FINAL ENVIRONMENTAL IMPACT REPORT

Project No. 99-239(5)
State Clearinghouse No. 200061049

Deerlake Ranch

Conditional Use Permit/Oak Tree Permit No. 99239
Tentative Tract Map 53138

Volume 1 of 4

Los Angeles County
Department of Regional Planning
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December, 2003

Final
Environmental Impact Report
Deerlake Ranch

December 2003

Prepared for

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Los Angeles, California

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1.1 INTRODUCTION

This Final Environmental Impact Report (EIR) has been prepared in accordance with the *Los Angeles County Environmental Document Reporting Procedures and Guidelines* and the California Environmental Quality Act (CEQA) as amended (Public Resources Code Section 21000 *et seq.*), and *CEQA Guidelines* (California Administrative Code Section 15000 et seq.). The Final EIR contains the following components:

- Draft Environmental Impact Report, Deerlake Ranch (November 2001) (SCH No. 200061049)
- Draft Additional Environmental Information for Deerlake Ranch (July 2002) (SCH No. 200061049)
- Revised Project Design Summary Document for Deerlake Ranch (May 2003) (SCH No. 200061049)
- Response to Comments on the Draft EIR (December 2003) (SCH No. 200061049)
- Mitigation Monitoring Program (August 2003)

The above-listed documents are incorporated by reference into the Final EIR. The Mitigation Monitoring Plan, Additional Environmental Information, and Revised Project Design Summary Document are included as appendices in this document (Appendices D, P, and Q, respectively). The Final EIR is available for review at the Los Angeles County Department of Regional Planning and the following Los Angeles County Public Library:

Los Angeles County Library – San Fernando Branch
1050 Library Street
San Fernando, CA 91340

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

This document contains: (1) a revised project description, (2) revisions to the Draft EIR, (3) responses to written comments received on the Draft EIR, Additional Environmental Information document and Revised Project Design Summary document, (4) responses to comments received at Planning Commission public hearings, and (5) a series of updated technical studies and project related information.

The Draft EIR was distributed to various public agencies, citizen groups and interested individuals on November 27, 2001, for a period of 45 days, as required by CEQA. Appendix A of this document includes a distribution list and the Notice of Completion for the Draft EIR. The comment period technically closed on January 10, 2002. However, five public hearings were held in which the public was invited to present testimony to the Los Angeles County Planning Commission (January 23, 2002, April 10, 2002, June 19, 2002, August 21, 2002, and September 3, 2003) and comment letters were accepted by the County through the last Planning Commission hearing. Therefore the comment period for the Draft EIR has greatly exceeded the 45-day requirement per CEQA. A total of 444 letters were received by the Los Angeles County Department of Regional Planning from responsible agencies and special interest groups (see Appendix B of this document). This document includes responses to

individuals comments received during the public review period, as well as those presented at Planning Commission hearings.

Subsequent to circulation of the Draft EIR, two additional documents were prepared to evaluate revised projects and distributed to those who commented on the Draft EIR:

- The Draft Additional Environmental Information for Deerlake Ranch was prepared and circulated for public review (July 19, 2002 – August 19, 2002) at the request of the Regional Planning Commission. The Draft Additional Environmental Information document provided additional information relative to (1) the relationship of the proposed project to the proposed Santa Susana Mountains/Simi Hills Significant Ecological Area; (2) Alternative 2 – Certificate of Compliance build-out; (3) Reduced Density / Equestrian Alternative – Additional Alternative 4 (424 residential units); and (4) growth-inducing impacts. This document is included in Appendix P.
- Revised Project Design Summary Document for Deerlake Ranch was prepared and circulated for review (June 16, 2003 – July 30, 2003) in response to information provided by the project applicant, as well as, comments and testimony received on the Draft EIR during the public review period. This document presented the environmental setting and impact analysis relative to a reduced density project design (388 residential units). This document is included in Appendix Q.

Responses to comments received on the Draft EIR, Additional Environmental Information document, and the Revised Project Design Summary Document are included in this Final EIR.

Due to the amount of form letters received during the public review process, comprehensive topical responses have been prepared for major comment areas (biology, urban runoff, noise/dust, fire services, police services, traffic, development issues and other non-traffic issues) and are included in Section 4.2 of this document. These topical responses provide a comprehensive discussion of the issue and are referred to throughout Sections 4.3 through 4.7 of this document.

In addition to the response to comments, this documents contains revisions and additions to the Draft EIR as well as a series of appendices containing additional information relative to the response to comments portion of the document. This information comprises:

- Mitigation Monitoring Program
- Draft Conditions of Approval, including the applicant's community commitments
- Updated biological resources Information
- Updated geologic information
- Updated hydrologic information
- Storm Water Quality Mitigation Plan
- School facilities impact analysis
- Updated traffic study
- Land use technical memorandum
- Northerly property access technical memorandum
- Alternative access technical memorandum
- Community meetings – questions and answer summary
- Additional environmental documentation

All comments and public hearing testimony have been retyped, are numbered in sequential order, and are followed by responses. Responses to topical environmental issue area comments have been included in order to comprehensively respond to identified issues (see Section 4.1 of this document). Copies of all comment letters are included in Appendix B of this document.

In accordance with Public Resources Code 21092.5 of the *CEQA Guidelines*, this Final EIR will be provided to commenting public agencies a minimum of 10 days prior to certification of the EIR and available to other commenters at the Los Angeles County Department of Regional Planning and the above-designated public library.

1.2 REVISED PROJECT DESCRIPTION

Pursuant to direction from the Los Angeles County Regional Planning Commission, the project applicant has revised the project description in response to issues raised during public review process.

The project has been revised to reduce the total number of single-family residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots, as a result of their location adjacent to the existing and proposed equestrian trails. The revised project description has been accommodated within the existing development footprint associated with the 484-unit project evaluated in the Draft EIR. A revised Vesting Tentative Tract Map (VTTM) has been submitted that reflects the Revised Project Design (see Appendix C.1).

Comments contained in Draft EIR comment letters and public hearing testimony were directed at the 484-unit plan evaluated by the Draft EIR. However, responses to comments have been prepared based upon the context of the 388-unit revised project design.

1.3 SUMMARY OF IMPACTS

The analysis in the Draft EIR confirmed that, except for grading, the originally proposed project would have the same (or in most cases, reduced) impacts as it pertains to the project site. The reduction in the total number of single-family residential units from 484 to 388 is a 20% reduction in impacts based on the lot count, primarily as a result of incorporation of larger lot sizes. Acreage-based impacts remain the same as evaluated in the Draft EIR, as the development footprint has not changed. The proposed project would not result in any significant impacts that have not already been discussed in the Draft EIR, and would not increase the severity of any previously discussed significant impacts. A summary of impacts contained in the Draft EIR is included as Table 1.1. This table has not been updated to reflect the 388-unit plan, as all impacts remain the same or are reduced.

1.4 SUMMARY OF MITIGATION AND CONDITIONS OF APPROVAL

After distribution of the Draft EIR, the applicant agreed to various community commitments and additional mitigation measures. This was based on discussions with members of the adjacent community, the City of Los Angeles Department of Transportation, and the California Department of Transportation. In addition, approval of the proposed project includes conditions established by the County of Los Angeles through various permits that are required for the project. All proposed community commitments, mitigation measures, and conditions of approval shall be incorporated into project design and implementation and tracked for compliance through the Mitigation Monitoring Program (see Appendix D of this document).

A summary of mitigation measures and conditions of approval is included in Table 1.2 (Summary of Mitigation Measures and Conditions).

Table 1.1. Summary of Impacts

Environmental Impact	Unavoidable Impact After Mitigation
AESTHETICS AND VISUAL RESOURCES	
Implementation of the proposed project would not result in significant impacts related to aesthetics or visual resources. Project implementation would result in the development of 388 single-family residences, which would be in keeping with the existing development and natural character of the surrounding area.	None.
The proposed project site would require 2.24 million cubic yards of cut and fill grading for development, modifying its topography. However, the primary natural topographic feature of this site (i.e., Devil Canyon) would not be impacted.	
Views From Adjacent Residential Uses	
The proposed project would alter the views of the existing residential uses to the west and immediately south of the site, and modify the nighttime appearance of the area. The project would not conflict with County goals or policies and therefore, impacts to views from residential areas are considered adverse but not significant.	
Views From Recreational Uses	
The aesthetic environment and views from adjacent equestrian and hiking trails would be altered with implementation of the proposed project. Homes in the southern portion of the development would also be visible from trails located along the northwestern boundary of the project site. The addition of lighting for the proposed project would also be visible from nighttime recreational uses in the vicinity. The project would not be visually inconsistent with the surrounding development and would not conflict with County goals or policies and therefore, impacts to views from recreational areas are considered adverse but not significant.	
Views From Scenic Highway Routes	
The view of the proposed project would be limited from County designated first priority scenic highway routes, SR-118 and Topanga Canyon Boulevard, due to topography. Therefore, impacts would be considered significant.	
Views from Long Distance Areas	
Views of the project site from distant cross-valley vantage points would be distant and relatively obscure due to the intervening distance. Views of the project site from long distance vantage points are not considered significant impacts.	
Cumulative Impact	
The location of the eleven related projects identified in Section 3.0 are sufficiently distant and/or in isolated viewsheds, such that they would not contribute cumulatively with the proposed project to aesthetic and view impacts. Continued development and urbanization of the Chatsworth area of the San Fernando Valley over time is resulting in a more urban setting. Given the evolving developed nature of the project locale, the combined effect on the views in the vicinity are similar to the project's impacts themselves, therefore, cumulative impacts are not considered significant.	

Table 1.1. Summary of Impacts (continued)

Environmental Impact	Unavoidable Impact After Mitigation
AIR QUALITY Construction Grading emissions would be associated with dozer operations and water trucks for dust control and with construction workers commuting to and from the project site. Construction emissions would vary with the grading/excavation activities. With implementation of dust control and mitigation measures, peak grading activity days would experience PM_{10} emissions that are below the identified significance threshold. Temporary construction emissions would occur during project buildout and include on-site generation of dust and equipment exhaust, and off-site emissions from construction vehicular traffic. NOx would exceed the SCAQMD thresholds prior to application of mitigation measures. Operation Air pollutant emissions associated with project operation would not exceed SCAQMD thresholds for criteria pollutants. Therefore, impacts associated with project operation would not be significant. CO Hot Spots Implementation of the proposed project would not create any new violation with regard to CO hot spots and would not violate the standard. No significant impacts would occur. Consistency with Regional Plans The proposed project would be consistent with the AQMP and would not jeopardize the attainment of air quality standards. Cumulative Impact A buildout year of emission generating projects within the South Coast Air Basin or within the local sub-basin within a similar timeframe as the proposed project would increase the short-term emissions for concurrent activities during any day of the construction period. Since the worst-case construction emissions for the project were identified to be less than significant with mitigation, any additional construction activities during this time and in the vicinity of the proposed project site would be adding additional air pollutant emission burden to these less than significant levels. Operational emissions associated with the buildout of the proposed project would occur with emissions from other development projects in the vicinity. All projects projected to be built and operational within the project's timeframe would likely have impacts similar to those of the proposed project. However, as the Basin is in non-attainment, cumulative air quality operational impacts would be considered significant.	None.
BIOLOGICAL RESOURCES Vegetation Impact A total of 176.44 acres (153.90 acres of permanent impact and 22.54 acres of partial fuel modification impact) of on-site vegetation would be impacted by project implementation. Sixty-five of the existing 353 oak trees located on the project site would be removed; however, none of these oak trees are of heritage status. Approximately 0.02 acre of willow woodland would be impacted under the proposed project.	None.

Table 1.1. Summary of Impacts (continued)

Environmental Impact	Unavoidable Impact After Mitigation
Implementation of the proposed project would result in the loss of approximately 61.02 acres and 1,800 individuals of Plummer's mariposa lily. However, measures have been included to mitigate these impacts to less than significant. Wildlife Impacts The project site does not represent an important wildlife movement corridor and implementation of the proposed project would not result in an impact to any state- or federally-listed wildlife species. There is, however, a potential for impacts to two pairs of ashy rufous-crowned sparrows and to migratory birds and/or raptors during breeding season. Jurisdictional Impact The proposed project would impact approximately 18,860 square feet (0.43 acre) of on-site Corps jurisdictional waters of the United States. None of the impacted areas constitute jurisdictional wetlands. The proposed project would impact approximately 59,805 square feet (1.37 acres) of on-site CDFG jurisdiction. Vegetated riparian habitat within the CDFG jurisdiction is approximately 42,095 square feet (0.97 acre). Two bridge crossings of Devil Canyon would span the drainage and avoid direct impacts to jurisdictional areas. Indirect Impacts Residential development encroachment into open space areas would increase wildlife disturbance through increased recreational use and household pets. Night light sources would likely have little impact on open space habitats, especially high-quality habitat in canyons below the development. However, proposed open space (including lands previously dedicated) have sufficient cover and isolation from indirect effects of development. The proposed project would impact surface water quality during the construction period. However, these impacts would be mitigated with the development of a Standard Urban Stormwater Mitigation Plan. Cumulative Impact Implementation of the proposed project would not contribute to a cumulative loss or degradation of Corps and CDFG jurisdiction, sensitive vegetation associations or habitats, and federally- and/or state-listed plants or animals. However, the proposed project would result in adverse, but not significant, impacts to common wildlife species and ashy rufous-crowned sparrow and adverse cumulative, but not significant, impacts to Plummer's mariposa lily. The applicant is proposing to dedicate a strip of land along the northern portion of the project site to the Santa Monica Mountains Conservancy, which will effectively restrict any future access to, and development of areas north of the project site.	
CULTURAL RESOURCES Project Impact Eight archaeological sites were recorded and had the potential to be significant. Three sites were thought to be historical and five sites either revealed small artifacts prehistoric in description or revealed no archaeological objects of any significance. As a result of fieldwork, implementation of the proposed project would not result in adverse impacts to significant cultural resources. Cumulative Impact Although the cumulative total of all related project development creates the potential for additional impact to archaeological resources, each project must develop adequate mitigation measures to substantially decrease or avoid impacts. As all archaeological resources on the project site have been recovered, no significant cumulative loss of cultural resources would occur and impacts would not be significant.	None.

Table 1.1. Summary of Impacts (continued)

Environmental Impact	Unavoidable Impact After Mitigation
GEOLOGY AND SOILS Project Impact No observable Holocene Age faults occur on the project site. Older faulting does occur on-site as existing zones of weakness that may be susceptible to minor displacement as a secondary response to primary faulting along nearby active faults. However, the proposed project has been designed to mitigate this condition through the construction of uniform, engineered fill cap in conjunction with stiffened foundation systems in these locations. Two landslide and several areas of superficial instability have been mapped near the project site. The area in the north portion of the project site would not be graded and capacity has been provided within a proposed debris basin. The landslide in Devil Canyon is considered potentially unstable where facing east, northeast or north, and seven proposed lots within that area would require mitigation. Implementation of the proposed project would involve excavating an estimated 2.24 million cubic yards of earth with the majority of the graded cuts less than 40 feet deep and the maximum cut slope at 100 feet. Erosion associated with site preparation would be temporary and would cease upon completion of construction activities. No significant erosion impacts would result from the proposed project. Cumulative Impact Impacts related to geology and soils are primarily based upon site-specific conditions. No soils would be moved off-site. All cumulative development would be subject to similar requirements to those imposed and implemented on the proposed project and would be required to adhere to applicable regulations, standards, and procedures. The proposed project would not result in significant cumulative impacts with regard to geology and soils.	None.
HYDROLOGY AND WATER QUALITY Project Impact Implementation of the proposed project would leave approximately 76 acres or 33 percent of the site undeveloped. Although peak storm water runoff from these pervious surfaces would increase during significant storm events, the total peak storm water runoff volume from the entire drainage area, including the site after development, would be reduced because of the removal of approximately 4,590 cubic yards of solid (bulk and burn) materials by four proposed debris basins, and the removal of 44.2 acres of vegetation for building and paving. Implementation of the proposed project would result in a decreased flow due to inclusion of four debris basins in the project design. The proposed project would be constructed to the standards and specifications of the Los Angeles County Department of Public Works. In addition, a SUSMP would be developed for the project to further ensure impacts would be less than significant. Impacts would not be significant. Cumulative Impact Under existing conditions, the peak storm water runoff from all areas tributary to Devil Canyon is 14,320 cfs, including bulk and debris matter carried by the runoff water. Of that volume, 876.4 cfs is attributable to runoff from areas within the project site. The future development of 12 lots which are currently not included in the project, but are located within the development "envelope" of the site (as shown on VTTM), would have no calculable effect on the volume of storm water runoff from the project site. After construction of four debris basins, which will remove approximately 4,590 cubic yards of debris, the peak storm water runoff from the project site would be	None.

Table 1.1. Summary of Impacts (continued)

Environmental Impact	Unavoidable Impact After Mitigation
reduced from 876.4 to 458.0 cfs. The cumulative impact of the proposed project on the Devil Canyon drainage course would be to reduce the peak storm water runoff from 14,320 to 13,901.6 cfs, and to reduce the total debris discharged into the canyon by approximately 4,590 cubic yards. Therefore, cumulative impacts would be less than significant.	
NOISE Construction Varying levels of construction noise may be heard in different parts of the project site during the project's total construction period. With the combination of an adequate distance buffer, terrain shielding, and compliance with County ordinances, construction activities would not result in a significant noise impact. Traffic Noise Without consideration of background freeway noise, the proposed project would create a maximum off-site noise impact of 6.9 dB above the future no project condition. However, when background freeway noise is considered, the greatest project increase would be 1.9 dB. All other roadway segments would experience a noise contribution of 2.0 dB or less. Off-site noise impacts would be less than significant. On-Site Noise Some lots would have a maximum noise exposure of 73 dB CNEL; Other lots would have an exterior loading of 65 to 72 dB CNEL. The remainder of the project site would have an exterior loading of less than 65 dB CNEL. However, with implementation of mitigation, impacts would not be significant. Cumulative Impact Increases in noise levels due to the proposed project would be less than 3 dB(A) and would not create a discernable change in noise levels. Implementation of the proposed project would not result in a significant cumulative adverse impact upon the environment.	None.
PUBLIC SERVICES - FIRE PROTECTION Project Impact The County Fire Department has indicated that the level of staff is adequate to meet fire suppression and emergency medical needs to the proposed project and that no additional staff or service would be required. However, the maximum distance criteria (three miles) would be exceeded. To ensure that fire protection and emergency needs are adequately met, the City of Los Angeles, under an automatic aid agreement with the County, would render primary services. The City Fire Department has indicated that the level of staff is adequate to meet the needs of the proposed project. The proposed project would not conflict with applicable County Fire Department Code and ordinance requirements or standards for construction, access, water mains, fire-flow and fire hydrants and would not impair emergency access to the site or cause an increase in emergency response times. The project site is located in an area designated as Fire Zone 4 (Very High Fire Hazard Severity Zone). However, with implementation of a Fuel Modification Plan, wildfire impacts would be less than significant.	None.

Table 1.1. Summary of Impacts (continued)

Environmental Impact	Unavoidable Impact After Mitigation
Cumulative Impact The cumulative residential population increase for the proposed project in conjunction with related projects is expected to collectively increase demand for the County's fire protection services. As with the proposed project, the related projects would contribute via property taxes to the County's funding for fire protection services, which would serve to offset these impacts. All projects would be subject to protection and safety measures to comply with the Department's development review criteria. Implementation of the proposed project would not result in a significant impact with regard to emergency access to the site.	
PUBLIC SERVICES - POLICE PROTECTION Project Impact Implementation of the proposed project would include physical changes to the environment and would increase resident population. Although this increase would not result in a significant change in the current officer to resident ratio, the Sheriff's Department indicated implementation of the project would require additional officers. The project applicant has agreed to contribute funds to construct a facility suitable for use a s Sheriff Department Substation to Service the project area. The new facility would be approximately 800 square feet in size and located near the Topanga Canyon Blvd. entrance to the project site. In addition, implementation of the proposed project would serve to increase the existing funding mechanisms (i.e., property taxes) for any additional officers required to serve the project area. Therefore, impacts would not be considered significant. Emergency access to the site would be improved and therefore associated impacts would not be significant. Cumulative Impact Cumulative increase in residential population would require approximately 1.15 additional police officers in order to maintain the current level of service. However, impacts would not be significant as the related projects would also serve to increase existing funding mechanisms for any additional officers to serve the area. Cumulative impacts would not be significant.	None.
PUBLIC SERVICES – SCHOOLS Project Impact Based on the current student generation factors for single-family residential uses an estimated 494 total students would be generated by the proposed project (208 elementary, 121 middle school, and 165 high school students). The estimated elementary and high school students generated as a result of the proposed project are anticipated to result in significant impacts to LAUSD elementary and high school services, while the estimated middle school students generated as a result of the proposed project are not anticipated to result in significant impacts to LAUSD middle school services. Cumulative Impact An estimated 3,834 total students would be cumulatively generated (1,616 elementary, 940 middle school, and 1,278 high school students). This would result in a deficit of elementary school space of 649 students, the majority associated with Porter Ranch, a deficit of space of 510 students at the middle school level and a deficit of space of 1,306 at the high school level. However, Porter Ranch has entered an agreement with LAUSD to provide capacity within the district to accommodate further growth in the area associated with Porter Ranch. In addition, as with the proposed project, all related projects would be required to pay applicable developer fees to offset these impacts. Therefore, cumulative impacts would not be significant.	None.

Table 1.1. Summary of Impacts (continued)

Environmental Impact	Unavoidable Impact After Mitigation
LIBRARIES Project Impact Implementation of the proposed project would result in a total of 401 square feet of library space and 2,289 additional items. Los Angeles County Ordinance requires that new residential subdivisions pay a library fee to ensure that new projects mitigate impacts to library facilities. As the developer would pay the applicable fees to offset potential capacity deficits in local schools, no significant impacts are anticipated. Cumulative Impacts Cumulative project impacts would include a total of 631 square feet of library space and 3,606 additional items. Applicable fees would be paid for new residential subdivisions as required by the Los Angeles County ordinance. Therefore, no significant impacts would occur.	None.
TRANSPORTATION/TRAFFIC Construction Development of the project would have short-term effects on vehicular traffic during the grading and excavation phase. However, these impacts would be would not be significant. Operation Implementation of the proposed project would generate approximately 3,608 daily trips and would result in significant impacts to three of the study intersections: Topanga Canyon Boulevard & SR-118 WB On/Off-ramps; Topanga Canyon Boulevard & SR-118 EB On/Off-ramps; and De Soto Avenue and Chatsworth Street. The remaining ten study intersections would have incremental, but not significant impacts. CMP The proposed project would result in a project impact at one of the CMP monitoring stations (Topanga Canyon Boulevard & SR-118 WB On/Off-ramp) during the A.M. and P.M. peak hours. Based on the threshold criteria for a Traffic Impact Assessment for conducting impact evaluations on freeway segment monitoring locations, it was concluded that the proposed project would not add 150 or more trips, in either direction, at the CMP mainline freeway monitoring locations. Therefore, no impact would occur and further analysis is not required. Transit System As a result of the proposed project, the existing transit demand would be increased by up to 19 to 24 persons during the A.M. and P.M. peak hours, respectively. In addition, a total of 239 daily person trips on public transit are forecasted. Additional ridership due to implementation of the proposed project would not have a significant impact on the public transit system. Cumulative Impact The analysis for the proposed project is based on methodologies that incorporate the cumulative effects of traffic from general growth and anticipated nearby projects. Although project implementation would result in significant impacts, these impacts would be less than significant with mitigation.	None.

Table 1.1. Summary of Impacts (continued)

Environmental Impact	Unavoidable Impact After Mitigation
UTILITIES AND SERVICE SYSTEMS – WATER SUPPLY Consistency with Regulatory Plans and Projections The proposed project is consistent with the Los Angeles County General Plan Land Use element within the LVMWD service area. The proposed project is consistent with the LVMWD's Master Plan and UWMP and would not have a significant impact on the LVMWD's ability to meet its objectives as prescribed in the California water code. Project Impact Implementation of the proposed project would result an average daily water demand of approximately 393,558 gallons per day (441 acre feet/year). This represents less than three percent of LVMWD supply and would not result in a significant impact. Cumulative Impact The cumulative demand for water with implementation of the proposed project would result in approximately 24,603 acre feet per year in 2005. As previously mentioned, the LVMWD would be able to accommodate the required water supply demand of the proposed project and does not anticipate any water availability shortfalls which would affect the demands of the District, assuming cumulative growth.	None.
UTILITIES AND SERVICE SYSTEMS – WASTEWATER Project Impact The proposed project would generate approximately 135,800 gallons of wastewater per day. No metering station would be required. A portion of the City sewer main within Canoga Avenue (Outlet Point No. 2) would not have adequate capacity to accommodate sewage associated with the proposed project. Potions of the sewer main would be reconstructed or paralleled in order to provide adequate capacity for the proposed project, plus future demands. Adequate future capacity exists in the Hyperion Treatment Plant expansion project to serve the future needs of the LVMWD service area. The proposed project is consistent with the County's General Plan Land Use Element, and thus is consistent with population growth projections used by the LVMWD. Cumulative Impact The cumulative impact of the proposed project would not result in a significant impact.	None.
UTILITIES AND SERVICE SYSTEMS - SOLID WASTE Construction Impacts stemming from the disposal of construction-related solid waste would be less than significant due to the limited disposal activity as well as the Sanitation Districts implementation and operation of a resource and recovery program. Operations Implementation of the proposed project would result in the generation of approximately 4,745 pounds of solid waste per day (approximately 2.37 tpd). This represents 0.02 percent of the authorized, maximum solid waste disposal rate for Puente Hills Landfill, and no significant impact would occur with regard to solid waste generation and landfill capacity.	None.

Table 1.1. Summary of Impacts (continued)

Environmental Impact	Unavoidable Impact After Mitigation
Cumulative Impact The proposed project and related projects would be expected to cumulatively generate approximately 36,818 pounds (18.4 tons) of solid waste per day. This is approximately 0.14 percent of the maximum disposal rate for Puente Hills Landfill, and no significant cumulative impacts would occur.	
UTILITIES AND SERVICE SYSTEMS – ELECTRICITY Project Impact Implementation of the proposed project would result in the consumption of approximately 2,183,082 kWh of electricity per year. SCE has stated should a shortage of energy and/or generating capacity ever occur, the utility will apportion its available supply as set forth in Rule 14. It is not anticipated that development of the proposed project would significantly impact the supply of electricity or exceed the planned capacity of existing electricity distribution systems. No significant impacts would occur. Cumulative Impact The proposed project and related projects would be expected to cumulatively consume approximately 2,308,792 kWh of electric power per year. No significant impacts would occur to electrical facilities or existing electrical supplies.	None.
UTILITIES AND SERVICE SYSTEMS – NATURAL GAS Project Impact The proposed project would consume an estimated 31,032 Mcf of natural gas per year. Although no natural gas facilities are located on the project site at this time, The Gas Company has indicated that sufficient natural gas facilities exist in the project vicinity and gas service to the proposed project site could be provided. No significant impacts would occur. Cumulative Impact The proposed project and related projects would cumulatively consume approximately 222,354 Mcf of natural gas per year. The Gas Company has indicated that sufficient natural gas facilities exist and gas service for cumulative projects could be provided. No significant cumulative impacts would occur.	None.

Table 1.2. Summary of Mitigation Measures and Conditions

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
AESTHETICS AND VISUAL RESOURCES				
The primary east-west ridgeline along the northern project boundary shall be retained in undisturbed natural open space to provide a natural viewshed backdrop.	X			
Approximately 70 acres of the project site has been, or is proposed to be, dedicated to the SMMC for preservation of significant aesthetic resources. Those portions not currently dedicated as undisturbed open space shall be dedicated prior to issuance of a grading building permit	X			
A comprehensive landscape plan (as shown in Figure 2.10) shall be approved by the County, prior to the issuance of a grading permit	X			
AIR QUALITY				
Dust Control: The following dust control measures shall be implemented in accordance with South Coast Air Quality Management District (SCAQMD) Rule 403, *Fugitive Dust*, including: • Active construction areas shall be watered at least three times daily, or four times daily if there is evidence of fugitive dust • Apply water twice per hour on unpaved roads and restrict vehicle speeds to 15 mph • All haul trucks shall be covered or shall maintain at least two feet of freeboard. • All unpaved parking or staging areas shall be watered four times daily. • Site access points shall be swept or washed within 30 minutes of any visible dirt deposition on any public roadway. • On-site stockpiles of debris, dirt, or other dusty material shall be watered daily over 80 percent of their surface areas or covered • Minimize the areas of brush clearance in advance of grading operations to minimize areas susceptible to fugitive dust	X		X	
Emissions: The following measures shall be implemented to control emissions related to construction activities: • Off-road construction equipment built within the last ten years shall be utilized. • Off-road construction equipment shall have low-NO_x tune-ups every 90 days. • Idling of trucks and heavy equipment shall be limited to 10 minutes.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
Off-site impacts: The following measures shall be implemented to control emissions related to off-site impacts: • Lane closures shall be limited to off-peak travel periods. • Construction vehicles shall not be parked on heavily traveled roadways. • Receipt of materials shall be encouraged during non-peak traffic hours. • Ride-share incentives shall be provided for contractor and subcontractor personnel.	X		X	
Homes shall be built to meet minimum statewide energy conservation requirements.	X			
Homes shall include as an option the following residential design features that encourage trip elimination or trip diversion to alternative transportation: • Prewiring for various telecommunications systems access for in-home offices.	X			
BIOLOGICAL RESOURCES				
An off-site mitigation parcel shall be dedicated to County or a public conservation agency to the satisfaction of the County Department of Regional Planning. The mitigation parcel shall be of a minimum size of the collective total of all on-site project-sensitive vegetation impacted (but not less than 68 acres) and shall be adjacent to or and contiguous with permanent open space of comparable size.	X			
The applicant shall mitigate impacts to 0.03 acre of on-site willow woodland based on recommendations of the project biologist (see Appendix G) and to the satisfaction of the CDFG and the County Department of Regional Planning. The mitigation plans shall be reviewed and approved by these agencies prior to the issuance of grading permits. This mitigation measure shall be implemented on the mitigation parcel with 0.12 acre (representing a 4:1 ratio).	X			
All eucalyptus shall be removed from open space portions of the project site to enhance the biological values of open space areas, reduce the risk of a canopy fire, and prevent further encroachment of eucalyptus into native habitats to the satisfaction of the County Department of Regional Planning prior to the issuance of grading permits. To avoid impacts on nesting birds, such removal shall be implemented outside of the avian nesting season from March 15 to August 15.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
Impacts on Plummer's mariposa lily shall be mitigated through a 2:1 replacement of impacted individuals for a total of 4,000 for an impact of 2,000 and an additional 1:1 replacement through preservation. Relocated Plummer's mariposa lily shall be planted on the mitigation parcel. A qualified biologist/botanist shall oversee all aspects of this mitigation plan, including bulb and seed collection and transplanting, per the recommendations of the project biologist (see Appendix G). Seed collection shall occur prior to collection of bulbs from all plants within the development envelope. The Plummer's mariposa lily mitigation plan shall be reviewed and approved by the Los Angeles County Department of Regional Planning, prior to issuance of grading permits. Maintenance of relocated Plummer's mariposa lilies shall be monitored for a period of five years. Annual monitoring reports shall be submitted to CDFG and the County Department of Regional Planning. The Plummer's mariposa lily salvage, propagation, and transplanting program is designed to retrieve a sizable portion of the on-site bulbs for use in both on-site and off-site habitat enhancement. Another component of this effort is researching and documenting methods that lead to successful long-term establishment of transplanted bulbs. This includes bulbs collected and transplanted directly to a site within the same year, stored bulbs, and bulbs grown from seed in a nursery. The salvage program shall consist of the following components: • Prior to grading, seed shall be collected and all flagged/mapped bulbs and any bulbs uncovered during removal shall be salvaged. A minimum of 4,000 bulbs shall be collected (this represents a 2:1 replacement ratio). If 4,000 bulbs do not inhabit the project site, all bulbs found shall be collected. • All bulbs shall be stored at a qualified native plant nursery. • 40% of the bulbs shall be used for transplantation to on-site and off-site preserved habitat in the fall/winter immediately following salvage. • 20% of the bulbs shall be propagated at a qualified native plant nursery to collect seed for starting new plants for transplantation to preserved areas, both on-site and off-site. • 40% of bulbs shall be stored for a period of five years for annual or biannual planting in preserved areas, as determined by a qualified biologist. • All transplanted bulbs shall be maintained, including weed control. • Monitoring and reporting shall be conducted.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
A Standard Urban Storm Water Mitigation Plan (SUSMP) shall be in place to direct prevention and/or minimization of storm water runoff from the work site during construction to prevent or minimize impacts on riparian and wetland vegetation and its associated species. The SUSMP shall be subject to the approval and satisfaction of the County Department of Public Works.	X	X		
For the proposed bridges, special construction methods as recommended by the project bridge engineer and to the satisfaction of the County Department of Public Works shall be implemented to incorporate clear spans across Devil Canyon.	X			
Coastal sage impacts of 2.39 acres shall be mitigated to the satisfaction of the County Department of Regional Planning through the preservation of a minimum of 4.78 acres (which represent a 2:1 ratio) of coastal sage scrub or coastal sage scrub/chaparral ecotone on the mitigation parcel.	X			
Coast live oak woodland impacts of 1.3 acres shall be mitigated to the satisfaction of the County Department of Regional Planning through the preservation of 2.6 acres (which represent a 2:1 mitigation ratio) on the project site and the mitigation parcel.	X			
All manufactured slopes outside of the irrigated fuel modification zone shall be landscaped with locally indigenous plant materials in accordance with the conceptual landscape plan (see Figure 2.10) and to the satisfaction of the County Department of Regional Planning.	X		X	
All 61 impacted oak trees shall be mitigated (2:1 replacement with 15-gallon trees for removed trees). No heritage oaks shall be impacted by the proposed project. A minimum of 122 15-gallon oak trees shall be planted in appropriate habitat areas on the project site and/or within the mitigation parcel, as approved by the County Forester and Fire Warden. All oak tree mitigation shall be monitored by a qualified arborist, in accordance with the established preservation program included in the Oak Tree Report (see Appendix H of the Draft EIR).	X			X
Copies of the final Oak Tree Report shall be reviewed and approved by the Los Angeles County Forester and Fire Warden, and the County approved Oak Tree Permit shall be maintained on-site during construction. Implementation of work approved by the Oak Tree Permit shall not begin prior to issuance of a grading permit.	X		X	X

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
Prior to any construction activity, the applicant shall have a qualified biologist survey the project site for the presence of any occupied raptor nests, including Cooper's hawks, as protected by the Migratory Bird Treaty Act. If such a nest is found, it shall be avoided and protected until nesting activity has ended to ensure compliance with Section 3503.5 of the CDFG, based on the recommendations of the project biologist (see Appendix G). During nesting (March 15 to August 15), occupied nests shall be avoided through implementation of a 300-foot buffer zone for nesting birds and a 500-foot buffer zone for nesting raptors. Should construction activities encroach into these identified buffer zones, noise barriers shall be constructed to minimize noise impacts to the birds and ensure that noise levels do not exceed 65db CNEL.	X			
Light poles shall be 14 feet high instead of 26 feet high and all streetlights potentially affecting open space areas shall be fitted with baffles to eliminate direct shine into open space areas. Light standards shall be equipped with low-pressure sodium lamps to minimize nighttime glare. Security lighting shall be low-intensity, shielded, directed downward and away from open space areas.	X			
Mitigation required for impacts on areas identified within the jurisdiction of the Corps' CWA Section 404 Permit and/or a CDFG Section 1603 Streambed Alteration Agreement shall be determined during agency permitting subsequent to EIR certification. The applicant shall be responsible for the development of a mitigation plan in accordance with the Corps' Mitigation and Monitoring Guidelines and shall include those measures required by CDFG[1] Final Corps and CDFG mitigation plans shall be provided to the County Department of Regional Planning.	X			
If earthmoving activities are scheduled to start at the site between April 10 and August 15 (the vireo nesting season) a qualified biologist will perform a one-day survey of the potential vireo habitat for the presence of nesting vireos not more than seven days prior to the start of such earthmoving activities. If any nesting vireos are observed, no work (vegetation clearing, earthmoving, or construction) may occur on the plateau above the riparian habitat within 150 feet of the nest, or in the riparian habitat within 500 feet of the nest. If any nesting vireos are observed, the qualified biologist will monitor activities occurring with 1,000 feet of the nest to ensure compliance with this condition.	X			

1 On March 27, 2000, the Corps issued a provisional verification that the property complies with the terms of Nationwide Permit NW22.

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
If earthmoving activities start outside the vireo nesting season (August 16 through April 9), no additional vireo surveys will be required, unless (during the vireo nesting season) said work ceases for a period of more than 15 days before beginning again. In such case, the restart of earthmoving activities will be considered as a new start of earthmoving activities, subject to the condition above.	X			
CULTURAL RESOURCES				
A qualified archaeological monitor shall be present during grading in areas of the previously recorded and examined archaeological sites.	X			
GEOLOGY & SOILS				
All grading shall be accomplished under the discretion of the project geotechnical engineer in accordance with the requirements of the County.	X	X		
A uniform, engineered fill cap shall be constructed in conjunction with stiffened foundation systems to manage ground rupture potential. The depth of removal and recompaction associated with construction of these fill caps shall be on the order of 5 to 10 feet to provide a homogenous buffer to the overlying foundations. These precise locations of these fill caps, including thickness, shall be developed as a part of a detailed geotechnical report in conjunction with the final project grading plans.	X			
Design of structures shall be based on the UBC (Uniform Building Code) 1997 seismic design methods incorporating the PGA values as computed in the geotechnical report found in Appendix G.	X			
Shallow soils shall be removed beneath structures and/or proposed fill.	X			
Where development is proposed at the top and/or toe of slope and development and cannot be avoided within a 2:1 projection from the toe of the slope (i.e., an area within the northeastern portion of the site), the slope shall be stabilized, which may consist of dewatering, offloading, or supporting these slopes using conventional hillside development methods and shall be designed on the basis of a detailed slope stability analysis as part of the final project grading plan.	X			
Proposed cut slopes and fill slopes shall be at a slope no steeper than 2:1. These slopes shall be constructed using typical slope drainage systems in accordance with the 1997 UBC, including midslope drainage swales and brows ditches, and are subject to typical homeowners maintenance requirements.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
Prior to grading, the project site shall be grubbed and cleared of all vegetation and debris. The vegetation and debris shall be properly disposed of off-site, or it may be mulched on site and used for landscape cover as directed by the project landscape architect.	X			
Site preparation and earthwork operations shall be performed in accordance with applicable provisions of the 1997 UBC, unless specifically revised or amended by the geotechnical engineer, and in accordance with all applicable requirements.	X			
On slopes flatter than 5:1 and in drainage swales, separate cleanout operations may be necessary. During benching, colluvium shall be removed to firm material as evaluated by the geotechnical engineer. The overexcavated materials shall be moisture-conditioned and recompacted as structural fill in accordance with the recommendations for engineered fill. The specific depth and extent of removals shall be evaluated during the actual earthwork operations, based on grading observations and testing.	X			
Subsurface exploration, sampling, and laboratory analysis shall be performed to provide shrink/bulk estimates to be used in conjunction with design civil and contractor information for similar projects in similar earth units.	X			
All fill soils shall be compacted as engineered fill. Engineered fill shall be uniformly moisture-conditioned to near optimum moisture content, placed in horizontal lifts less than eight inches in loose thickness, and compacted to at least 90 percent relative compaction. All fill placed at depths greater than 50 feet below final site grades shall be compacted to at least 95 percent relative compaction. Additional fill lifts shall not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.	X			
The following measures shall be completed to reduce temporary cut slope failure during construction: • Reduce the time between slope excavation and reconstruction operations to the extent possible. • Prevent water infiltration into slope materials prior to and during excavation. • Construct slopes at inclinations no steeper than 1.5:1. • Adjust the project schedule as needed so that temporary slopes are excavated and left exposed only during the dry months of the year.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
In areas where steep slopes may be unstable and exist adjacent to proposed areas of development, stabilization can be accomplished by typical hillside methods. Such slope reinforcement methods range from revegetation to construction of mechanically stabilized earth (MSE) systems and retention systems.	X			
Proposed structures may be supported on shallow, reinforced concrete, spread footings founded entirely on engineered fill. Footings shall not transition from fill to bedrock conditions. Foundations shall have a minimum width of 24 inches and shall be placed at a minimum depth of 18 inches below the lowest adjacent grade or adjacent finish floor elevation, whichever is lower. An allowable pressure of 3,000 pounds per square foot (psf) for dead plus sustained live loading is suitable for preliminary design. Foundation preparation necessary to improve soils to provide this capacity shall be evaluated during the design.	X			
A soils engineer shall be retained to evaluate the corrosive potential of soil on concrete foundations, and to, recommend appropriate concrete specifications.	X			
HYDROLOGY AND WATER QUALITY				
The proposed project shall be designed and constructed in compliance with National Pollution Discharge Elimination System (NPDES) permit and all applicable state and local water quality requirements.	X	X		
A Standard Urban Storm Water Mitigation Plan (SUSMP) shall be developed for the project site that shall identify pollutant sources that may affect the quality of storm water discharges during construction (see Appendix I of the FEIR). The SUSMP shall include various pollution prevention measures such as erosion control, dust control, and will provide the comprehensive Best Management Practices (BMPs) Guide to contractors during site construction, as contained in the *Best Management Practice Handbook*, California Stormwater Quality Task Force, Sacramento, CA, 1993, or latest revised edition.	X	X		
A Standard Urban Storm Water Mitigation Plan (SUSMP) shall be developed for the project site identifying any pollutant sources that may affect storm water quality after project completion. The following measures shall be included in the SUSMP: • Continuous Deflection System (CDS) filters shall be installed at each storm drain discharge location prior to clarify storm water runoff prior to discharging into Devil and Brown Canyons, consistent with compliance strategies for pollutant reduction implementation measures of the Draft Basin Plan, *Draft Trash Total Maximum Daily Loads for the Los Angeles River Watershed*, dated January 22, 2001 (see Table 8 of the Plan).	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
• Storm drain outlet structures shall include energy-dissipating devices to reduce storm water discharge velocities to less than corrosive levels • Catch basins and storm drain inlets shall be labeled "No Dumping – Drains to Ocean" to discourage illegal dumping. • Streets within the proposed residential development shall be swept as required by the County's Department of Public Works. • Signs shall be posted through the proposed development with prohibitive language and/or graphical icons to discourage illegal dumping. • Nontoxic pesticides and fertilizers shall be used in landscaped areas of the project. • All graded slopes shall be planted on a timely basis to prevent erosion. • Homeowners shall be provided with information from the County Department of Public Works (LACDPW) Environmental Planning Division concerning recycling of household products, disposal of hazardous wastes, disposal of yard wastes, tire recycling, and preventing pollution of storm drain systems with trash (detailed information is available on the LACDPW website at: www.888cleanla.com or by telephone at 888-CleanLA). • Require developer-owners to execute and record the LACDPW's *Maintenance Covenant for Standard Urban Stormwater Mitigation (SUSMP)* pursuant to Section 106.4.3 of the County Building Code and Title 12, Chapter 12.8 of the County Code.				
Required project drainage facilities shall be constructed in compliance with the approved Drainage Concept Plan (see Appendix H of the FEIR), which details the location and sizes of stormdrains, debris basins, CDS filtration units, and inlet/outlet structures.	X			
NOISE				
All construction activity occurring on the project site shall adhere to the requirements of the County of Los Angeles Noise Ordinance, Title 12, Section 12.08.440.	X			
Residential lot building pads that are subject to noise greater than the 65 dBA noise contour shown on Figure 4.7.3 shall include the following features to reduce interior noise levels to acceptable County standards: • The materials and heights of rear yard on lots subject to noise greater than 65 dBA shall be approved by the County Department of Health Services.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
• Exterior walls shall be wood frame construction, with 7/8 stucco (or similar material) on the exterior, ½ inch gypsum board on the interiors and R-13 cavity (minimum) in the cavity. • Minimal window surface facing SR-118 and windows shall be mounted with low air-infiltration rate frames (0.5 cfm/foot or less per ANSI specifications). • Sliding glass doors shall have minimum sound transmission class of 34. • Roof or attic vents shall be located away from SR-118 or baffled. • Second floor windows facing SR-118 shall be glazed with ¼ inch laminated glass. • Central air conditioning shall be standard. These measures shall be completed prior to the issuance of the Certificate of Occupancy to ensure that the noise levels with the proposed mitigation features are within the adopted County standards.				
All stationary and point sources of noise occurring in the project site shall adhere to the requirements of the County of Los Angeles Ordinance No. 11743.	X			
FIRE PROTECTION				
The project shall incorporate the following County Fire Department requirements regarding access, water mains, fire flows, fire hydrants, and brush clearance into project design: • Every building constructed shall be accessible to fire department apparatus by way of access roadways, with an all weather surface of not less than the prescribed width, unobstructed, clear-to-sky. The roadway shall be extended within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building. • All bridges required to be used as part of a fire access road shall be constructed and maintained in accordance with nationally recognized standards and designed for a live load sufficient to carry a minimum of 75,000 pounds. • Access to existing fire fighting motorways shall be maintained. • Fire hydrant spacing shall be as directed by the County Fire Department, but not less than 600 feet apart, and shall meet the following, minimum requirements:	X	X		

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
– No portion of lot frontage shall be more than 450 feet via vehicular access from a public fire hydrant. – No portion or structure should be placed on a lot where it exceeds 750 feet via vehicular access from a properly spaced public fire hydrant. – When cul-de-sac depth exceeds 450 feet on a residential street, hydrants shall be required at the corner and mid-block. Additional hydrants shall be required if hydrant spacing exceeds specified distances.				
Streets or driveways within the development shall be provided with the following widths in accordance with County Fire Department and Department of Public Works standards: • Provide 36 feet width on all collector streets and those streets where parking is allowed on both sides. • Provide 34 feet width on cul-de-sacs up to 700 feet in length. This allows parking on both sides of the street. • Provide 36 feet width on cul-de-sacs from 701 to 1,000 feet in length. This allows parking on both sides of the street.	X	X		
If required by the County Fire Department as a condition of building permits, dwelling units shall be fully sprinkled per NFPA pamphlet 13 D to offset potential response time impacts	X			
The proposed project shall comply with the preliminary fuel modification plan, which has been approved by the Forestry Division of the Fire Department (see Appendix C.4).	X			
The proposed project shall comply with all applicable County Fire Code and Ordinance requests including standards for construction, installation of sprinkler and alarm systems, fire extinguishers, and emergency exits.	X			
POLICE PROTECTION				
Prior to recordation of the Final Tract map, the applicant shall provide the Los Angeles County Sheriff's Department's with a diagram of the project, including access routes, street names, addresses, and any information that might facilitate police response.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
Prior to recordation of the Final Tract map, the applicant shall provide the Los Angeles County Sheriff's Department's with building plans to ensure that the proposed project is designed so as to minimize crimes against property. Features may include, but are not limited to: good sight lines, exterior lighting, and strong exterior doors, windows and locks.	X			
The Subdivider shall construct a Sheriff's Storefront Facility, not to exceed 800 sq. ft. in size but no less than 600 sq. ft in size, as depicted in Exhibit "A-1" of the Conditional Use (See Appendix C.2 of the FEIR)	X		X	
SCHOOLS				
The applicant shall pay developer fees, as required under Section 65995 of the California Code, for school impact mitigation. The applicant has indicated that it will enter into discussions with LAUSD and the Porter Ranch master developer to investigate the possibility of accelerating the Porter Ranch elementary and middle school construction schedule.	X		X	
LIBRARIES				
The applicant shall pay library fee, as required per Los Angeles County ordinance, of $626, or the fee in effect at the time, per residential unit for the project to ensure that new projects mitigate impacts to County library facilities.	X		X	
The applicant shall pay an additional, voluntary fee to the City of Los Angeles Chatsworth Library, which is the closest public library to the project site	X		X	
TRAFFIC				
The applicant shall install a traffic signal at the intersection of Topanga Canyon Boulevard and Poema Place/Mayan Drive. The traffic signal shall be interconnected and operated in conjunction with the existing traffic signal at the Topanga Canyon Boulevard & SR-118 WB On/Off-ramps.	X		X	
The applicant shall widen and restripe the WB SR-118 off-ramp to provide exclusive right-turn lane. This would result in a left-turn lane, a shared through/left-turn lane, and a right-turn only lane in the westbound approach.	X		X	
The applicant shall widen and restripe the westbound Mayan Drive approach to County Collector Street standards to provide a second left turn lane. This would result in a left-turn land and a shared through/left-turn lane in the westbound Mayan Drive approach.	X		X	

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
The applicant shall widen and restripe the EB Poema Place approach to provide a second right-turn lane. This would result in a right-turn lane and a shared through/right-turn lane in the eastbound Poema Place approach.	X		X	
The applicant shall contribute to the City of Los Angeles' Automated Traffic Surveillance and Control (ATSAC) system for the following intersections: • Topanga Canyon Boulevard and SR-118 EB On/Off-ramps.	X		X	
In addition, prior to the recordation of the first final subdivision map for the project, not including large-lot parcel maps for sale purposes, the applicant's traffic engineer will submit to the City of Los Angeles Department of Transportation a study to assess the need for the following improvements: • Left-turn traffic signal phasing shall be implemented related to eastbound Chatsworth Street traffic at DeSoto Avenue intersection. Additional paving shall be included along the northerly edge of Chatsworth Street to lengthen the existing eastbound left-turn lane by approximately 100 feet. • Left-turn traffic signal phasing shall be completed related to southbound Canoga Avenue traffic at the Chatsworth Street intersection, and construction of approximately 100 feet of paving along the westerly edge of Canoga Avenue to provide for a left-turn lane onto eastbound Chatsworth Street. This paving would be considered temporary pending a City of Los Angeles project to widen this portion of Canoga Avenue to City standards. • Subject to approval by the California Department of Transportation (Caltrans), City of Los Angeles, and County of Los Angeles, the existing pavement on southbound Topanga Canyon Boulevard shall be restriped to provide a second left-turn lane onto the eastbound SR-118 on-ramp. If the City of Los Angeles, Department of Transportation determines that these improvements are warranted, design plans would be prepared for the appropriate modifications.	X		X	

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
The applicant shall construct the following safety-related improvements, subject to City of Los Angeles B-Permit(s) These permits shall be obtained from the City prior to obtaining any certificates of occupancy for the project. • Three-way stop signs shall be installed at the intersection of Canoga Avenue and Candice Place. • A "No Left Turn" sign shall be install from southbound Canoga Avenue to Candice Place, prohibiting such movement between 6:00 A.M. and 9:00 A.M. • "Speed bumps" shall be installed along Canoga Avenue between the SR-118 and Candice Place, and an additional speed bump shall be installed south of Candice Place. • "No Left Turn" signage shall be installed at the intersection of Canoga Avenue and Celtic Place. • Self-actuated flashing lights shall be installed at the intersection of Canoga Avenue and Rinaldi Avenue for equestrian and pedestrian crossing, subject to approval by the City of Los Angeles. • A crosswalk shall be striped on Chatsworth Street east of the intersection with Independence Avenue. • Permanent signs shall be installed along Canoga Avenue displaying "Watch for Equestrians", or similar language. • Signs shall be installed during the project construction period displaying "Jake Breaking Strictly Prohibited", or similar language.	X		X	
The subdivider shall be responsible to repair damage to the existing pavement on Canoga Avenue between Chatsworth Street and SR-118, caused by project contractors during the course of construction.	X			
The subdivider shall install three-way stop signs at the proposed intersection of Mayan Drive and "B" Street, subject to the approval of the County of Los Angeles.	X			
The subdivider shall install all stop signs for equestrian crossings of streets within the project, subject to approval of the County Department of Public Works.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
Caltrans has requested additional mitigation measures to mitigate impacts of the project within the State right-of-way. The applicant will prepare, as a voluntary measure, a Project Study Report (PSR) to address long-term regional traffic operations at the Topanga Canyon Boulevard/SR-118 interchange. In addition, the applicant will consider possible payment of fair-share fees as determined by the County.	X			
WATER SUPPLY				
Water system distribution facilities shall meet the Las Virgenes Municipal Water District specifications and standards as shown in the *Preliminary Water Design Report For Tentative Tract No. 53138* in Appendix H.	X			
The project developer shall install low-flush toilets and low-flow showerheads, consistent with the LVMWD requirements.	X			
The project shall comply with Water Conservation Ordinance Nos. 11-86-161 and 1-93-205.	X			
Water conserving measures in landscape management shall include: • Use of drought-tolerant plantings. • Installation of efficient irrigation systems that minimize runoff and evaporation and maximize the water that will reach the plant roots. Setting of automatic irrigation systems to ensure irrigation during early morning or evening hours. Resetting of automatic irrigation system to water less often in cooler months and during the rainfall season so that water is not wasted by excessive landscape irrigation.	X			
WASTEWATER				
The project site shall be Annexed to LVMWD Sewer Improvement District "B".	X	X		
Portions of the City of Los Angeles sewer system shall be constructed, as shown in Figure .14.3.	X	X		
Low-flow toilets and showers shall be installed to minimize sewage generation from the proposed homes.	X			
SOLID WASTE				
The proposed project shall incorporate storage and collection of recyclables into each project design.	X			
Refuse collection contracts shall include collection of recyclables.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
All residents shall be encouraged to recycle, at a minimum, newspaper, glass, bottles, aluminum and bimetal cans and P.E.T. bottles.	X			
Recycling shall be included in the design of the project by reserving space appropriate for the support of recycling, such as adequate storage areas and access for recycling vehicles.	X			
All contractors shall be urged to recycle construction and demolitions wastes to the extent feasible.	X			
The project applicant shall provide homebuyers with the following information concerning: • Participation in the County of Los Angeles Household Hazardous Waste Collection Program. • City sponsored programs including curbside oil and filter recycling. • Information on the proper disposal of hazardous materials.	X			
ELECTRICITY				
Project built-in appliances, refrigerators, and space-conditioning equipment shall exceed the minimum efficiency levels mandated in the California Code of Regulations.	X			
To reduce electricity consumption, fluorescent and high-intensity-discharge (HID) lamps shall be installed wherever possible, which give the highest light output per watt of electricity consumed, including all street lights consistent with the Los Angeles County Department of Public Works standards.	X			
NATURAL GAS				
Project buildings shall be designed and constructed to be well-sealed to prevent outside air from infiltrating and increasing interior space-conditioning loads.	X			
Thermal insulation, which exceeds requirements established by the California Code of Regulations, shall be installed in walls and ceilings.	X			
Window systems shall be designed to reduce thermal loss, thus reducing heating loads during cool weather.	X			
Project energy engineers and architects shall consult with The Gas Company for an energy analysis of the proposed dwellings regarding efficiency/conservation measures and up-to-date technology, manufacturing equipment, etc.	X			

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
OTHER				
All grading and construction on the subject property and appurtenant activities, including engine warm-up, shall be restricted to the hours between 7:00 A.M. and 6:00 P.M. No grading or construction activities would occur on Saturday, Sunday or County-observed holiday.	X		X	
No access of heavy construction equipment or vehicles, nor delivery of construction materials would occur on the project site prior to 9:00 A.M. and after 2:00 P.M. Monday through Saturday. No such access or deliveries would occur on Sunday or holidays.	X		X	
Exterior building construction operations, such as framing, as well as landscaping and interior building construction operations shall be limited to Monday through Friday between the hours of 7:00 A.M. and 6:00 P.M. and on Saturday between the hours of 8:00 A.M. and 5:00 P.M. These activities would not be conducted on Sunday or County-observed holidays.	X		X	
The Twin Lakes Property Owners Association and the Chatsworth Neighborhood Council would be notified if any deviation from the above construction activity schedule were necessary. Notification would be at least five working days prior to any change in activity and the applicant would obtain written approval from the County.	X		X	
No construction equipment would be allowed within the Twin Lakes community and signs and/or personnel would be posted to ensure enforcement of this prohibition.	X		X	
Parking of construction vehicles would not be permitted along Mayan Drive, Canoga Avenue, or within any portion of the nearby communities. All construction vehicles would be parked within the project site boundaries.	X		X	
Water tanks and water trucks would be available on-site prior to commencing any grading operations to ensure that effective dust control measures can be implemented and sustained during these operations.	X		X	
All construction-related vehicles would be operated, either on-site or within the surrounding community, in strict compliance with the California Vehicle Code pertaining to maximum permitted noise generation.	X		X	
The names and contact numbers for the subdivider and general contract would be available and posted at entry points to the project site.	X		X	

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
The applicant is proposing to construct public mainline sewers to serve the adjacent Twin Lakes Community, subject to obtaining necessary funding through a community facilities district (CFD).	X		X	
The project applicant shall grant to the Fire Department an easement over land in the northeast corner of the project site (see Figure 2.8) as a "heli-spot." Construction for the heli-spot would include site grading, paved access driveway, two concrete landing pads, and two fire hydrants. .	X		X	
Installation of cable service would be provided for the proposed project. In addition, the applicant has agreed to work with the cable company franchisee in the project area for the cable operator to provide cable services to the existing Twin Lakes Community.	X		X	
In addition to the 31 acres of riparian habitat and project buffer areas already dedicated to the SMMC (see Section 2.2), approximately 49 acres of open space areas will be dedicated to the SMMC, as a result of the proposed project. These areas will be dedicated to the SMMC at the time the final maps are recorded.	X		X	
Open space lots subject to fuel modification will be deeded to the HOA, subject to a conservation easement to the SMMC. All other open space lots containing manufactured slopes of other improved features will be deeded to the HOA.	X		X	
In addition to the on-site open space, the applicant has acquired an approximate 159-acre parcel north of the project site for use as off-site mitigation for biological resources. The proposed mitigation parcel is located north of the community of Chatsworth, on the south flank of the Santa Susana Mountains in unincorporated Los Angeles County (see new Figure 2.13). This parcel will be dedicated to the SMMC, and in conjunction with the Biological Mitigation Plan, will mitigate all project related biological resource impacts to less than significant levels. Details of the off-site mitigation property are included in Appendix F.1 of this Final EIR.	X		X	
The proposed project includes three pocket parks and a natural park (see Figure 2.8). The pocket parks will be located within the project site boundaries and may include playground equipment and would be deeded to the HOA. The natural park area, known as Lima Rock, will be dedicated to SMMC. In addition to park funds provided pursuant to Government Code Section 66477 ("Quimby Act"), the applicant has contributed funding for the acquisition by the SMMC of a 13-acre parcel to be used for public park facilities. This public park is located adjacent to the easterly boundary of the project site, adjacent to the northerly right-of-way of SR-118 (see new Figure 2.8).	X		X	

Table 1.2. Summary of Mitigation Measures and Conditions (continued)

Issue Area	EIR Mitigation Measure	Condition of Approval		
		VTTM	CUP	Oak Tree Report
The applicant will construct approximately 4.3 miles of public trails on site (see Figure 2.8).	X	X	X	
Stop signs or other warning signals will be installed at locations where future trails will cross public roads and temporary trails will be constructed during construction activities. When possible, the temporary trails will connect to the existing trails from Devil and Brown's Canyons. These trails may be redirected depending on construction activities during development of the project site.	X		X	

Notes:

BMP = best management practice
CDFG = California Department of Fish and Game
County = County of Los Angeles
CUP = Conditional Use Permit
CWA = Clean Water Act
db CNEL = decibels, Community Noise Equivalent Level
LACPDW = Los Angeles County Department of Public Works
MSE = mechanically stabilized earth
NPDES = National Pollution Discharge Elimination System
psf = per square foot
SMMC = Santa Monica Mountains Conservancy
SUSMP = Standard Urban Storm Water Mitigation Plan
SWPPP = Storm Water Pollution Prevention Plan
UBC = Uniform Building Code
VTTM = Vesting Tentative Tract Map

The project applicant has revised the proposed project in response to issues raised during public review of the Draft EIR and Regional Planning Commission public hearing testimonies. The project has been revised to reduce the total number of single-family residential units from 484 to 388. The Revised Project Design has been accommodated within the originally proposed development footprint associated with the 484-unit project evaluated in the Draft EIR. A revised VTTM has been submitted that reflects the Revised Project Design and environmental effects associated with the revised project have been evaluated in the Revised Project Design Summary Document (June 2003). As indicated in the Revised Project Design Summary Document, environmental effects associated with the revised project are less than or similar to those associated with the 484-unit project evaluated in the Draft EIR. All mitigation measures contained in the Draft EIR remain valid and applicable to the revised 388-unit project.

For purposes of clarity, the entire project description is included in this document, with revisions incorporated where applicable.

The purpose of the project description is to describe the project in a way that will be meaningful to the public, reviewing agencies, and decision-makers. Section 15124 of the *CEQA Guidelines* requires that a complete project description contain the following information: (1) the location and boundaries of the proposed project; (2) a statement of project objectives; (3) a general description of the project's technical, economic, and environmental characteristics; and (4) a statement briefly describing the intended uses of the EIR, including a list of the agencies that are expected to use the EIR in their decision-making process, and a list of the approvals for which the EIR will be used. According to CEQA, an adequate project description need not be exhaustive, but should supply the detail that is necessary for project evaluation.

2.1 PROJECT LOCATION AND SETTING

The proposed project site is located within the northwestern San Fernando Valley area of unincorporated Los Angeles County, adjacent to the City of Los Angeles (see Figures 2.1 and 2.2).

The site is located in the south-facing foothills of the Santa Susana Mountains in an area known as Chatsworth. Lands to the north and the canyon immediately east of the project site are undeveloped. Porter Ranch, a large mixed-use master-planned community, lies ½ mile to the east of the project site. Although the land immediately adjacent to the southwestern boundary of the site is currently vacant, a tentative tract map for 65 multifamily residential units has been filed with Los Angeles County (Tentative Tract No. 53235).

In addition, an existing multifamily residential complex is located approximately ¼ mile to the west, and two existing single-family detached residential communities are located approximately ½ mile west of the project site. Development between the southern boundary of the site and State Route 118 (SR-118) consists of approximately 98 single-family dwelling units in an older Record of Survey subdivision (the Twin Lakes Community).

2.1.1 Existing Site Characteristics

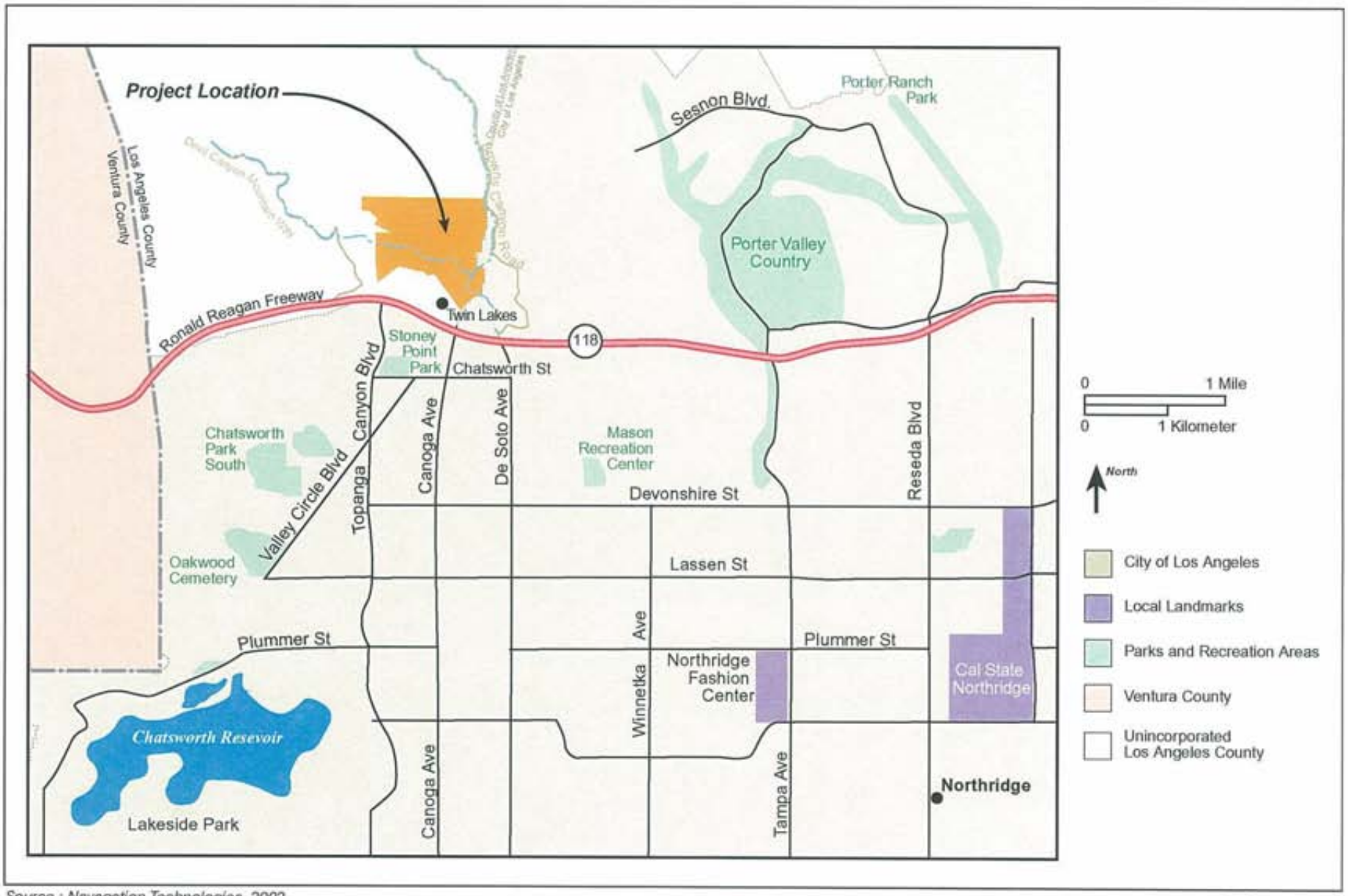
The proposed project site consists of 230.58 acres of mostly undeveloped land. Of the total area, 161 acres were previously divided by means of several Licensed Surveyor's Maps in 1927 and 1928 into approximately 2,575 Record of Survey lots (Figure 2.3). The lots were plotted with a series of easements for access and utility purposes to ensure that each lot had a legal means of access to a public road. However, there are no recorded or implied ingress, egress, or utility easements benefiting any land parcels north of the project site. Subsequently, in 2000 and 2001, a process was initiated to merge these Record of Survey lots into approximately 624 new lots, with each one having a minimum area of 6,000 square feet and a recorded Certificate of Compliance to establish that each lot is a legal lot (see Figure 2.4).

Not to Scale

Source : HDR, 2001

HDR ONE COMPANY | Many Solutions™

FIGURE 2.1
Project Location
Deerlake Ranch
Final Environmental Impact Report



Source : Navagation Technologies, 2002

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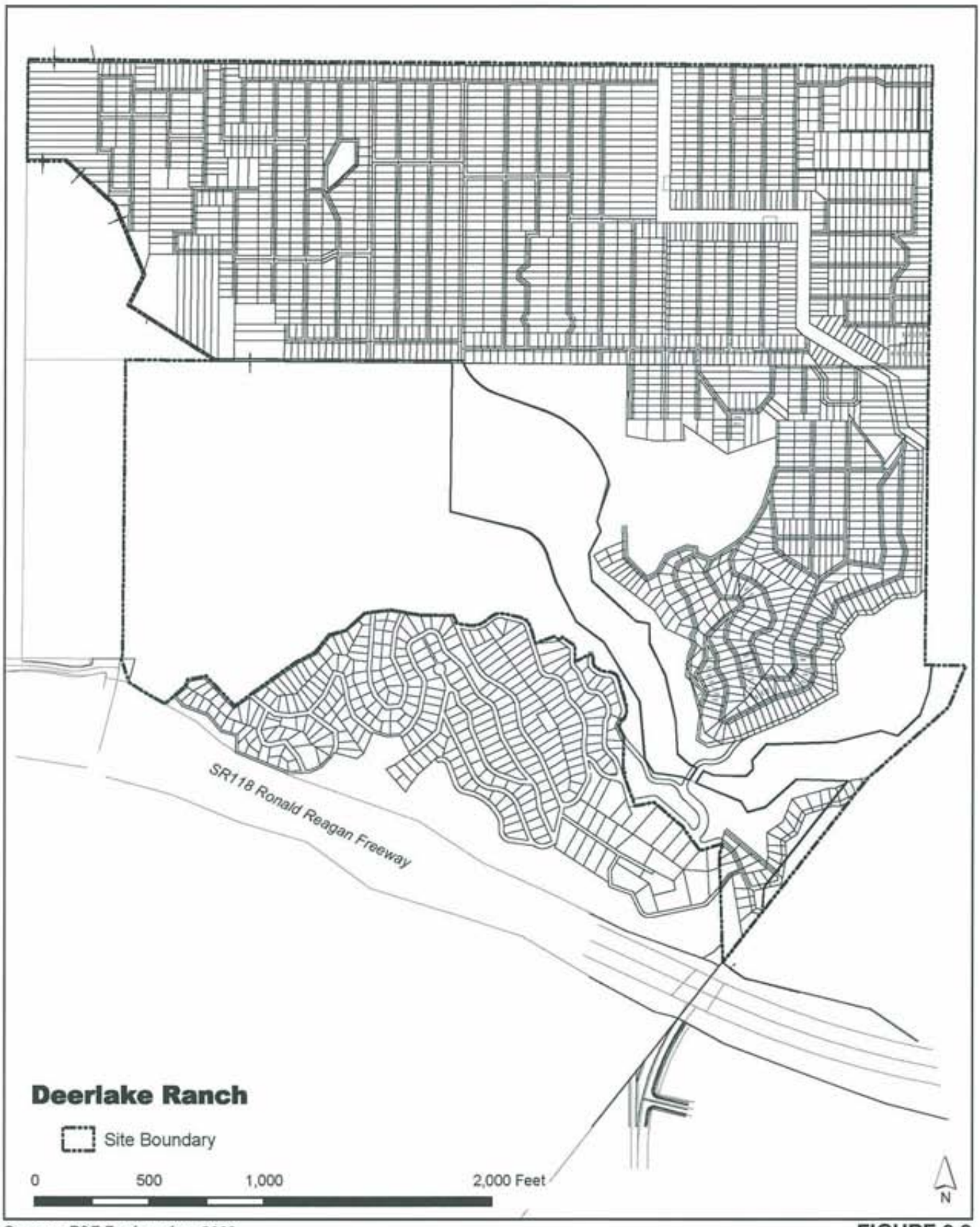
FIGURE 2.2
Project Vicinity
Deerlake Ranch
Final Environmental Impact Report



Source : B&E Engineering, 2003

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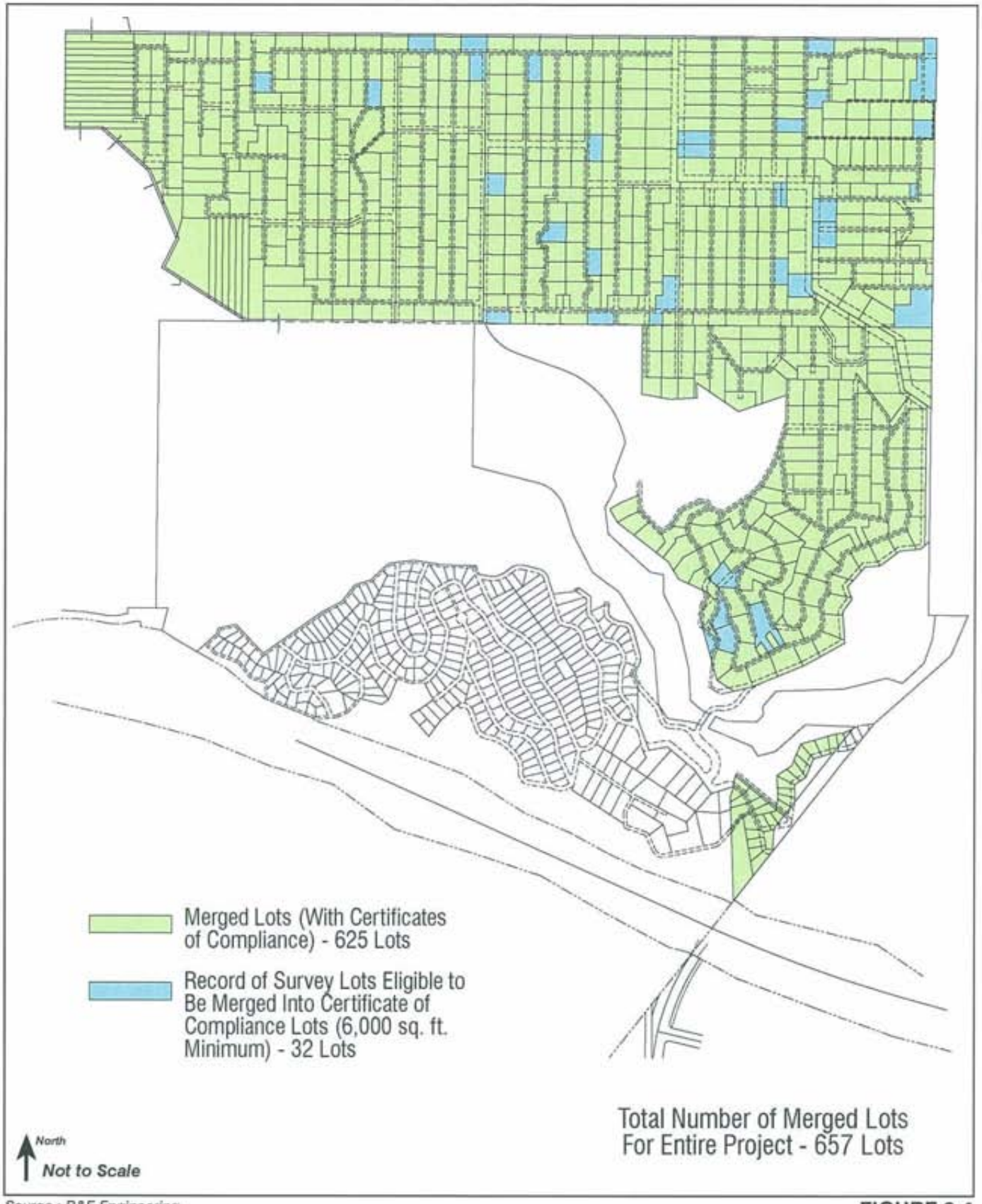
FIGURE 2.3

Record of Survey Lots

Deerlake Ranch

Final Environmental Impact Report



Source : B&E Engineering

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FIGURE 2.4

Certificate of Compliance Lots

Deerlake Ranch

Final Environmental Impact Report

That process has been completed and all 624 Certificate of Compliance lots have been recorded. In addition, five existing single-family residences and the foundations of several previous homes are located on lots within the site. The remaining 74 acres of the site consist of vacant undivided land.

The site is located on an uplifted plateau at an average elevation of approximately 1,325 feet above sea level. The plateau has an undulating surface, generally slopes to the south, and is bordered on the north by west-trending hills that are increasingly steep to the north and reach elevations in excess of 1,770 feet. The hills are cut by south-draining canyons. The plateau is bordered to the west and south by Devil Canyon, which bisects the project site, and to the east by Browns Canyon. The bases of the canyons are at elevations of approximately 1,150 feet. Canyon sidewalls are generally steep, with natural slope gradients between 2:1 to 0.5:1 (horizontal to vertical). Devil Canyon has intermittent concrete groins or debris dams to control siltation and prevent erosion. The mouth of Devil Canyon has a concrete and rock dam with a culvert.

Plant communities within the project area include chamise chaparral, coastal sage scrub, non-native grassland, coast live oak woodland, eucalyptus, and willow woodland. Biological surveys performed during 1998, 1999, 2000, and 2001 identified no occurrences of federally or state-listed plant or animal species. Two sensitive plant species, Plummer's mariposa lily (*Calochortus plummerae*) and southern California black walnut (*Juglans californica*), have been identified over some limited portions of the site. The project site is not located within any of the Significant Ecological Areas (SEAs) identified by the County of Los Angeles, General Plan.

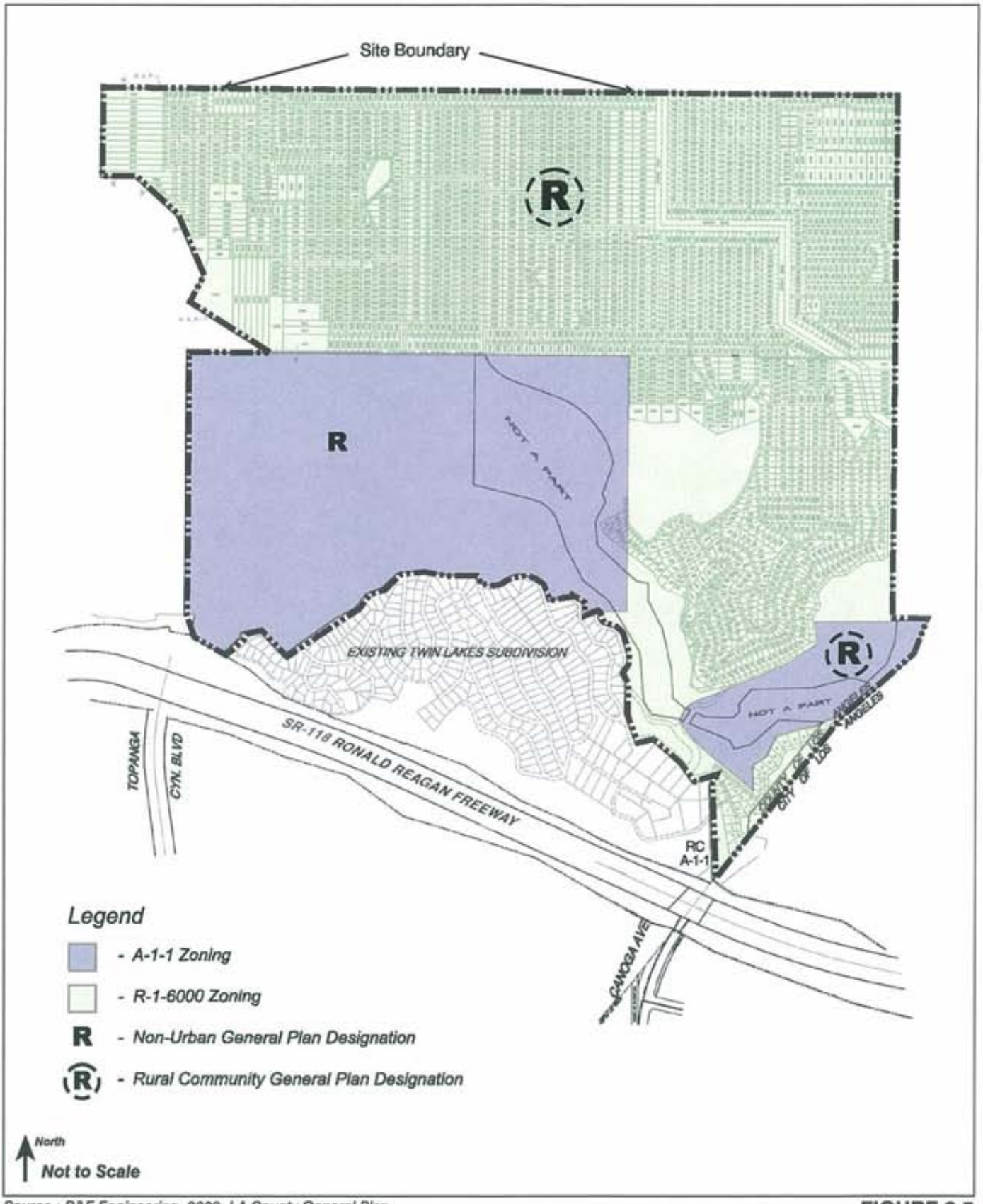
Common species that have the potential to occur on the project site include:

- **Large mammals:** mule deer, coyote, grey fox, mountain lion, and bobcat.
- **Medium mammals:** raccoon, opossum, striped skunk, California ground squirrel, and desert cottontail.
- **Small mammals:** pocket gopher, California mouse, and dusky-footed woodrat.
- **Reptiles:** western rattlesnake, western skink, southern alligator lizard, California kingsnake, and San Diego gopher snake.

Habitat variation on the project site provides potential nesting, roosting and foraging opportunities for numerous resident and migratory bird species. Special-status wildlife observed on the project site include Cooper's hawk (*Accipiter cooperii*), western yellow warbler (*Dendroica petchia brewsteri*), and ashy rufous-crowned sparrow (*Aimophila ruficeps canescens*).

2.1.2 Land Use Policy

The *Los Angeles County General Plan* (General Plan) specifies two separate land use designations for the project site: Non-Urban (R) and Rural Community (see Figure 2.5). The underlying zoning designation for the R General Plan land use designation is A-1-1 (light agriculture, one unit per acre). The zoning designation for the Rural Community land use designation is primarily R-1-6000 (low-density urban, one to six units per acre). Based on the General Plan land use designations, the low-density threshold for the project is 176 units and the high-density threshold is 1,052 units. The project site is not subject to a County-approved Local Area Plan.



Source : B&E Engineering, 2002; LA County General Plan

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FIGURE 2.5
Los Angeles County General Plan/ Zoning Designations
Deerlake Ranch
Final Environmental Impact Report

As shown on Figure 2.3, the project site that was originally divided by the Licensed Surveyor's Maps and later redivided onto merged lots with Certificates of Compliance (Figure 2.4) has the Rural Community General Plan land use designation and R-1-6000 zoning designations, while four large parcels within the southwestern portion of the site have the R and A-1-1 designations. Exceptions to this are:

1. A 6.75-acre parcel surrounded on three sides by the Licensed Surveyor's parcels with Rural Community General Plan land use and R-1-6000 zoning designations.
2. The two parcels previously mentioned that have Rural Community General Plan land use and A-1-1 zoning designations.

All of these exceptions qualify as "residential in-fill" areas as described in the General Plan, and therefore, their development to low urban densities would be consistent with the General Plan (see Table 2.1).

Table 2.1. Proposed Project Site General Plan Density Calculations

Slope and Classification	Area (acres)	Low-Density Threshold (Units)	High-Density Threshold (Units)	Proposed Units
Non-Urban (R):				
0-24.99% slope	18.23	3.65	18.23	--
25-50% slope	23.38	2.34	11.69	--
Greater than 50% slope	23.81	NA	1.19	--
Non-Urban Subtotal	65.42	5.99	31.11	52
Rural Community:				
(A-1-1)	12.04	12.04	72.24	30
(R-1-6000)	153.12	153.12	990.96	306
Rural Community Subtotal	165.16	165.16	1,063.2	336
Total	**230.58**	**171.15**	**1,094.31**	**388**

Source: B&E Engineers, 2003.

Specifically, General Plan policy supports a more concentrated form of development in localized areas where it can be demonstrated that such higher use is consistent with surrounding uses in terms of scale, intensity, and design, and is ensured through specific site plan review. In the case of the proposed project, this review mechanism will be a Conditional Use Permit (CUP) for Hillside Management.

Residential density determinations within Non-Urban (R) residential areas are subject to the density standards as specified in the Countywide Density Threshold outlined in the Land Use Element of the General Plan. The following are the parameters for these thresholds:

Low Density

0-24.99% slope	1 unit/5 acres
25-50% slope	1 unit/10 acres
Greater than 50% slope	1 unit/20 acres

High Density

0-24.99% slope	1 unit/acre
25-50% slope	1 unit/2 acres
Greater than 50% slope	1 unit/20 acres

For Rural Community land use designations, the General Plan specifies that densities ranging between High Density Rural and Low Density Urban may be permitted. It has been determined, by the Department of Regional Planning,[2] that a low-density urban density might be appropriate for the Rural Community General Plan land use portion of the project site, subject to the provisions of a CUP for Hillside Management (see Appendix B of the Draft EIR).

The General Plan density threshold for this site is between a minimum of 176 units and a maximum of 1,052 units. The County General Plan Land Use Policy permits the transfer of densities between urban and non-urban designations.[3] The policy specifically states that units may be transferred internally in a project (regardless of urban or non-urban designation) when geological or topographical data support the need, the change is for the purpose of better design, and it does not increase the number of units or affect health and safety detrimentally. Therefore, as shown in Table 2.1, the proposed 388-unit revised project is below the midpoint (614 dwelling units) of the low- and high-density calculations that apply for the various slope and land use classifications for this project.

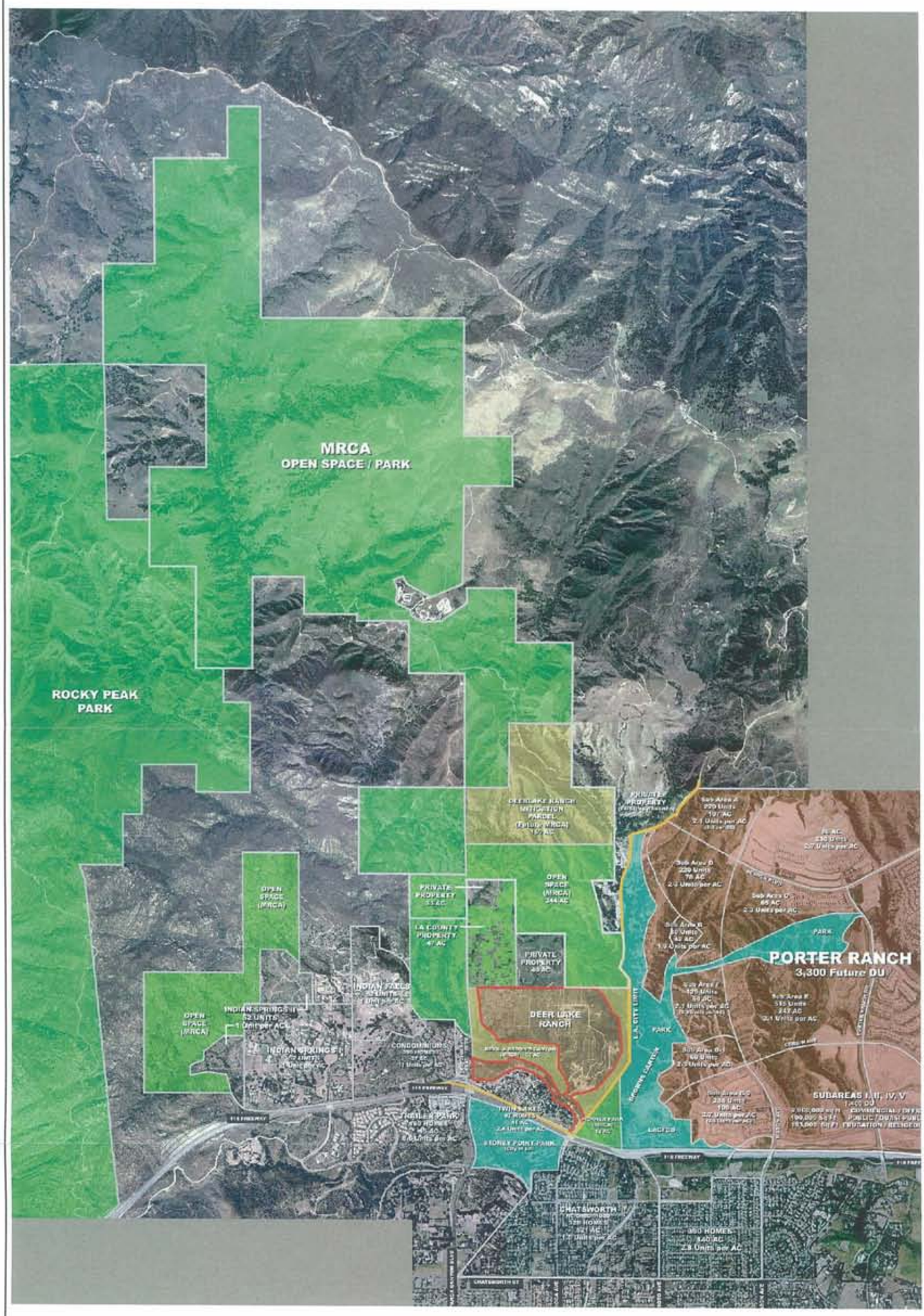
2.1.3 Surrounding Land Uses

Land uses in the vicinity of the project site include residential, educational, open space, undeveloped land, and recreational facilities. These nearby uses are illustrated in Figure 2.6. Single-family residences are located just south of the project site, as part of the existing Lower Twin Lakes community. In addition, there are several Not A Part (NAP) parcels within the project envelope consisting of existing Record of Survey lots, as shown on the project VTTM (see Appendix C.1 of this document). These have either existing single-family houses on them, or can be developed as additional single-family units in the future (see further discussion below). Areas along the immediate east, north, and west boundaries of the site are undeveloped.

The property immediately along the southwestern boundary of the site consists of a pending multifamily residential project (65 units), with an existing multifamily project located immediately to the west of the pending project. The large master-planned community of Porter Ranch is located ½ mile east of the project site. The 13-acre parcel immediately east of the project site and north of SR-118 has been acquired by the Mountains Recreation and Conservation Authority (MRCA) for an equestrian staging area and other recreation and conservation uses.

The areas to the north, northeast, and northwest consist of undeveloped, vacant land. However, there are no recorded or implied ingress, egress, or utility easements benefiting any land parcels north of the project site. Single-family residential uses are located south of the project site across SR-118. The Chatsworth Hills Academy is also located south of SR-118. Recreation uses in the project area include Stoney Point Park (south of SR-118) and various equestrian/hiking trails located throughout the surrounding neighborhoods. As shown in Figure 2.6, multifamily residential uses are located west and southwest of the project site.

2 Memo from George Malone, Los Angeles County Department of Regional Planning, 2000 (DEIR, Appendix B).
3 Los Angeles County Streamlined General Plan, Sec. I.D., Land Use Policy, adopted in 1980, revised 1992.



North

Source : Font Design, 2003

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FIGURE 2.6
Existing Land Use
Deerlake Ranch
Final Environmental Impact Report

2.2 PROJECT SITE HISTORY

The project site originally consisted of approximately 253 acres within the Upper Twin Lakes and Deerlake Highlands areas of Chatsworth. Of this area, approximately 161 acres were previously subdivided under various Records of Survey Maps in 1927 and 1928 into approximately 2,575 Record Survey lots (see Figure 2.3). Thirty-one of the 253 acres, including approximately 300 Record of Survey lots, have been dedicated previously to the MRCA, a designee of the Santa Monica Mountains Conservancy (SMMC) as part of an agreement titled *Agreement Re: Acquisition of Real Property* (Agreement), dated December 30, 1997, between the SMMC/MRCA and Chatsworth Ridge Estates (CRE), the project proponent at that time (see Appendix C of the Draft EIR). Of the total of 2,575 Record of Survey lots, 1,319 were owned by the Los Angeles County, which had acquired them as a result of tax defaults over a period of several years.

On September 15, 1997, prior to execution of the Agreement, the SMMC and MRCA boards of directors approved Resolution No. 97 (see Appendix C of the Draft EIR) which:

- Authorized the acquisition of the 1,319 County-owned Record of Survey lots
- Approved a land exchange agreement between the SMMC/MRCA, and the applicant, whereby the applicant would pay the acquisition cost to the County in exchange for acquiring title to approximately 2,275 of the Record of Survey lots from the SMMC/MRCA for the purpose of developing a residential project on the site (the SMMC/MRCA retained ownership of approximately 300 lots).
- Found that the proposed acquisition and exchange would not have a significant adverse impact on the environment.
- Approved the Negative Declaration (see Appendix C of the Draft EIR).

On December 9, 1997, the Los Angeles County Board of Supervisors (Board) approved the sale of the 1,319 Record of Survey lots to the MRCA, based on a County-appraised price. Further, the Board found that:

- These lots were not required for County use.
- The SMMC, pursuant to Public Resources Code Section 32207, had the first right of refusal to acquire any publicly owned property that may be declared excess by a public agency.
- The sale to the MRCA was exempt from CEQA.
- While most of this excess property would be developed with a residential project, the surrounding acreage would be dedicated to the SMMC for open space and wildlife corridor preservation.
- The exchange of the County's property by the SMMC with CRE would restore these lots to the tax rolls (see Appendix C of the Draft EIR).

In addition to the applicant paying the County the appraised acquisition price for all County-owned lots (31 acres), the Agreement provided for the following other considerations:

- Retention in fee by SMMC/MRCA of all or portions of approximately 300 lots (18 acres) to provide buffer areas along the northerly and easterly boundaries of the site.
- Dedication in fee to SMMC of 13 acres of sensitive riparian habitat, which was not part of the acquisition transaction.

- Monetary compensation to SMMC to be used for additional open space acquisitions by the SMMC within the Santa Susana Mountains.
- Provision of guaranteed annual funding of a Ranger position for the Santa Susana Mountain area.

Although the 31 acres (18 acres of Record of Survey lots and 13 acres of additional habitat area) was dedicated in fee to SMMC prior to the project application, the dedicated property is considered part of the project description because the transfer occurred expressly to mitigate potential impacts associated with anticipated future development of the project site. Subsequently, the project applicant, Presidio Chatsworth Partners, LLC, obtained the rights to develop the project site.

2.3 STATEMENT OF OBJECTIVES

CEQA, as amended, requires that an EIR include a statement of the objectives sought by a proposed project (Section 15124(b) of the *CEQA Guidelines*). The development activity proposed within the Deerlake Ranch project site is intended to provide housing opportunities within a planned residential community setting. The following represent the objectives for the revised project:

1. **Land Use Planning Objectives**
   - Create a new planned community , while preserving significant natural resources and open space.
   - Accommodate projected regional growth in a location that is adjacent to existing and planned infrastructure and transportation corridors, and is near urban services and major employment centers.
   - Provide a homogeneous community to be developed under a master development plan and the County subdivision ordinance.
   - Cluster development within the site to preserve regionally significant resource areas and sensitive habitat.
   - Provide a project, which is consistent with the Goals, Policies and Land Use designations of the County General Plan, the County Zoning Ordinance, and the County subdivision ordinance by eliminating all existing substandard lots.
2. **Economic Objectives**
   - Help alleviate current and future housing shortages by providing homes in a jobs-rich area.
   - Earn a reasonable return on investment through the development of 388 homes.
3. **Mobility Objectives**
   - Provide improvements to the on and offsite circulation system to ensure the safety of future project site and area residents.
4. **Parks, Recreation, and Open Area Objectives**
   - Construct a system of publicly dedicated hiking and equestrian trails and parks that connect with existing regional trails and supporting recreational facilities.

2.4 PROJECT CHARACTERISTICS

The following discussions identify the specific details of the revised project as proposed by the applicant. The project applicant for the Deerlake Ranch project is:

Presidio Chatsworth Partners, LLC
595 Market Street, Suite 2400
San Francisco, CA 94105

Contact: Mr. Richard Garlinghouse
Telephone: (415) 356-7725

The applicant originally submitted to the County Department of Regional Planning a project design for 538-unit single-family residential dwellings on a 235.58-acre project site. This project was included in the Notice of Preparation (NOP) circulated for public agency review and comment (June, 2000). All of the environmental analysis encompasses the original 235.58-acre project site, including the areas designated as NAPs and four (R-1 through R-4) areas designated as remainder parcels. Although the existing and potential development of these areas was included in the environmental analysis as a cumulative impact (Section 3.0, Related Projects, Table 3.1 of the Draft EIR), they have been excluded from the VTTM for the following reasons:

- For the seven NAP areas, the project applicant has not acquired ownership of the Record of Survey lots, which comprise these areas.
- For lots R-1 through R-4, although they are legal parcels under the provisions of the Subdivision Map Act and owned by the applicant, they would be difficult to grade for suitable building pads. This is due to the existence of adjoining NAP areas 1 and 3 (see Appendix C.1 of this document). Since the applicant does not own these NAP areas, no grading can occur.

Collectively, these seven NAP areas comprise 22 existing, legal lots established by Record of Survey maps. NAP areas 5, 6, and 7 each have an existing single-family dwelling and a recorded covenant, which would prohibit the future development of more than one residential unit per area. The remaining four NAP areas are vacant, but are subject to future development in one of two scenarios:

- Separate from VTTM: NAP areas 1 through 4 contain a total of four legal Record of Survey lots created under Record of Survey maps. Therefore these four NAP areas would yield a total of four single-family residential units if their owners developed them separately from the VTTM, as summarized in the NAP Development Table on the project VTTM. Under this scenario, the development of each Record of Survey lot would be subject to an unconditional Certificate of Compliance and the County Zoning and Building Codes, but would not require any further discretionary action as a condition of development. If developed separately by persons other than the applicant, the development of these four NPA areas would not be subject to the project CUP conditions.
- As part of VTTM: If these four NAP areas, each containing one legal Record of Survey lot, were developed as part of the revision to the VTTM by the project applicant (as a result of future acquisition by the applicant or their successors in interest), they would add a maximum total of four legal lots. Under this scenario, it is anticipated that development of these lots would be subject to a CUP, thereby requiring the same development standards as the project, including minimum lot size under existing zoning.

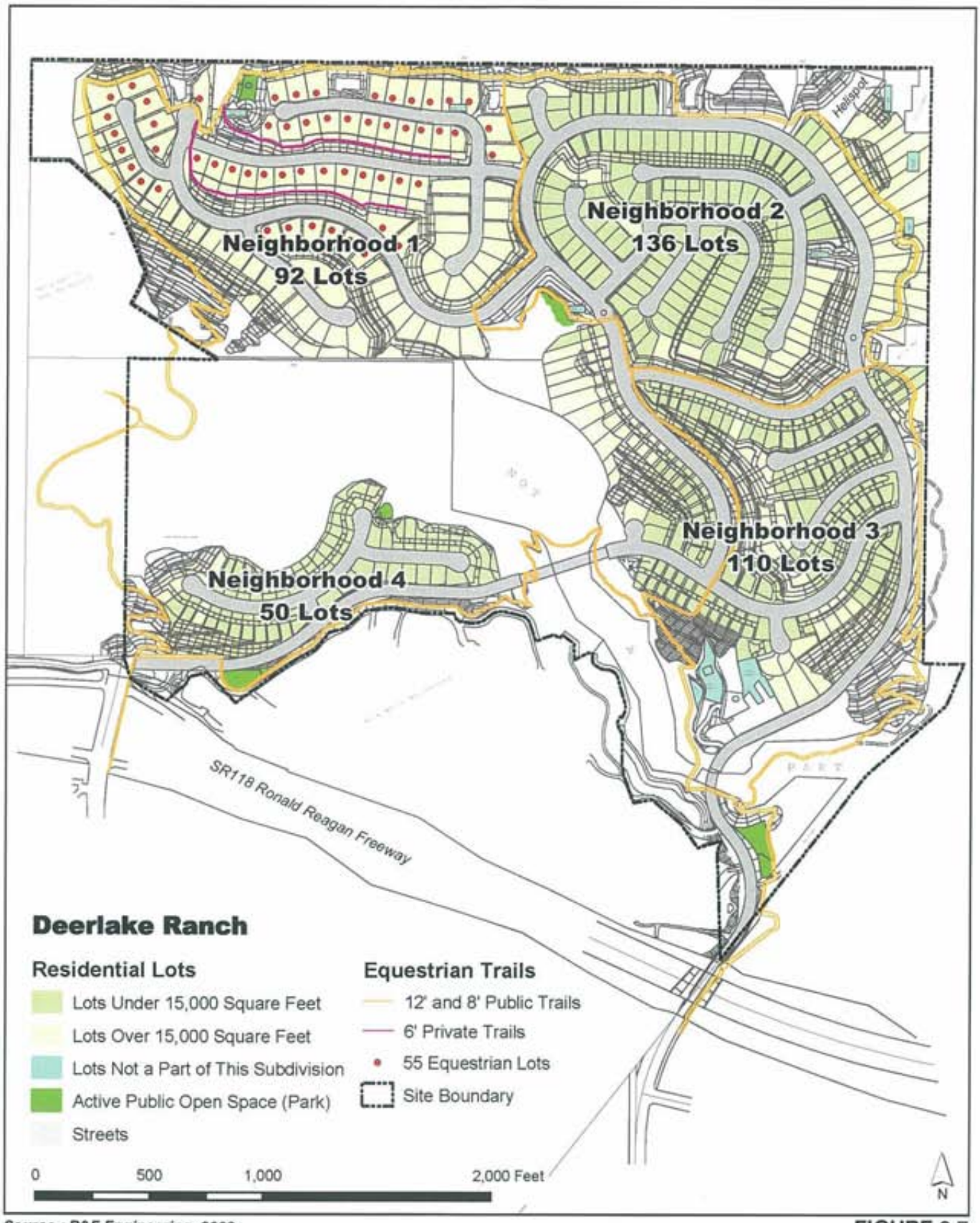
In order to achieve County-zoning standards and to comply with a CUP, a series of lot line adjustments would be required between the Record of Survey lots within the NAP areas. Each newly created lot would require a Certificate of Compliance as specific in the County Subdivision Code and the State Subdivision Map Act. Development on these lots would be subject to approval of individual plot plans by the County to ensure compliance. No additional discretionary action would be required for the above-described process.

Subsequent to the 538-unit project submittal, the project was reviewed by several public agencies including the County Department of Regional Planning Subdivision Review Committee, SMMC, and various other local, state, and federal agencies with regulatory authority over the project. As part of the review process, and based upon comments received from reviewing agencies, the applicant agreed to implement changes that would reduce environmental effects through a variety of design refinements. The Draft EIR reflected these changes and included a discussion of the 484-unit project. After the distribution of the Draft EIR, the applicant further reduced the project to include equestrian residential lots and additional onsite trails. This was based on issues raised during the public review of the Draft EIR. The Revised Project Design has been accommodated within the existing development footprint. These changes have resulted in a reduction to a current total of 388 single-family detached residential lots. Implementation of the Revised Project Design would result in the following:

- Reduced impacts on oak trees
- Reduced impacts on traffic and circulation systems and public services, including schools
- Reduced noise impacts, and
- Reduced visual impacts
- The addition of four pocket parks, more trails, a Sheriff substation, and a heli-spot.

This review process has resulted in a less impacting project and is consistent with the intent of CEQA and County Department of Regional Planning policy. The revised project reduces impacts on all environmental factors, as compared to the original project described in the Draft EIR (484 residential units).

The Revised Project Design includes the development of 388 single-family residential units, including 155 minimum 15,000 square foot estate lots, of which 55 will be equestrian lots (minimum 15,000 square feet), as a result of their location adjacent to the existing and proposed equestrian trails (see Figures 2.7 and 2.8). The internal circulation system has been modified and combined with landscape buffers to physically separate the project into four distinct neighborhoods. In addition, the design of the access roadway south of Devil Canyon has been modified to relocate all proposed residential lots on the north side of the street, which provides for an additional buffer to the existing homes in the Twin Lakes area. Each neighborhood also has a matrix of distinct lot sizes, configurations and housing types each providing a unique community. Revised Project Design is summarized in Table 2.2.



Source : B&E Engineering, 2003

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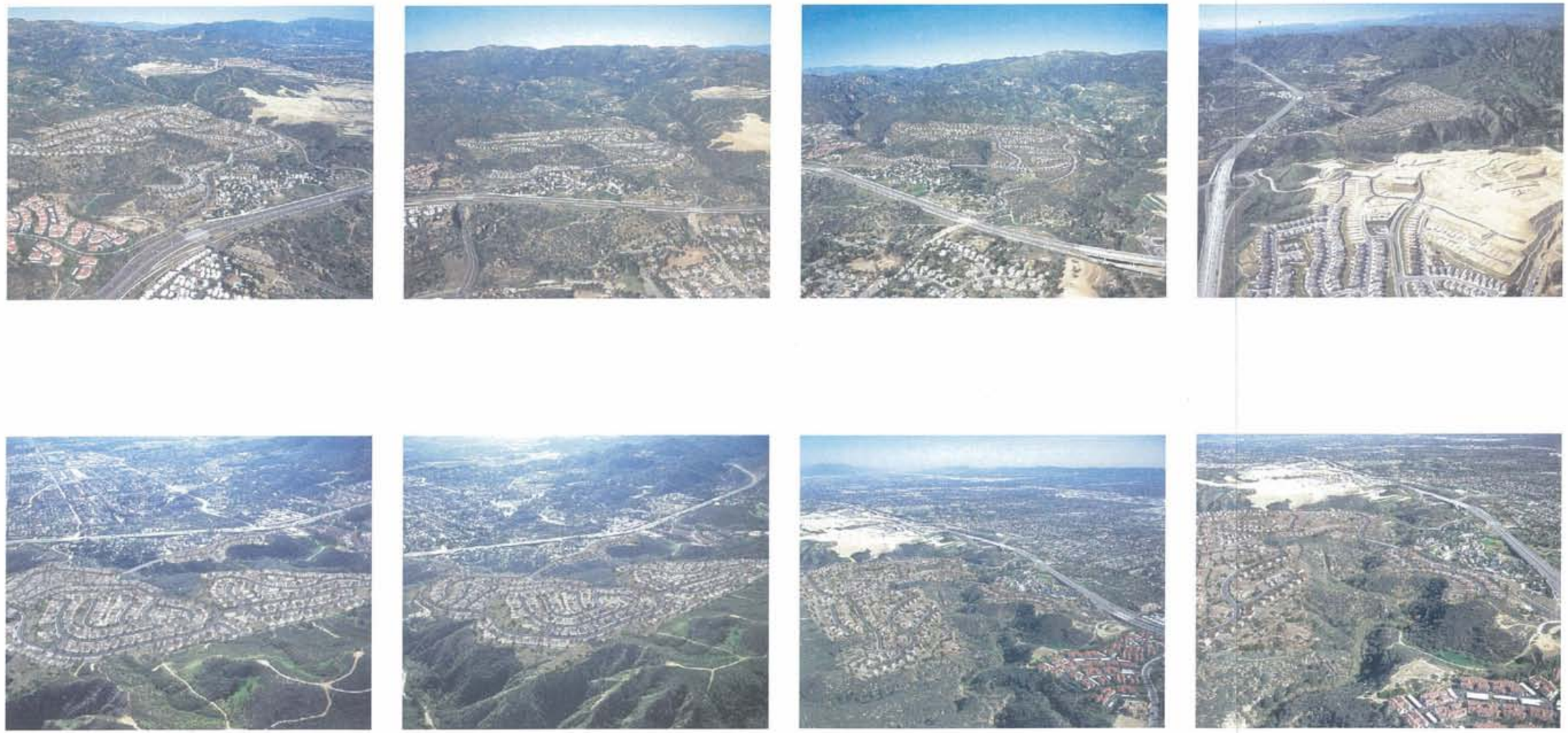
FIGURE 2.7

Proposed Site Plan

Deerlake Ranch

Final Environmental Impact Report



Source : Font Design, 2003;

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FIGURE 2.8
Aerial of Proposed Project at Buildout
Deerlake Ranch
Final Environmental Impact Report

Table 2.2. Summary of Revised Project Design Land Uses

Land Use	Originally Proposed Project (484 single-family units)		Revised Project Design (388 single-family units)	
	Area (acres)	Percent of Site [a]	Area (acres)	Percent of Site
Single-family Residential Pads (Total)	61.71	27	62.20	27
Building Footprints	*28.9*	*13*	*23.20*	*10*
Landscaped Yards	*32.8*	*14*	*39.0*	*17*
Streets/Sidewalks	24.31	11	28.70	12.4
Undisturbed Open Space	76.67	33	73.50	32
Landscaped Slopes	60.72	26	58.70	25.4
Heli-spot	2.07	0.9	1.79	0.8
Parks	1.89	0.8	1.0	0.4
Trails	3.21	1.3	4.69	2
TOTAL	**230.58**	**100**	**230.58**	**100**
Pervious Area	179.42	77.81	178.7	77.49
Impervious Area	51.16	22.19	51.9	22.51

Source: B&E Engineering, 2003.

Note: Undisturbed open space acreage includes areas to be offered for dedication to the Santa Monica Mountains Conservancy.

a Percentage of site for originally proposed project have been corrected from those included in the Draft EIR. Acreages included in the Draft EIR for the originally proposed project did not change.

Total disturbance with implementation of the revised design would be 157.08 acres, not including fuel modification impacts. As indicated in Table 2.2, the single-family residential pads would occupy a total of 62.20 acres (27% of the project site). Undisturbed open space under the revised project would comprise 73.50 acres (32% of the project site).

Undisturbed open space does not include the graded slopes, parks, or trails located throughout the site. When added to the proposed 73.50 acres of undisturbed open space, the slopes, parks, and trails would result in a total open space of 137.89 acres (59.8% of the total project site).

As shown in Table 2.3, the 388-unit project has been physically divided into four distinct neighborhoods and provides a variety of lot, pad, and home sizes. Estate and equestrian lots, with a minimum area of 15,000 square feet, are situated predominantly on the plateau in the upper area of the project site (see Figure 2.7).

Table 2.3. Summary of Revised Project Design Residential Lots

Type of Lot	Minimum (sf)	Maximum (sf)	Average (sf)
Neighborhood I (92 units)			
Lot Area	15,009	24,113	16,788
Pad Area	5,168	14,833	9,993
Neighborhood II (136 units)			
Lot Area	6,003	43,408	6,999
Pad Area	4,802	10,330	5,500
Neighborhood III (110 units)			
Lot Area	6,000	29,425	11,518
Pad Area	4,012	8,608	5,714
Neighborhood IV (50 units)			
Lot Area	6,008	21,088	8,195
Pad Area	4,094	9,239	5,846
Total Number of Lots = 388			

Source: B&E Engineering, 2003

Most of the equestrian lots have access to either the public trails along the perimeter of the site or private trails within the project site. In addition, the revised design provides for a low-density buffer for Devil Canyon and the ridgeline to the north. The northwestern portion of the project site is entirely large lots averaging 11,168 square feet, compatible with the existing, rolling topography. Slightly smaller flat lots, averaging 11,581 and 8,195 square feet, respectively, are located in the lower, steeper areas in the southern portion of the site. These estate and equestrian lots would result in a less dense appearing viewshed from existing offsite vantage points. The remaining public views of the originally proposed project would remain unchanged.

Additional proposed land uses include four park sites and a heli-spot, which would be used by the County Fire Department on an emergency-only basis. The tentative tract map includes a total of 429 lots, with 388 dedicated to single-family residential land uses, 25 lots dedicated to open space, 14 lots dedicated to streets, one lot dedicated to future Los Angeles County Sheriff facility, and one lot dedicated to the heli-spot.

No building plans are proposed at this time. However, all building design and construction would fit with the existing character of southern California and comply with the requirements of Title 24 of the California Administrative Code. A preliminary landscape plan is shown in Figure 2.9.

2.4.1 Project Phasing

The entire project site has been master-planned as a unified residential community of 388 single-family residential lots and has been submitted to County for entitlement processing under VTTM 53138 and CUP No. 99-239.

2.4.2 Site Grading

Preliminary earthwork estimates indicate that the project site would require approximately 2.24 million cubic yards of excavation (cut) and an equal volume of fill, balanced onsite. The majority of the cuts would be less than 40 feet deep and fills would be of similar thickness, with the greatest cut being approximately 100 feet, located along the northerly property boundary, west of the helispot.

2.4.3 Transportation Improvements

Access to the project would be from Topanga Canyon Boulevard and Canoga Avenue (see Figure 2.7). Two bridges would be constructed spanning Devil Canyon (Street "A" and Street "B") to provide internal circulation.

In addition, several improvements would be made to existing, offsite streets and intersections, including Topanga Canyon Boulevard, Canoga Avenue, Rinaldi Avenue, Chatsworth Street, and DeSoto Avenue, as follows:

- To reduce the queuing on Poema Place/Mayan Drive and improve the overall operations at the Topanga Canyon Boulevard terminus area, a traffic signal would be installed at the intersection of Topanga Canyon Boulevard and Poema Place/Mayan Drive. The proposed traffic signal would be interconnected and operated in conjunction with the existing traffic signal at the intersection of Topanga Canyon Boulevard and SR-118 westbound on/off ramps such that the two traffic signals will essentially function as one single traffic signal with the following signal (green light) phases:
  - Phase 1: Northbound Topanga Canyon Boulevard
  - Phase 2: Southbound Topanga Canyon Boulevard/Westbound Mayan Drive
  - Phase 3: Southbound Topanga Canyon Boulevard/Eastbound Poema Place
  - Phase 4: Westbound SR-118 Off-ramp

PLANT PALETTE

STREET TREES

Koelreuteria paniculata	Goldenrain Tree
Lagerstromia indica	Crape Myrtle
Magnolia species	Magnolia
Pistacia chinensis	Chinese Pistache
Platanus racemosa	California Sycamore
Platanus acerfolia	London Plane Tree
Prunus pissardii	Purple Leaf Plum
Pyrus calleryana	Callery Pear
Quercus agrifolia	Coast Live Oak
Quercus lobata	Valley Oak
Rhus lancea	African Sumac

ACCENT TREES (FOR SLOPES AND STREETS)

Arbutus unedo	Strawberry Tree
Agonis	Peppermint Tree
Cedrus deodara	Deodar Cedar
Chitalpa tashkentensis	Chitalpa
Cupaniopsis anacardioides	Carrot Wood
Eriobotrya	Loquat
Geijera parviflora	Australian Willow
Ginkgo biloba	Maidenhair Tree
Heteromeles arbutifolia	Toyon
Hymenosporum flavum	Sweetshade
Jacaranda mimosifolia	Jacaranda
Juglans californica	Southern California Black Walnut
Lagerstromia india 'Muskogee'	Crape Myrtle
Liquidambar	Sweet Gum
Melaleuca linariifolia	Flaxleaf Paperbark
Photinia fraseri	Photinia
Pistacia chinensis	Chinese Pistache
Platanus racemosa	California Sycamore
Platanus acerfolia	London Plane Tree
Prunus s. 'Kwanzan'	Kwanzan Flowering Cherry
Quercus agrifolia	Coast Live Oak
Quercus lobata	Valley Oak
Rhapis	Lady Palm
Tabebuia	Trumpet Tree
Tristania conferta	Brisbane Box
Umbellularia californica	California Laurel

SHRUBS (FOR INTERIOR AND PERIMETER SLOPES)

Agapanthus africanus	Lily of the Nile
Artemesia arborescens	Artemesia
Atriplex lentiformis	Saltbush
Buddelien	Butterfly Bush
Ceanothus spp.	Wild Lilac
Cercis occidentalis	Western Redbud
Cotoneaster parneyi	Cotoneaster
Dietes spp.	Fortnight Lily
Escallonia e. 'Fradesii'	Escallonia
Elymus condensatus	Giant Wild Rye
Hemerocallis - mixed colors	DayLily
Heteromeles arbutifolia	Toyon
Lavandula 'Hidcote'	English Lavender
Lavandula multifida	Lavender
Mahonia spp.	Mahonia
Pittosporum tobira spp.	Pittosporum
Rhamnus ilicifolia	Hollyleaf Redberry
Rhaphiolepis spp.	Indian Hawthorn
Rhus integrifolia	Lemonade Berry
Salvia apiana	California White Sage
Salvia leucophylla	Purple Sage
Sambucus mexicana	ElderBerry
Scabiosa caucasica	Perennial Pincushion Flower
Xylosma congestum	Shiny Xylosma

GROUNDCOVERS
(for small slope areas and parkways)
Rosmarinus officinalis
Hypericum calycinum
Myoporum parvifolium
Gazania white (small drifts)
Grasses - Carex, Sesseleria, Pasture grass, Stipa

HYDROSEED MIX I

Achillea millefolium
Eriophyllum confertiflorum
Eschscholia california
Lotus scoparius
Lupinus nanus 'Cal. Native'
Mimulus longiflorus
Oenothera cheiranthifolia
Phantago insularius
Salvia columbariae

HYDROSEED MIX II

Phacelia campanularia
Linaria recticulata
Plantago sempervirens
Eschscholzia caespitosa
Gilia capitata
Gazania dwf. Pixie White

Source : L. Newman Design Group, 2003;

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FIGURE 2.9
Conceptual Landscape Plan
Deerlake Ranch
Final Environmental Impact Report

- Widen and restripe the westbound SR-118 off-ramp to provide an exclusive right-turn lane for traffic headed for either Mayan Drive or Poema Place, which would therefore not have to wait for traffic turning left onto southbound Topanga Canyon Boulevard.
- Widen and restripe the westbound Mayan Drive approach to County collector street standards (40-foot roadway width on a 64-foot right-of-way) to provide a second left-turn lane. This would result in two left-turn lanes (the north left-turn lane would also permit through traffic onto Poema Place), which would allow significantly more cars to turn southbound through the intersection during each green light phase.
- Widen and restripe the eastbound Poema Place approach to provide a second right-turn lane. This would result in two right-turn lanes (the north right turn lane would also permit through traffic onto Mayan Drive), which would allow significantly more cars to turn southbound through the intersection during each green light phase.
- Install left-turn traffic signal phasing related to eastbound Chatsworth Street traffic at the DeSoto Avenue intersection, and construct additional paving along both the northern and southern edges of Chatsworth Street adequate to lengthen the existing eastbound left-turn lane by approximately 100 feet.
- Install left-turn traffic signal phasing related to southbound Canoga Avenue traffic at the Chatsworth Street intersection, and construct approximately 100-feet of paving along the western edge of Canoga Avenue to provide for a left-turn lane onto eastbound Chatsworth Street. This paving would be considered temporary, pending a City of Los Angeles project to widen this portion of Canoga Avenue to City of Los Angeles standards.
- Install three-way stop signs at the intersection of Canoga Avenue and Candice Place and install a "No Left Turn" sign from southbound Canoga Avenue to Candice Place, prohibiting such movement between 6:00 A.M. and 9:00 A.M.
- Install speed bumps along Canoga Avenue between SR-118 and Candice Place, and an additional speed bump south of Candice Place.
- Install "No Left Turn" signage at the intersection of Canoga Avenue and Celtic Street.
- Install self-actuated flashing lights at the intersection of Canoga Avenue and Rinaldi Street for equestrian and pedestrian crossing.
- Paint a crosswalk on Chatsworth Street east of the intersection with Independence Avenue.
- Install permanent signs along Canoga Avenue displaying "Watch For Equestrians" or similar language.
- Install signs during the project construction period displaying "Jake Braking Strictly Prohibited" or similar language.
- Contribute fair share to the City of Los Angeles Department of Transportation for purposes of implementing the City's traffic signal enhancement program (known as ATSAC).

The improvements listed above, as deemed applicable by the City of Los Angeles, would be guaranteed through the City's B-Permit process of the Bureau of Engineering of the Department of Public Works of the City of Los Angeles and must be completed to the satisfaction of the appropriate City of Los Angeles agency within six months after the issuance of a B-Permit by the City of Los Angeles.

2.4.4 Drainage Improvements

Implementation of the revised design would include the construction of four debris and desilting basins. These basins would be located along the northern project site boundary and would intercept debris from the upstream watershed, thereby reducing the peak storm water runoff volume currently being discharged into Devil Canyon.

In addition, at each point of storm water discharge through a proposed storm drain, an energy-dissipating structure would be constructed in accordance with County Department of Public Works (LACDPW) standards to reduce discharge velocities to a non-erosive level. These facilities would be operated and maintained by LACDPW.

Also, at each point of storm water discharge into natural drainage courses, including Devil Canyon, a continuous deflective separation (CDS) unit with adsorbents would be constructed. These systems remove trash, soil, and other particles, and, with the use of adsorbents, oils and grease. These units would be contained in subsurface vaults, and will be operated and maintained by LACDPW.

2.4.5 Fuel Modification

The project site is located within an area designated as Fire Zone 4 (Very High Fire Hazard Severity Zone). Therefore, the project applicant has developed a fuel modification plan to minimize or retard the spread of brush and wildfire into the development area. As shown in Figure 2.10, the fuel modification plan includes:

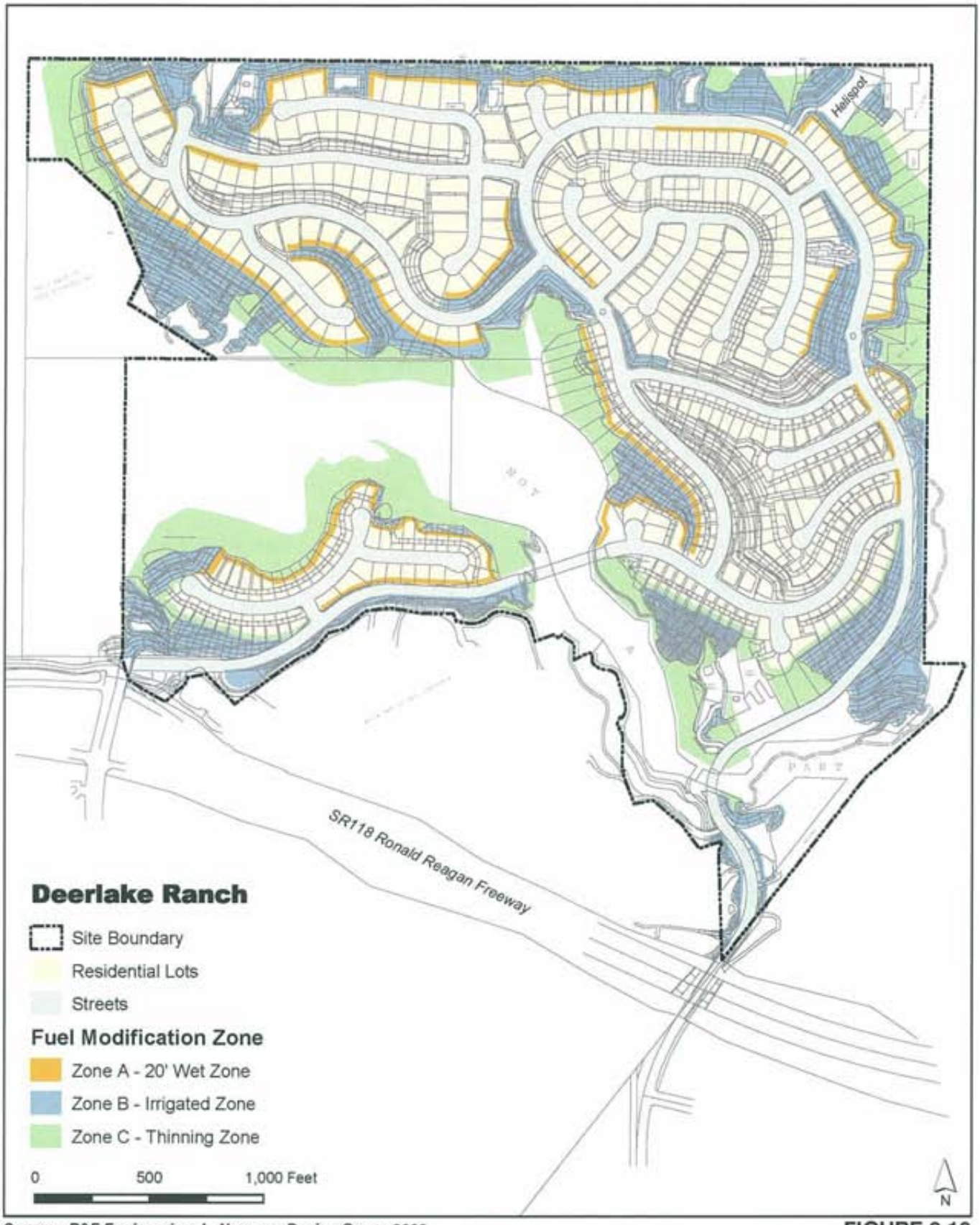
- A setback zone (wet zone)
- An irrigated zone
- A thinning zone
- Interface thinning zone standards

The plan provides zones of fire retardant, drought tolerant vegetation, and irrigation, which reduces fuel volumes and prevents rapid spread of fire from the natural area to the development area (see Appendix E of the Draft EIR).

2.4.6 Utilities and Public Services

Potable water would be provided to the project by the existing Twin Lakes Tanks and distribution system of the Las Virgenes Municipal Water District (LVMWD). Although this system currently serves the southern portion of the site, the applicant will be required to reconstruct portions of the existing distribution mains from the tanks to Topanga Canyon Boulevard to accommodate increased service.

Sanitary sewer service would be provided to the project by connecting to the existing County sewer line in Topanga Canyon Boulevard at Poema Way and to the City of Los Angeles sewer line in Canoga Avenue. Small portions of the City's existing sewer mains within Canoga Avenue would require reconstruction to provide additional capacity for the project. The LVMWD has a service agreement with the City to accept sewage for conveyance, treatment, and disposal from LVMWD's Chatsworth service area to the Hyperion Treatment Plant, and this agreement includes this project site. In addition, the applicant is proposing to contribute funds to construct public main sewers that serve the adjacent Twin Lakes Community.



Source : B&E Engineering, L. Newman Design Group 2003

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FIGURE 2.10

Preliminary Fuel Modification Plan

Deerlake Ranch

Final Environmental Impact Report

Fire protection would be provided to the project site and vicinity by the County Fire Department. In addition, the project applicant has agreed to grant the Fire Department an easement over land in the northeastern corner of the project site as a "heli-spot" (see Figure 2.7). The heli-spot would be graded, and two small concrete pads for landing helicopters would be constructed along with two fire hydrants.

Law enforcement would be provided to the project site and vicinity by the County Sheriff's Department. In addition, the project applicant has agreed to construct a facility suitable for use as a Sheriff Department "storefront" facility to service the project area. As shown on Figure 2.7, the substation would be located near the Topanga Canyon Boulevard entrance to the project site.

Public school students would attend schools within the Los Angeles Unified School District (LAUSD), including Chatsworth Elementary School (grades K–5), Germain Elementary School (grades K–5); Lawrence Middle School (grades 6–8); and Chatsworth High School (grades 9–12).

Electrical service would be provided to the site by Southern California Edison (SCE), through several overhead facilities serving the property. With implementation of the revised design, existing overhead facilities would be replaced with an underground system. Southern California Gas Company (The Gas Company) supplies natural gas to the project vicinity through a system of subsurface gas mains and pipelines. Although currently there are no natural gas facilities on the project site, there is a six-inch gas main located at Topanga Canyon Boulevard near the project site. The revised design includes the construction of all related utility improvements.

Cable services would be provided to the project site by Time Warner Communications. In addition, the applicant has agreed to include the adjacent Twin Lakes Community within the application for cable services.

2.4.7 Open Space Characteristics

Open Space

In addition to the 31 acres of riparian habitat and project buffer areas already dedicated to the SMMC (see Section 2.2), approximately 19.2 acres of additional riparian and other open space areas, and 6 acres of additional buffer areas would be dedicated to the SMMC and 8.6 acres of other open space, as a result of development of the project. These lots would be dedicated to the SMMC at the time the final maps are recorded. In total, 73.50 acres of the project site is proposed for dedication as permanent undisturbed open space.

In addition, open space lots subject to fuel modification would be deeded to the homeowners' association (HOA), subject to an easement for SMMC. All other open space lots containing manufactured slopes or other improved features would be deeded to the HOA.

In addition to the onsite open space, the applicant has secured an option to purchase an approximate 159-acre parcel north of the project site for use as offsite mitigation for biological resources. As shown on Figure 2.6, the proposed mitigation parcel is located north of the community of Chatsworth, on the south flank of the Santa Susana Mountains in unincorporated Los Angeles County. This parcel would be dedicated to the SMMC and, in conjunction with the Biological Mitigation Plan, would mitigate project-related biological resource impacts to less than significant levels. Details of the offsite mitigation property are included in Appendix F.1 of this document.

Park Areas

The proposed project includes five active public park areas, which would be located within the project site boundaries and would be deeded to the HOA. In addition to the park funds that would be provided

pursuant to Government Code Section 66477 (I), the applicant has entered into an agreement with the SMMC and MRCA to provide funding for construction of improvements, as directed by the County, on a 13-acre parcel to be used for a community park.

Trails

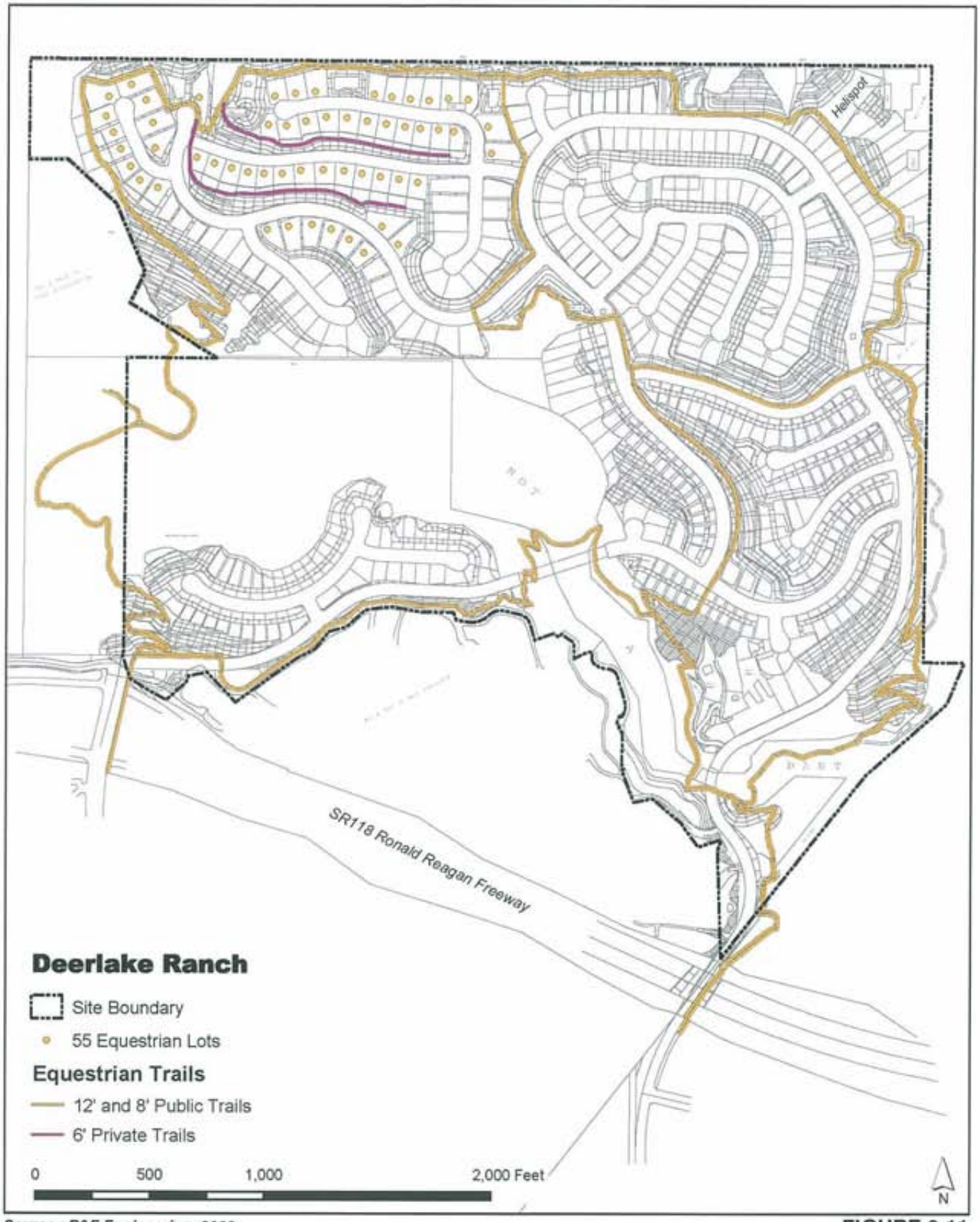
As shown in Figure 2.11, a proposed trail system, to be dedicated to the County, would loop the project site, connecting to existing trails at the terminus of Canoga Avenue and west of Topanga Canyon Boulevard, with existing trails to the east, north, and west of the site. In addition, the revised project includes shorter loop trails, both on the project site and on properties owned by other public agencies, which also will be dedicated to the County. Equestrian trail access would be provided to each of the 55 proposed equestrian lots.

In addition, stop signs or other warning signals would be installed at locations where future trails would cross public roads. Temporary trails would be constructed during construction activities in order for trails to remain open.

2.5 ENTITLEMENTS REQUIRED FOR THE PROPOSED PROJECT

Because the property is currently divided into 624 legal lots with Certificates of Compliance (not including the 300+ lots previously dedicated to SMMC), the eventual subdivision of the property could be accomplished by lot line adjustments, both as provided for by the State Subdivision Map Act, the County Subdivision Ordinance and the conditional use permit process. However, because the subdivision process provides a much more effective mechanism for ensuring implementation of public infrastructure and services, the County and the applicant have agreed that the project would be re-subdivided under a VTTM (see Appendix C.1 of this document). Final subdivision map(s) will be filed subsequent to the VTTM approval. In addition to the VTTM, the project is subject to a CUP (Chapter 22.56, Part 1 of the County Zoning Ordinance, including provisions of Section 22.56.205 [density control development] and Section 22.56.215 [hillside management]). Also, the project would require an Oak Tree Permit (Chapter 22.56, Part 16 of the County Zoning Ordinance). Along with the environmental review provided by this EIR, the above actions would be the primary discretionary procedures for this project.

In addition to the above-described County actions, the project would also require applicable permits from the U.S Army Corps of Engineers (Corps), the California Department of Fish and Game (CDFG), and the California Regional Water Quality Control Board (RWQCB).



Source : B&E Engineering, 2003

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FIGURE 2.11

Equestrian/Hiking Trails

Deerlake Ranch

Final Environmental Impact Report

3.1 INTRODUCTION

This section contains revisions to information contained in (1) Draft EIR, (2) Additional Environmental Information document, and (3) Revised Project Design Summary Document, based on:

- Additional or revised information required to prepare a response to a specific comment
- Updated information that has become out-of-date as a result of the passage of time and/or the revisions in the project as described in Section 2.0
- Community commitments agreed to by the applicant and additional conditions imposed by the County
- Typographical errors

Any changes to the Draft EIR are addressed in this section.

3.2 REVISIONS TO THE PROJECT DESCRIPTION

Revisions to the project description are discussed in detail in Section 2.0 (Revised Project Description).

3.3 REVISIONS TO SECTION 4.0 – DRAFT EIR IMPACT ANALYSIS

The following impact analysis sections have not changed since distribution of the Draft EIR: 4.2 (Air Quality), 4.4 (Cultural Resources), 4.7 (Noise), 4.8 (Public Services – Fire Protection), and 4.13 through 4.17 (Utilities and Services Systems [Water Supply, Wastewater, Solid Waste, Electricity, and Natural Gas]).

Revised or supplemental studies were completed to further explain the conclusions of no significant impact included in the Draft EIR. These studies have been completed for the following sections and are included as appendices to this document:

- 4.3 (Biological Resources) – Appendix F of this document includes updated biological studies.
- 4.5 (Geology and Soils) – Appendix G of this document includes an updated geologic report based on the revised project.
- 4.6 (Hydrology and Water Quality) – Appendix H and I of this document include an updated hydrology report (H.1), a preliminary water system design report (H.2), and the storm water mitigation plan (I).
- 4.10 (Public Services – Schools) – Appendix J of this document includes additional analysis of student generation factors.
- 4.12 (Transportation/Traffic) - Appendix K of this document includes an updated traffic study based on the revised project.

The following revisions to the remaining impact analysis sections of the Draft EIR are included in response to specific comments on the Draft EIR (see Section 4.0 and 5.0 of this document). These revisions reflect changes imposed by the County and, also, those changes, which the applicant has agreed to voluntarily complete. .

None of the revisions to the Draft EIR impacts analysis change any of the conclusions of the Draft EIR. Specifically, the revised project will have impacts, which will be mitigated to a level which is less than significant.

In the following sections, text being added to the Draft EIR text is italicized; text being deleted is in strikeout.

3.3.1 Aesthetics and Visual Resources (Section 4.1 of the Draft EIR)

Revision A:

Figure 4.1.5 (Section BB) of the Draft EIR has been revised to more accurately reflect the proposed project's single loaded street. Additional cross sections have also been included to illustrate views of the project site from adjacent trails. See revised figures that follow this section of the Final EIR.

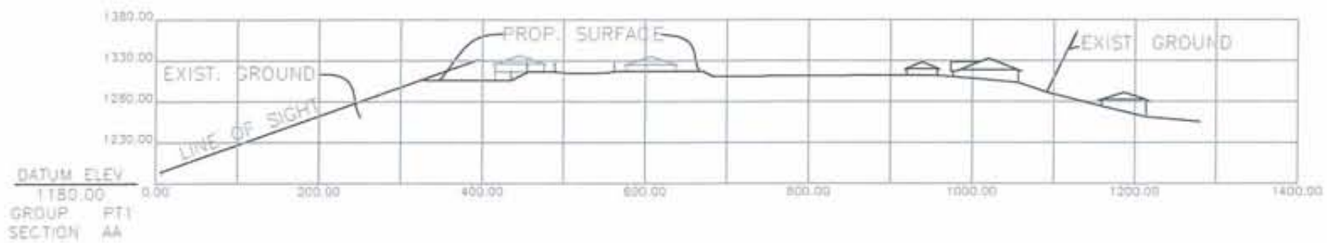
3.3.2 Biological Resources (Section 4.3 of the Draft EIR)

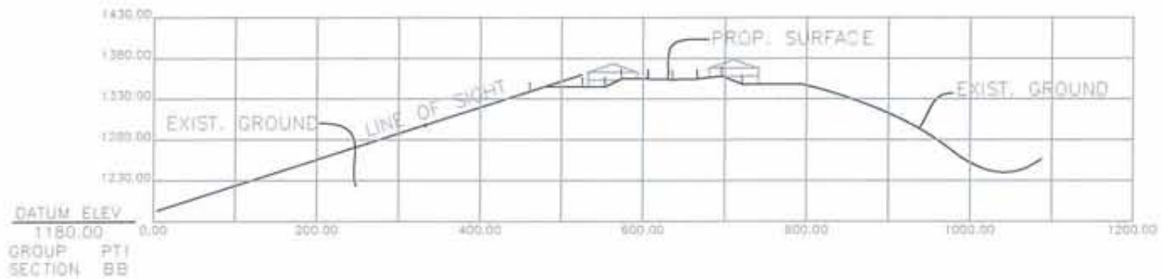
Revision B:

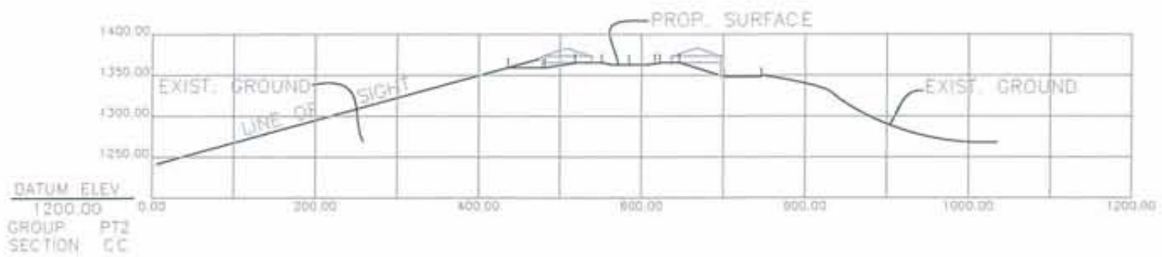
The text on page 4.3-1, Section 4.3 of the Draft EIR has been revised as follows:

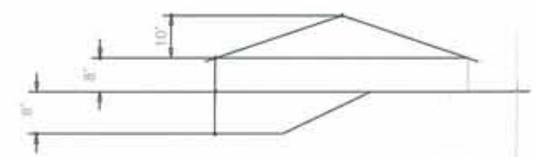
> *The applicant has conducted additional sensitive biological resource surveys and prepared biological resource mitigation program updates in 2003 to augment and update information contained in the Draft EIR. These biological resource surveys and updated mitigation plans include.*

- *Sensitive Plant Surveys for the Deerlake Ranch Project, Los Angeles County, California – August 15, 2003, Glenn Lukos Associates.*
  - The sensitive plant survey did not identify the presence of any federally or state listed plant species which could occur on the project site, including the San Fernando Valley Spineflower, Santa Susana Tarplant, Brautin's Milk Vetch, Nevin's Barberry or Slender Horned Spine Flower. The sensitive plant survey did identify an expanded area of Plummer's Mariposa Lilly, which is not federally or state listed, but is listed by the CNPS as 1B, on the project site. An additional 19.97 acres of Mariposa Lily area, of which 15.0 acres will be impacted by the proposed project, has been identified onsite, for a total of 80.55 acres of onsite Plummer's Mariposa Lily area.. The Plummer's Mariposa Lily Mitigation Plan has been updated to reflect the additional bulb collection mitigation requirements. A portion of the 160-acre mitigation parcel previously described in the Plummer's Mariposa Lily Mitigation Plan provides for adequate mitigation for the additional identified impacts to the Plummer's Mariposa Lily and no additional mitigation measures beyond expanded bulb collection are necessary.
- *Updated Plummer's Mariposa Lily Mitigation Plan, Los Angeles County California, August, 2003, Envicom Corporation*
  - The Plummer's Mariposa Lily Mitigation Plan has been updated to reflect the current acreage of existing and impacts plants, based upon the findings contained in the Sensitive Species Survey. Although the 160 acre mitigation parcel remains adequate to fully mitigate the impacts of an additional 15.0 acres of impact to Plummer's Mariposa Lily, additional bulb collection within the additional 15.0 acre impact area and relocation will be required.
- *Submittal Requirements for the Coastal California Gnatcatcher Surveys for the Deerlake Ranch Project, Los Angeles County California – August 8, 2003, Glenn Lukos Associates*
  - The focused survey did not identify the presence of any Coastal California Gnatcatchers on the project site.









SPLIT LEVEL HOUSE
TYPICAL SECTION
N.T.S.

Source : B&E Engineering, L. Newman Design Group 2003;

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FIGURE 4.1.5
Project Cross Sections
Deerlake Ranch
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- *Results if Focused Surveys Conducted for the Least Bell's Vireo on the Deerlake Ranch Project Site, Los Angeles County, California – August 15, 2003, Glenn Lukos Associates*
  - The focused survey did not identify any Least Bell's Vireo on the project site, however a separate survey conducted for Southwestern Willow Flycatchers did observe one (1) male Least Bell's Vireo, on one occasion, in the proposed open space area, which will not be impacted by project implementation. It has been concluded that the bird was likely to be an unmated male unsuccessfully seeking a mate and a breeding location in the survey area by exploring riparian drainages. It was not detected on any other visits despite the fact that the species is normally very vocal and easy to detect when breeding or on territory.

    The following additional mitigation measures are proposed to ensure that any potential noise related impact to least Bell's vireo is mitigated to less than significant levels:

    - *If earthmoving activities are scheduled to start at the site between April 10 and August 15 (the vireo nesting season) a qualified biologist will perform a one-day survey of the potential vireo habitat for the presence of nesting vireos not more than seven days prior to the start of such earthmoving activities. If any nesting vireos are observed, no work (vegetation clearing, earthmoving, or construction) may occur on the plateau above the riparian habitat within 150 feet of the nest, or in the riparian habitat within 500 feet of the nest. If any nesting vireos are observed, the qualified biologist will monitor activities occurring with 1,000 feet of the nest to ensure compliance with this condition.*
    - *If earthmoving activities start outside the vireo nesting season (August 16 through April 9), no additional vireo surveys will be required, unless (during the vireo nesting season) said work ceases for a period of more than 15 days before beginning again. In such case, the restart of earthmoving activities will be considered as a new start of earthmoving activities, subject to the condition above.*

- *Focused Surveys for the California Red-Legged Frog on the Deerlake Ranch Project Site, Los Angeles County California – August 15, 2003, Glenn Lukos Associates*
  - The focused survey did not identify any Red-Legged Frogs on the project site.
- *Southwestern Willow Flycatcher Focused Survey for the Deerlake Ranch Project, Los Angeles County, California – August 18, 2003, Jones and Stokes*
  - The focused survey did not identify any Southwestern Willow Flycatchers on the project site. The survey did identify a transient non-listed Western Flycatcher was observed onsite, which does not require mitigation.

These studies are included in their entirety in Appendix F of this Response to Comments/Final EIR document and do not change the conclusion of the Draft EIR regarding impacts to sensitive biological resources.

Revision C:

The text on page 4.3-23 under Section 4.3.4 (Mitigation Measures) of the Draft EIR has been revised as follows (new text is italicized):

> *The applicant has acquired a 160-acre parcel of undeveloped open space, located north of the community of Chatsworth, to mitigate all impacts on biological resources to less than significant levels.* ~~The applicant is proposing to mitigate all impacts to biological resources to less than significant levels through the acquisition of a minimum 60 acre parcel of undisturbed natural open space in the immediate vicinity of the project site.~~ A portion of this parcel sufficient to mitigate all impacts to biological resources to less than significant levels will be dedicated to a public resource protection agency prior to initiation of project grading operations. The parcel *is located* ~~will be located either adjacent to the project site or~~ adjacent to the existing Santa Monica Mountains Conservancy 2,000 acre + conservation area. The biological composition of the parcel to be dedicated to the resource agency has, at a minimum, the required amount of high quality habitat to meet mitigation requirements as outlined in the updated Plummer's Mariposa Lily Mitigation Plan., and in many cases will provide in excess of required mitigation requirements.
>
> The following revised mitigation measure will be implemented on the offsite mitigation parcel and are recommended to ensure biological resource impacts would be less than significant.
>
> **General Biological Resource Mitigation Measures**
>
> 4.3-2 The applicant shall mitigate impacts to 0.03 acre of on-site willow woodland based on the requirements outline in the above referenced updated mitigation plan and to the satisfaction of the CDFG and the Los Angeles County Department of Regional Planning. The mitigation plans shall be reviewed and approved by these agencies prior to the issuance of grading permits. This mitigation measure will be implemented on the mitigation parcel with ~~0.15~~ 0.12-acre ~~(representing a 5:1 ratio)~~ *(representing a 4:1 ratio).*

3.3.3 Public Services – Police Protection (Section 4.9 of the Draft EIR)

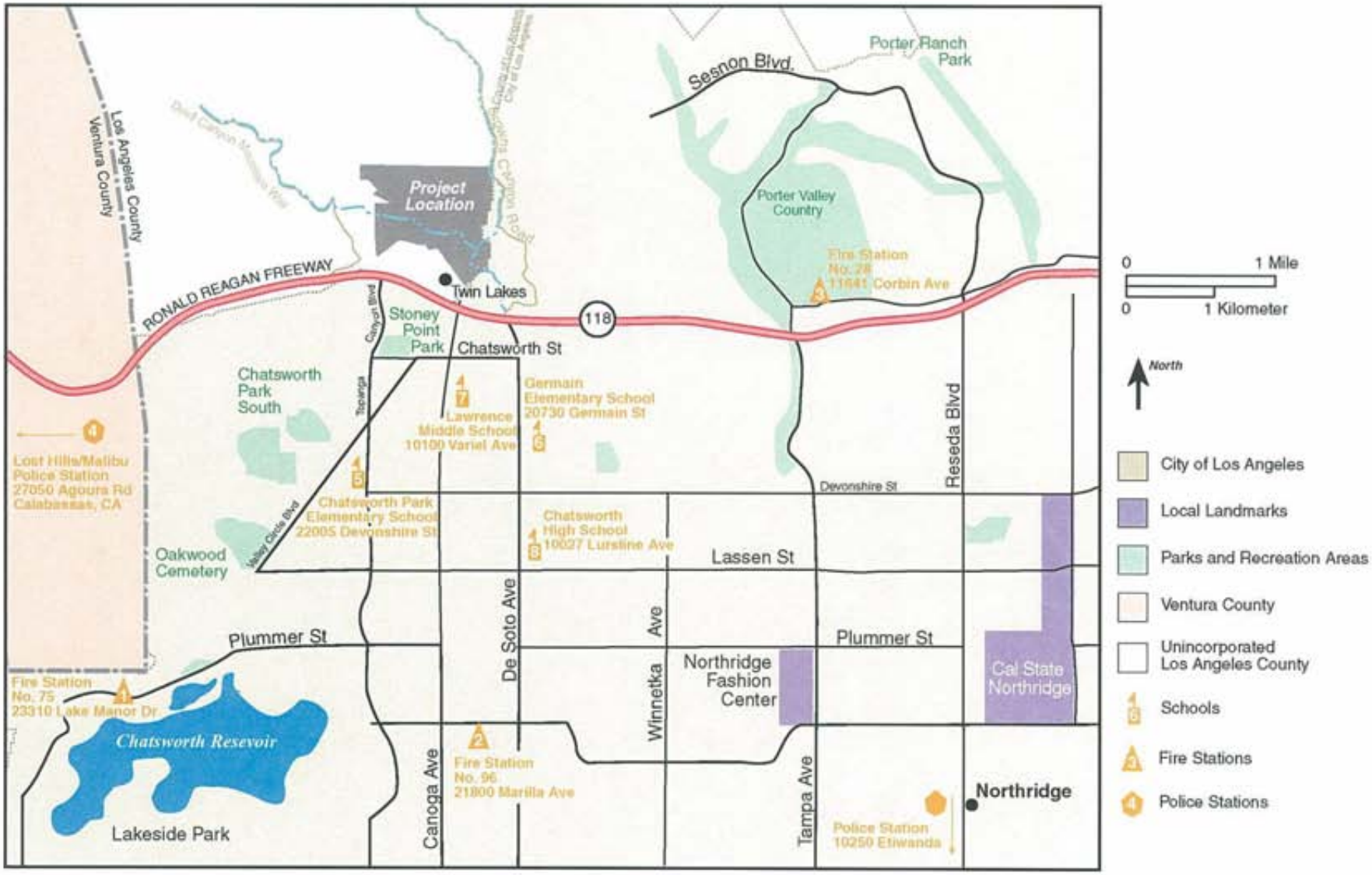
Revision C:

The following paragraph on Page 4.9-1 of the Draft EIR under "Environmental Setting" has been added (after paragraph 1) to reflect additional information received regarding police services:

Areas surrounding the project site, within the City of Los Angeles are served by the City of Los Angeles Police Department, Devonshire Community Police Station. This station is located at 10250 Etiwanda Avenue in Northridge, approximately two miles from the southeasterly portion of Porter Ranch (see Figure 4.8.1) and approximately 4 miles from the project site. The Devonshire Community Police Station serves an estimated 240,000 residents within approximately 53.9 square miles. The average emergency response time in 2001 was 10.1 minutes.

Revision D:

Figure 4.8.1 of the Draft EIR has been revised to more accurately reflect the locations of all public services (including the Devonshire Community Police Station).



Source : City of Los Angeles, 2001; Sheet 180G080

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FIGURE 4.8.1
Public Services Locations
Deerlake Ranch
Final Environmental Impact Report

Revision E:

The following paragraph on Page 4.9-2 of the Draft EIR under "Project Impacts" has been revised to reflect community commitments proposed by the applicant (new text is *italicized*):

> The addition of 388 residences would increase calls for police protection service to this area and may necessitate a change in the Lost Hills/Malibu Station's deployment of deputies. The proposed project would add an additional 1,145 residents to the service area of the Lost Hills/Malibu Station. Based on the standard provision of one officer per 1,000 residents, an additional 1.15 officers would be required. *However, the project applicant has agreed to construct a facility suitable for use as a Sheriff's Department Substation to service the project area. The new facility would be approximately 800 square feet in size and located near the Topanga Canyon Boulevard entrance to the project site; see Figure 2.8 (Proposed Site Plan). In addition,* ~~However,~~ implementation of the proposed project would serve to increase the existing funding mechanisms (i.e., property taxes) for any additional officers required to serve the project area. Therefore, impacts would not be considered significant.

3.3.4 Public Services – Schools (Section 4.10 of the Draft EIR)

Revision F:

After distribution of the Draft EIR, additional updated data from the Los Angeles Unified School District (LAUSD) was made available regarding school capacity. Note that LAUSD has provided conflicting student generation rates, which yield widely ranging student generation results. However, this new data did not change the conclusions of the Draft EIR—that impacts would not be significant with implementation of mitigation measures. In addition, the applicant has indicated that it will enter into discussions with LAUSD and the Porter Ranch master developer to investigate the possibility of accelerating the Porter Ranch elementary and middle school construction. Please see Section 3.2.8 (LAUSD Responses) and Appendix J of this Final EIR for a detailed analysis of the information provided by LAUSD. Page 4.10-1 of the Draft EIR has been revised as follows (new text is *italicized*):

> The proposed project site currently has no student population. The Los Angeles Unified School District (LAUSD) provides primary and secondary public education services for the project area. The capacity of public schools in the project vicinity to accommodate increases in student enrollment is assessed by comparing the existing enrollment capacity (the number of students for which a school has been designed) with current and projected enrollment levels. ~~The standard classroom ratios for schools that would serve the proposed project are 20:1 for kindergarten through third grades; 30:1 for grades fourth through fifth; and 35:1 for grades sixth through twelfth.~~ *The standard classroom ratios for schools that would serve the proposed project are 20:1 for kindergarten through third grades; 29:1 for fourth and fifth grades; 33:1 for grades sixth to eighth; and 35:1 for grades ninth through twelfth.*
>
> The proposed project is located within the attendance boundaries of four public schools (see Figure 4.8.1). These schools are: Chatsworth Elementary School (Grades K-5); Germain Elementary School (Grades K-5); Lawrence Middle School (Grades 6-8); and Chatsworth Senior High School (Grades 9-12). Location, existing operating capacity and enrollment figures for these schools are provided in Table 4.10.1. As of October ~~2000~~ *2002*, there was a surplus capacity of ~~125~~ *63* student spaces at Chatsworth Park Elementary School, ~~228~~ *102* at Germain Elementary School, ~~914~~ *551* at Lawrence Middle School, and ~~1,291~~ *137* at Chatsworth Senior High School.

Revision G:

Table 4.10.1 on Page 4.10-1 of the Draft EIR has been replaced with the following updated data provided by LAUSD:

Revised Table 4.10.1. Existing School Capacity and Enrollment

School Facility	Operating Capacity[a]	Capped[b]	Actual Enrollment[a] *	Resident Area (R2) Enrollment[a,c,*]	Existing Space Available/(Deficit)		Resident (R2) Enrollment Projections[c]
					Actual	R2	
Chatsworth Park Elementary	559	No	496	511	63	48	0
Germain Elementary	905	No	803	706	102	199	(20)
Lawrence Middle School	2,427	No	1,876	1,666	551	761	250
Chatsworth Senior High School	3,351	No	3,214	2,515	137	36	680
Total	**7,242**	--	**6,389**	**5,398**	**853**	**1,044**	**910**

Source: LAUSD, 2002.

NOTES:

a Operating Capacity, actual enrollment and resident enrollment are current as of October 2001.

b A "No" indicates that the school has not reached its enrollment capacity. A "Yes" indicates that the school has reached its enrollment capacity, and new enrollees are assigned and transported by the LAUSD to schools which can accommodate additional students.

c This enrollment does not reflect actual enrollment at the above listed schools, however for purposes of impact analysis, it is necessary to use Resident Area (R2) enrollment statistics which reflect those students living within the attendance boundaries of the school. The resident enrollment projections are for five years out, beginning with the 2002-2003 school year, for the elementary and middle schools; the projections are for eight years for the senior high school.

* Actual enrollment reflects the number of students in attendance at the above listed schools. Resident Area (R2) enrollment reflects the number of students living within the attendance boundaries of the school.

Revision H:

The text on page 4.10-3 under "Project Impacts" of the Draft EIR has been revised to read (new text is *italicized*):

> There are two elementary schools which students from the proposed project could attend. The project site is located within the existing boundaries for both Chatsworth Elementary School and Germain Elementary School. These schools, projected to have ~~125~~ *63* and ~~228~~ *102* student spaces available, respectively, would not have sufficient space to accommodate all 208 elementary students generated by the project (see Table 4.10.3). *Implementation of the proposed project would result in a deficit of space of 43 students at the two elementary schools.* Lawrence Middle School, which is projected to have space to accommodate ~~914~~ *551* additional students, would have sufficient space for the 121 students generated by the proposed project. Finally, Chatsworth Senior High School is projected to have space to accommodate an additional ~~1,291~~ *137* students and would not have sufficient space to accommodate the 165 students generated by the proposed project. *Implementation of the proposed project would result in a deficit of space of 28 students at the high school.* ~~Therefore, the estimated elementary, middle, and high school students generated as a result of the proposed project are not anticipated to result in significant impacts to LAUSD elementary, middle, or high school services.~~ *Therefore, the estimated elementary and high school students generated as a result of the proposed project are anticipated to result in significant impacts on LAUSD elementary and high school services, while the estimated middle school students generated as a result of the proposed project are not anticipated to result in significant impacts on LAUSD middle school services.*

Revision I:

Table 4.10.3 on Page 4.10-3 of the Draft EIR has been replaced with the following updated data provided by LAUSD:

Revised Table 4.10.3. Student Generation Impacts

School Facility	Operating Capacity[a]	Enrollment			Total Enrollment		Existing Space Available/(Deficit)		Resident Area (R2) Enrollment Projections
		Actual[a]	Resident Area (R2)[ab]	Proposed Project	Actual	R2	Actual	R2	
Elementary	*1,464*	*1,299*	*1,217*	*208*	*1,507*	*1,425*	*(43)*	*39*	*(20)*
Middle School	*2,427*	*1,876*	*1,666*	*121*	*1,997*	*1,787*	*430*	*640*	*250*
High School	*3,351*	*3,214*	*2,515*	*165*	*3,379*	*2,680*	*(28)*	*671*	*680*
Total	***7,242***	***6,389***	***5,398***	***494***	***6,883***	***5,892***	***359***	***1350***	***910***

Source: LAUSD, 2002.

a. Operating capacity, actual enrollment, and resident enrollment are current as of October 2001.
b. This enrollment does not reflect actual enrollment at the above listed schools, however for purposes of impact analysis, it is necessary to use Resident Area (R2) enrollment statistics which reflect those students living within the attendance boundaries of the school. The resident enrollment projections are for five years out, beginning with the 2002-2003 school year, for the elementary and middle schools; the projections are for eight years for the senior high school.

Revision K:

The last two paragraphs on Page 4.10-4 under Section 4.10.3 (Cumulative Impacts) of the Draft EIR has been revised as follows to reflect current student population information.(new text is *italicized*):

> Related Projects No. 7 (Porter Ranch, which includes ~~1,698~~ *3,600* single-family residential units), No. 8 (which includes a total of 52 single-family residential units); No. 10 (which includes 159 multi-family dwelling units); and No 11 (which includes 12 single-family residential units) are located within the boundaries of the aforementioned schools. *Currently, all developed areas in Porter Ranch are assigned to Castlebay Lane Elementary, which is not within the boundaries of the proposed project or other related projects.* ~~However, Porter Ranch is also served by the Porter Ranch Elementary School, which is not within the boundaries of the proposed project and other related projects. Currently only Germain Elementary School accepts students from Porter Ranch without a permit, and Porter Ranch students account for only about two percent of the current student population.~~ *Most of the remaining Porter Ranch development area is within the Germain Elementary School attendance area. An evaluation of opportunities to reassign boundaries would be one of the steps taken to remedy enrollment impacts on Germain Elementary School. Growth in the District is experienced District-wide, and solutions to ease crowding in District schools are implemented District-wide.*
>
> As shown in Table 4.10.4 this would result in an estimated additional ~~798~~ *1,616* elementary school students, ~~465~~ *940* middle school students, and ~~631~~ *1,278* high school students for a total of ~~1,894~~ *3,834* students. As shown in Table 4.10.5, *all* area schools~~, with the exception of the elementary schools,~~ would be *un*able to accommodate the additional students associated with the proposed and related projects.

Revision L:

Table 4.10.4 on Page 4.10-5 of the Draft EIR has been replaced with the following updated data provided by LAUSD:

Revised Table 4.10.4. Cumulative Student Generation

Project Use	Elementary (K-5)		Middle School (6-8)		High School (9-12)	
	Factor	Students	Factor	Students	Factor	Students
Porter Ranch – Single-family (3,600 units)	0.43	1548	0.25	900	0.34	1224
Single-family (52 units)	0.43	22	0.25	13	0.34	18
Multifamily (159 units)	0.26	41	0.15	24	0.20	32
Single-family (12 units)	0.43	5	0.25	3	0.34	4
Total Project Generation	--	**1,616**	--	**940**	--	**1,278**

Source: LAUSD, 2002.

Revision M:

Table 4.10.5 on Page 4.10-5 of the Draft EIR has been replaced with the following updated data provided by LAUSD:

Revised Table 4.10.5. Cumulative School Impacts

School Facility	Operating Capacity [a]	Proposed Project and Current Enrollment		Related Projects Enrollment	Cumulative Enrollment		Existing Space Available/(Deficit)		Resident (R2) Enrollment Projections
		Actual	R2		Actual	R2	Actual	R2	
Elementary	1,464	1,507	1,425	1,616	3,123	3,041	(1,659)4	(1,577)	(20)
Middle School	2,427	1,997	1,787	940	2,937	2,727	(510)	(300)	250
High School	3,351	3,379	2,680	1,278	4,657	3,958	(1,306)	(607)	680
Total	**7,242**	**6,883**	**5,892**	**3,834**	**10,717**	**9,726**	**(3,475)**	**(2,484)**	**910**

Source: LAUSD, 2002.

a Operating Capacity, actual enrollment and resident enrollment are current as of October 2001.

Revision N:

The last paragraph on Page 4.10-5 of Section 4.10.3 (Cumulative Impacts) of the Draft EIR has been revised as follows (new text *italicized*):

> As shown in Table 4.10.5, the cumulative impact of the proposed and related projects would result in a deficit of space of ~~653~~ *1,659* students at the elementary level, mainly from Porter Ranch; *a deficit of space of 510 students at the middle school level; and a deficit of space of 1,306 at the high school level.* Environmental documentation for this related project indicates that the applicant for Porter Ranch and LAUSD have entered into an agreement to provide capacity within the district to accommodate further enrollment growth in the area associated with Porter Ranch. In addition, as with the proposed project, all related projects would be required to pay applicable developer fees to offset these impacts. Therefore, cumulative impacts would not be significant.

[4] Per a Letter from Rena Perez, Director, Master Planning and Demographics, LAUSD, January 22, 2002, the cumulative school space deficit is listed as 1,699; however, this is a calculation error. The correct cumulative school space deficit is 1,659.

Revision O:

The text on Page 4.10-6 under Section 4.10.4 (Mitigation Measures) of the Draft EIR has been revised as follows (new text is *italicized*):

> ~~Although impacts associated with the proposed project would not be significant, the~~ *The* following mitigation measure is recommended to ensure that project impacts to schools in the area would be less than significant:
>
> 4.10-1 The applicant shall pay developer fees, as required under Section 65995 of the California Code, for school improvements. *The applicant has indicated that it will enter into discussions with LAUSD and the Porter Ranch master developer to investigate the possibility of accelerating the Porter Ranch elementary and middle school construction schedule.*

Revision P:

The text on Page 4.10-6 under Section 4.10.5 (Unavoidable Impact After Mitigation) of the Draft EIR has been revised as follows (new text is *italicized*):

> The proposed project is expected to generate an additional 494 students. Based on LAUSD projections, all four schools serving the project area would not have adequate space to accommodate the additional students generated by the project. *However, payment of school fees would reduce these impacts to less than significant. Section 17620(a) of the California Education Code and Section 65995(b) of the California Government Code authorizes school districts to impose and collect school impact fees for all residential and nonresidential activities that occur within the jurisdictions to offset the costs associated with the generation of new students. Referencing Section 65995(h) of the Government Code, "the payment or satisfaction of a fee, charge, or other requirement levied or imposed pursuant to Section 17620 of the Education Code in the amount specified in Section 65995 and, if applicable, any amounts specified in Section 65995.5 or 65995.7 are hereby deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization as defined in Section 56021 or 56073, on the provision of adequate school facilities." Payment of applicable fees constitutes full mitigation of those impacts that are directly or indirectly caused by a proposed project upon those school districts potentially impacted by that project.* ~~Therefore, no significant impacts are anticipated.~~

3.3.5 Public Services – Libraries (Section 4.11 of the Draft EIR)

Revision Q:

The following paragraph on Page 4.11-1 of the Draft EIR under "Environmental Setting" has been revised as follows (new text is in *italics*):

> The Los Angeles County Public Library operates facilities and services Countywide in both unincorporated and incorporated areas of the County. *The proposed project would be served by the Los Angeles County Las Virgenes Bookmobile, which provides service to the project area. The bookmobile has a collection of 8,521 library materials consisting of books, audio and video materials, DVD's, pamphlets, periodicals and government documents. The Las Virgenes Bookmobile serves an estimated 2,750 residents in the project area.* ~~The Chatsworth Branch Library, located at 21052 Devonshire Street, is within the attendance boundaries of all four schools serving the project site (see Figure 4.8.1). The Initial Study determined that additional~~

~~students could potentially impact this library facility. However, the library, which is 5,400 square feet in size, can currently accommodate the additional 494 students. In addition, the facility will undergo renovation within the next two years, expanding its size to 12,500 square feet.5 As of July 2001, the library maintains a staff of six full-time employees and five part-time employees.6 The library hours of operation are Monday and Wednesday 10:00 A.M. to 8:00 P.M., Tuesday and Thursday 12:00 P.M. to 8:00 P.M., Friday and Saturday 10:00 A.M. to 6:00 P.M. The library is closed on Sundays~~.

Revision R:

The following paragraph on Page 4.11-2 of the Draft EIR under "Project Impact" has been revised as follows (new text is in *italics*):

> Development of the proposed project would increase demand for library services, thereby increasing the need for additional facilities and materials (e.g., books, periodicals, audio tapes, videos, etc.). The proposed project would result in an additional ~~1,428~~ *1,199* residents within the project area.7 Based on County Library planning guidelines of ~~0.35~~ *0.5* net square feet of library space per capita and ~~2.0~~ *2.75* library items per capita, it is anticipated that the proposed project would require a total of ~~500~~ *600* square feet of library space and ~~2,856~~ *3,297* additional items would be required.

Revision S:

The following paragraph on Page 4.11-2 of the Draft EIR under "Cumulative Impact" has been revised as follows (new text is in *italics*):

> Continued development and urbanization of the Chatsworth area of the San Fernando Valley over time would increase the resident population. There are a total of 11 related projects which were identified for this analysis and which are described in Section 3.0 of this Draft EIR. Of the 11 related projects, three proposed projects (Nos. 8, 10 and 11) are located within the project area. Related Project No. 8, located to the immediate west of the proposed project site, would result in the addition of 52 single-family dwelling units; No. 10 would result in 159 dwelling units; and No 11 would result in 12 single-family dwelling units *for a total of 223 additional dwelling units for the related projects*. The cumulative population generated by these related projects would be approximately ~~658~~ *689* residents. Combined with the proposed project total population of ~~1,428~~ *1,199* residents, a cumulative generation of ~~2,086~~ *1,888* residents would be added to the area.
>
> Based on County Library planning guidelines, it is anticipated that cumulatively, a total of ~~730~~ *944* square feet of library space and ~~4,172~~ *5,192* additional items would be required. Such development (e.g., single and multi-family residential projects, and mobile homes) would be subject to mitigation consistent with County guidelines on a project-by-project basis similar to that indicated for the proposed project. Applicable fees would be paid for new residential subdivisions as required by the Los Angeles County ordinance. Therefore, no additional mitigation beyond that which is identified for the proposed project is recommended for cumulative development projects, and cumulative impacts would be less than significant.

5 Telephone communication with Bruce Seidman, Supervisor, Chatsworth Branch Library, October 16, 2000.

2 Telephone conversation with Bruce Seidman, Supervisor, Chatsworth Branch Library, July 20, 2001.

3 A factor of 2.95 persons per dwelling unit is used to determine estimated resident population. This factor is based on information from the Water System Design Report for Tentative Tract No. 53138 Chatsworth Ridge, Boyle Engineering Corporation, August 2000, included in its entirety in Appendix H of this Draft EIR.

3.3.6 Transportation/Traffic (Section 4.12 of the Draft EIR)

Revision T:

After distribution of the Draft EIR, additional traffic analyses were completed. Page 4.12-1 of the Draft EIR has been revised as follows (new text is *italicized*).

> The following information is based on *Traffic Impact Study, Chatsworth Ridge Estates Project, Chatsworth, California* (March 22, 2001, Revised November 15, 2001) ~~and~~; *Chatsworth Ridge Estates Project Updated tables and exhibits based on 484 dwelling units* (October, 24, 2001); *Response to Traffic Comments Raised at the December 6, 2001 Community Meeting Regarding the Traffic Study Prepared for Tentative Tract No. 53138 (Chatsworth Ridge Estates) (December 21, 2001, Revised January 9, 2002); Discussion of the Congestion Management Program Roadway Impact Analysis (January 7, 2002); Response to Comments Submitted by the State of California Department of Transportation Related to Tentative Tract No. 53135 (Deerlake Ranch Project), Chatsworth Area of Unincorporated Los Angeles County; and the updated traffic study dated April 9, 2003, all* prepared by Linscott Law & Greenspan, Engineers, for the proposed project. The findings of these reports are summarized in this section and are presented in their entirety as Appendix M of this Draft EIR.
>
> The traffic impact study analyzes existing conditions, as well as, projected traffic conditions following the development of the proposed Deerlake Ranch project. While the project site is located in an unincorporated area of Los Angeles County, some study intersections are located within the City of Los Angeles. Therefore, the updated traffic analysis (April 9, 2003) follows County of Los Angeles and City of Los Angeles traffic study guidelines and has been approved by both County of Los Angeles and the City of Los Angeles. This impact analysis portion of the updated traffic study is based upon ~~a worst case scenario~~ *the proposed development* of ~~538~~ *388* residential dwelling units, although the mitigation measures are based on the original 538 unit project proposal.

Revision U:

Page 4.12-7 of the Draft EIR has been revised as follows (new text is *italicized*):

> As shown on Table 4.12.2, ~~six~~ *seven* study intersections are currently operating at LOS E or F during the A.M. and/or P.M. peak hours. The remaining ~~seven~~ *six* study intersections are currently operating at acceptable LOS during both the A.M. and P.M. peak hours.

Revision V:

Table 4.12.2 on Page 4.12-10 of the Draft EIR has been revised per the new traffic analysis:

Revised Table 4.12.2. Summary of Existing Volume-to-Capacity (V/C) Ratios and Level of Service (LOS)

Study Intersections [a]	Peak Hour	Existing (2000) Conditions	
		Volume to Capacity Ratio	LOS
Topanga Canyon Boulevard & Poema Place/Mayan Drive [b c]	A.M.	--	--
	P.M.	--	--
Topanga Canyon Boulevard & SR-118 WB On/Off-ramps [c]	A.M.	0.923	E
	P.M.	0.979	E
Topanga Canyon Boulevard & SR-118 EB On/Off-ramps	A.M.	1.267	F

Study Intersections [a]	Peak Hour	Existing (2000) Conditions	
		Volume to Capacity Ratio	LOS
	P.M.	1.183	F
Topanga Canyon Boulevard & Santa Susana Pass Road	A.M.	1.101	F
	P.M.	0.861	D
Topanga Canyon Boulevard & Chatsworth Street	A.M.	0.880	D
	P.M.	0.942	E
Topanga Canyon Boulevard & Devonshire Street	A.M.	0.922	E
	P.M.	1.143	F
Canoga Avenue & Rinaldi Street	A.M.	~~0.326~~ *0.408*	A
	P.M.	~~0.187~~ *0.234*	A
Canoga Avenue & Chatsworth Street	A.M.	0.524	A
	P.M.	0.364	A
Canoga Avenue & Devonshire Street	A.M.	0.609	B
	P.M.	0.566	A
De Soto Avenue & SR-118 WB On/Off-ramps	A.M.	~~0.581~~ *0.727*	~~A~~ *C*
	P.M.	~~0.420~~ *0.525*	A
De Soto Avenue & SR-118 EB On/Off-ramps	A.M.	~~0.590~~ *0.738*	~~A~~ *C*
	P.M.	~~0.511~~ *0.638*	~~A~~ *B*
De Soto Avenue & Chatsworth Street	A.M.	0.969	E
	P.M.	0.963	E
De Soto Avenue & Devonshire Street	A.M.	0.925	E
	P.M.	1.014	F

Source: Linscott Law & Greenspan, Engineers, 2003.

Notes:

a Study intersections are located within the City of Los Angeles, unless otherwise indicated.

b Study intersection is located within the County of Los Angeles.

c This intersection is unsignalized. Because of its proximity to Topanga Canyon Boulevard and SR-118 WB On/Off ramps less than 50 feet apart), the two intersections are analyzed together as one.

Revision W:

Page 4.12-14 of the Draft EIR has been revised as follows (new text is *italicized*):

Ambient Growth

Growth with traffic due to the combined effects of continuing development, intensification of existing development and other factors were assumed to be two percent through 2005. This ambient growth incrementally increases V/C ratios at all of the study intersections. As shown in Tables 4.12.4 and 4.12.5, the following seven study intersections are expected to operate at LOS E or F during the A.M. and/or P.M. peak hours with the addition of ambient traffic growth:

- Topanga Canyon Boulevard and SR-118 WB On/Off-ramps (LOS E – A.M. peak hour, LOS F - P.M. peak hour).
- Topanga Canyon Boulevard and SR-118 EB On/Off-ramps (LOS F – A.M./P.M. peak hours).

- Topanga Canyon Boulevard and Santa Susana Pass Road (LOS F – A.M. peak hour, LOS E – P.M. peak hour).
- Topanga Canyon Boulevard and Chatsworth Street (~~LOS E – A.M./P.M. peak hours~~ *LOS E – A.M. peak hour, LOS F - P.M. peak hour*).
- Topanga Canyon Boulevard and Devonshire Street (~~LOS F – P.M. peak hour~~ *LOS E – A.M. peak hour, LOS F – P.M. peak hour*).
- De Soto Avenue and Chatsworth Street (LOS F – A.M./P.M. peak hours).
- De Soto Avenue and Devonshire Street (~~LOS F – P.M. peak hour~~ *LOS E – A.M. peak hour, LOS F – P.M. peak hour*).

Revision X:

Tables 4.12.4 and 4.12.5 on Pages 4.12-15 and 4.12-16 of the Draft EIR have been revised per the new traffic analysis:

Revised Table 4.12.4. Summary of V/C Ratios and Level of Service (LOS)
County of Los Angeles Study Intersections A.M. and P.M. Peak Hours

Study Intersections	Peak Hour	Ambient Growth (2005)		With Project (2005)		Change V/C	Sig?	With Mitigation (2005)		Change V/C	Mitigated?	Related Projects (2005)	
		V/C	LOS	V/C	LOS			V/C	LOS			V/C	LOS
Topanga Canyon Boulevard & Poema Place/Mayan Drive [a]	A.M.	--	--	--	--	NA	--		--	NA	--	--	--
	P.M.	--	--	--	--	NA	--	--	--	NA	--	--	--
Topanga Canyon Boulevard & SR-118 WB On/Off – ramps	A.M.	0.989	E	~~1.101~~ *1.095*	F	~~0.112~~ *0.106*	Yes	~~0.975~~ *0.972*	E	~~-0.014~~ *-0.017*	Yes	1.034	F
	P.M.	1.050	F	~~1.146~~ *1.129*	F	~~0.096~~ *0.079*	Yes	~~1.017~~ *1.011*	F	~~-0.033~~ *-0.039*	Yes	1.102	F

Source: Linscott Law & Greenspan, Engineers, 2003.

Notes:

a. This intersection is unsignalized. Because of its proximity to Topanga Canyon Boulevard and SR-118 WB On/Off-ramps (less than 50 feet apart), the two intersections are analyzed together as one.

Revised Table 4.12.5. Summary of V/C Ratios and LOS
City of Los Angeles Study Intersections A.M. and P.M. Peak Hours

Study Intersection	Peak Hour	Ambient Growth (2005)		Related Projects (2005)		With Project (2005)		Change V/C	Significant ?	With Mitigation (2005)		Change V/C	Mitigated ?
		V/C	LOS	V/C	LOS	V/C	LOS			V/C	LOS		
Topanga Canyon Boulevard & SR-118 EB On/Off-ramps	A.M.	1.368	F	~~1.490~~ *1.433*	F	~~1.553~~ *1.494*	F	~~0.063~~ *0.061*	Yes	~~1.483~~ *1.424*	F	~~-0.007~~ *-0.009*	Yes
	P.M.	1.278	F	~~1.377~~ *1.385*	F	~~1.423~~ *1.423*	F	~~0.046~~ *0.038*	Yes	1.353	F	~~-0.024~~ *-0.032*	Yes
Topanga Canyon Boulevard & Santa Susana Pass Road	A.M.	1.189	F	~~1.261~~ *1.235*	F	~~1.267~~ *1.241*	F	0.006	No	~~1.267~~ *1.241*	F	0.006	--
	P.M.	0.930	E	~~1.013~~ *1.003*	F	~~1.020~~ *1.009*	F	~~0.007~~ *0.006*	No	~~1.020~~ *1.009*	F	~~0.007~~ *0.006*	--
Topanga Canyon Boulevard & Chatsworth Street	A.M.	0.950	E	~~1.011~~ *1.002*	F	~~1.017~~ *1.008*	F	0.006	No	~~1.017~~ *1.008*	F	0.006	--
	P.M.	1.017	F	~~1.095~~ *1.077*	F	~~1.102~~ *1.082*	F	~~0.007~~ *0.005*	No	~~1.102~~ *1.082*	F	~~0.007~~ *0.005*	--
Topanga Canyon Boulevard & Devonshire Street	A.M.	0.996	E	~~1.072~~ *1.039*	F	~~1.077~~ *1.044*	F	0.005	No	~~1.077~~ *1.044*	F	0.005	--
	P.M.	1.234	F	~~1.324~~ *1.336*	F	~~1.331~~ *1.342*	F	~~0.007~~ *0.006*	No	~~1.331~~ *1.342*	F	~~0.007~~ *0.006*	--
Canoga Avenue & Rinaldi Street	A.M.	~~0.352~~ *0.440*	A	~~0.352~~ *0.451*	A	~~0.409~~ *0.520*	A	~~0.057~~ *0.069*	No	~~0.409~~ *0.520*	A	~~0.057~~ *0.069*	--
	P.M.	~~0.202~~ *0.253*	A	~~0.202~~ *0.248*	A	~~0.244~~ *0.288*	A	~~0.042~~ *0.040*	No	~~0.244~~ *0.288*	A	~~0.042~~ *0.040*	--
Canoga Avenue & Chatsworth Street	A.M.	0.566	A	~~0.624~~ *0.650*	B	~~0.658~~ *0.683*	B	~~0.034~~ *0.033*	~~No~~ *Yes* [a]	~~0.658~~ *0.683*	B	~~0.034~~ *0.033*	-- *Yes*
	P.M.	0.393	A	~~0.463~~ *0.428*	A	~~0.515~~ *0.471*	A	~~0.052~~ *0.043*	~~No~~ *Yes* [a]	~~0.515~~ *0.471*	A	~~0.052~~ *0.043*	-- *Yes*
Canoga Avenue & Devonshire Street	A.M.	0.657	B	~~0.686~~ *0.694*	B	~~0.712~~ *0.721*	C	~~0.026~~ *0.027*	No	~~0.712~~ *0.721*	C	~~0.026~~ *0.027*	--
	P.M.	0.611	B	~~0.633~~ *0.645*	B	~~0.651~~ *0.659*	B	~~0.018~~ *0.014*	No	~~0.651~~ *0.659*	B	~~0.018~~ *0.014*	--
De Soto Avenue & SR-118 WB On/Off-ramps	A.M.	~~0.628~~ *0.785*	~~B~~ C	~~0.931~~ *0.688*	~~E~~ *B*	~~0.934~~ *0.692*	B	~~0.003~~ *0.004*	No	~~0.934~~ *0.692*	~~E~~ *B*	~~0.003~~ *0.004*	--
	P.M.	~~0.454~~ *0.567*	A	~~0.767~~ *0.442*	~~C~~ *A*	~~0.779~~ *0.453*	~~C~~ *A*	~~0.012~~ *0.011*	No	~~0.779~~ *0.453*	~~C~~ *A*	~~0.012~~ *0.011*	--
De Soto Avenue & SR-118 EB On/Off-ramps	A.M.	~~0.637~~ *0.797*	~~B~~ *C*	~~0.901~~ *0.708*	~~E~~ *C*	~~0.904~~ *0.711*	~~E~~ *C*	0.003	No	~~0.904~~ *0.711*	~~E~~ *C*	0.003	--
	P.M.	~~0.551~~ *0.689*	~~A~~ *B*	~~0.841~~ *0.736*	~~D~~ *C*	~~0.843~~ *0.738*	~~D~~ *C*	0.002	No	~~0.843~~ *0.738*	~~D~~ *C*	0.002	--
De Soto Avenue & Chatsworth Street	A.M.	1.047	F	~~1.159~~ *1.109*	F	~~1.182~~ *1.132*	F	0.023	Yes	~~1.112~~ *1.093*	F	~~-0.047~~ *-0.016*	Yes
	P.M.	1.040	F	~~1.132~~ *1.038*	F	~~1.143~~ *1.047*	F	~~0.011~~ *0.009*	~~Yes~~ *No*	~~1.073~~ *1.020*	F	~~-0.059~~ *-0.018*	Yes
De Soto Avenue & Devonshire Street	A.M.	0.999	E	~~1.069~~ *1.042*	F	~~1.077~~ *1.050*	F	0.008	No	~~1.077~~ *1.05*	F	0.008	--
	P.M.	1.095	F	~~1.183~~ *1.175*	F	~~1.192~~ *1.183*	F	~~0.009~~ *0.008*	No	~~1.192~~ *1.183*	F	~~0.009~~ *0.008*	--

Source: Linscott Law & Greenspan, Engineers, 2001.Source: Linscott Law & Greenspan, Engineers, 2003.

Notes:

a. Intersection identified per the June 6, 2002 LADOT letter as a significant cumulative traffic impact.

Revision Y:

The text on Page 4.12-17 of the Draft EIR has been revised as follows (new text *italicized*):

With Related Projects

The City of Los Angeles analysis procedures require that consideration of traffic due to related projects be considered prior to consideration of traffic due to the proposed project. Table 4.12.5 shows that the LOS at the City of Los Angeles study intersections are incrementally increased by the addition of traffic generated by the related projects listed in Table 4.12.3. The following eight study intersections are anticipated to operate at LOS E or F during either the A.M. or P.M. peak hours with the addition of traffic expected to be generated by related projects:

- Topanga Canyon Boulevard and SR-118 EB On/Off-ramps (LOS F – A.M./P.M. peak hours).
- Topanga Canyon Boulevard and Santa Susana Pass Road (LOS F – A.M./P.M. peak hours~~, LOS E – P.M. peak hour~~).
- Topanga Canyon Boulevard and Chatsworth Street (~~LOS E – A.M. peak hour,~~ LOS F *A.M.*/P.M. peak hours).
- Topanga Canyon Boulevard and Devonshire Street (LOS F – *A.M.*/P.M. peak hours).
- ~~De Soto Avenue and SR-118 WB On/Off-ramps (LOS F – A.M. peak hour).~~
- ~~De Soto Avenue and SR-118 EB On/Off-ramps (LOS F E – A.M. peak hour, LOS E – P.M. peak hour).~~
- De Soto Avenue and Chatsworth Street (LOS F – A.M./P.M. peak hours).
- De Soto Avenue and Devonshire Street (~~LOS E – A.M. peak hour,~~ LOS F – *A.M.*/P.M. peak hours).

Project Trip Generation

Traffic volumes expected to be generated by the proposed project were estimated using accepted generation rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 6th Edition, 1997. Traffic volumes expected were based upon rates per single-family residential unit. ITE Land Use 210 (single-family detached housing) trip generation rates were used to forecast the traffic volumes expected to be generated by the proposed project.

The project is expected to generate ~~387~~ *411* vehicle trips (~~97~~ 103 inbound and ~~290~~ *308* outbound) during the A.M. peak hour and ~~489~~ *445* vehicle trips (~~313~~ *285* inbound and ~~176~~ *160* outbound) during the P.M. peak hour.

Revision Z:

Page 4.12-18 and 4.12-21 of the Draft EIR has been revised as follows (new text is *italicized*):

With Proposed Project

As shown in Tables 4.12.4 and 4.12.5, application of the County's and City threshold criteria "with Proposed Project" scenario indicates at three study intersections are anticipated to be significantly impacts by the proposed project during the A.M. and P.M. peak hours. The proposed project is expected to create significant impacts because it exceeds the City's impact thresholds at the following intersections:

- Topanga Canyon Boulevard and SR-118 WB On/Off-ramps
  - A.M. peak hour V/C ratio increase of ~~0.125~~ *0.106* – LOS E to LOS F
  - P.M. peak hour V/C ratio increase of ~~0.106~~ *0.079* – LOS F to LOS F
- Topanga Canyon Boulevard and SR-118 EB On/Off-ramps
  - A.M. peak hour V/C ratio increase of ~~0.072~~ *0.061* – LOS F to LOS F
  - P.M. peak hour V/C ratio increase of ~~0.052~~ *0.038* – LOS F to LOS F
- De Soto Avenue and Chatsworth Street
  - A.M. peak hour V/C ratio increase of ~~0.026~~ *0.123* – LOS F to LOS F
  - ~~P.M. peak hour V/C ratio increase of 0.013 0.092 – LOS F to LOS F~~

In addition, the June 6th letter issued by the LADOT identified a significant cumulative traffic impact at a fourth intersection.

- Canoga Avenue and Chatsworth
  - A.M. peak hour V/C ratio increase of 0.033 – LOS B to LOS B
  - P.M. peak hour V/C ratio increase of 0.052 – LOS A to LOS A

Incremental, but not significant impacts would occur at the remaining ten study intersections. Figures 4.12.9 and 4.12.10 show the future with project (existing, ambient growth, related projects, and project) traffic volumes at the study intersections for the A.M. and P.M. peak hours, respectively.

It should be noted that all three study intersections located along Canoga Avenue (at Rinaldi Street, Chatsworth Street, and Devonshire Street) are projected to continue operating at good LOS (LOS A/B/C during the A.M. peak hour and LOS A/B during the P.M. peak hour), even with the addition of traffic generated by the proposed project.

Revision AA:

The text on Page 4.12-27 of the Draft EIR has been revised as follows (new text is *italicized*):

Impacts To Transit Systems

The traffic study also examined whether transit trips generated by the proposed project would affect the public transit system. As discussed above, the proposed project is expected to generate ~~4,874~~ *3,608* daily vehicle trips, ~~387 411~~ *332* A.M. peak hour trips and ~~489 445~~ *364* P.M. peak hour trips.

The following mitigation measures for traffic impacts have been added to page 4.12-28 of Section 4.12.4 Mitigation Measures of the Draft EIR per the request of the City of Los Angeles Department of Transportation:

4.12-6 In addition, prior to the recordation of the first final subdivision map for the project, not *including large-lot parcel maps for sale purposes, the applicant's traffic engineer will submit to the City of Los Angeles Department of Transportation a study to assess the need for the following improvements:*

- *Left-turn traffic signal phasing shall be implemented related to eastbound Chatsworth Street traffic at DeSoto Avenue intersection. Additional paving shall be included along the northern edge of Chatsworth Street to lengthen the existing eastbound left-turn lane by approximately 100 feet.*

- *Left-turn traffic signal phasing shall be completed related to southbound Canoga Avenue traffic at the Chatsworth Street intersection, and construction of approximately 100 feet of paving along the western edge of Canoga Avenue to provide for a left-turn lane onto eastbound Chatsworth Street. This paving would be considered temporary, pending a City of Los Angeles project to widen this portion of Canoga Avenue to City standards.*
- *Subject to approval by the California Department of Transportation (Caltrans), City of Los Angeles, and County of Los Angeles, the existing pavement on southbound Topanga Canyon Boulevard shall be restriped to provide a second left-turn lane onto the eastbound SR-118 on-ramp.*

If the City of Los Angeles, Department of Transportation determines that these improvements are warranted, design plans would be prepared for the appropriate modifications.

4.12-7 The applicant shall request that the CFD, which is proposed to fund public facilities for Deerlake Ranch, contribute funds to construct the following safety-related improvements. These improvements are subject to City of Los Angeles B-Permit(s), prior to obtaining any other construction permit for the project.

- *Three-way stop signs shall be installed at the intersection of Canoga Avenue and Candice Place.*
- *A "No Left Turn" sign shall be installed from southbound Canoga Avenue to Candice Place, prohibiting such movement between 6:00 A.M. and 9:00 A.M.*
- *Speed bumps shall be installed along Canoga Avenue between the SR-118 and Candice Place, and an additional speed bump shall be installed south of Candice Place.*
- *A "No Left Turn" sign shall be installed at the intersection of Canoga Avenue and Celtic Place.*
- *Self-actuated flashing lights shall be installed at the intersection of Canoga Avenue and Rinaldi Avenue for equestrian and pedestrian crossing, subject to approval by the City of Los Angeles.*
- *A crosswalk shall be striped on Chatsworth Street east of the intersection with Independence Avenue.*
- *Permanent signs shall be installed along Canoga Avenue displaying "Watch for Equestrians", or similar language.*
- *Signs shall be installed during the project construction period displaying "Jake Braking Strictly Prohibited," or similar language.*

4.12-8 As agreed, the subdivider shall be responsible for repairing damage to the existing pavement on Canoga Avenue between Chatsworth Street and SR-118 that is caused by project contractors during the course of construction.

4.12-9 The subdivider shall install three-way stop signs at the proposed intersection of Mayan Drive and "B" Street, subject to the approval of the County of Los Angeles.

4.12-10 The subdivider shall install all stop signs for equestrian crossings per the applicant's community commitments.

4.12-11 Caltrans has requested additional mitigation measures to mitigate impacts of the project within the State right-of-way. The applicant will prepare, as a voluntary measure, a Project Study Report (PSR) to address long-term regional traffic operations at the Topanga Canyon Boulevard/SR-118 interchange. In addition, the applicant shall consider possible payment of fair-share fees as determined by the County.

Revision BB:

Text on Page 4.12-29 of Section 4.12.5 (Unavoidable Impact After Mitigation) of the Draft EIR has been revised as follows (new text is *italicized*):

As shown in Tables 4.12.4 and 4.12.5, with implementation of mitigation measures, the project's impact on these three study intersections, based on City and County of Los Angeles V/C criteria for significance, would be reduced to less then significant as follows:

- Topanga Canyon Boulevard & SR-118 WB On/Off-ramps:

  Project V/C Increase Criteria for Significance = 0.01
  Project V/C Increase with Mitigation = ~~0.000~~ *-0.014* (A.M.)
  = ~~0.021~~ *-0.033* (P.M.)

- Topanga Canyon Boulevard & SR-118 EB On/Off-ramps:

  Project V/C Increase Criteria for Significance = 0.01
  Project V/C Increase with Mitigation = ~~0.002~~ *-0.007* (A.M.)
  = ~~-0.019~~ *-0.024* (P.M.)

- De Soto Avenue & Chatsworth Street:

  Project V/C Increase Criteria for Significance =0.01
  Project V/C Increase With Mitigation = ~~-0.044~~ *-0.047* (A.M.)
  = ~~-0.058~~ *-0.059* (P.M.)

Therefore, with implementation of the recommended mitigation measures, the proposed project would not result in significant impacts to area traffic.

4.1 INTRODUCTION

In order to comprehensively respond to all letters received on the Draft EIR, Additional Environmental Information Document and Revised Project Design Summary Document, and address each CEQA issue raised, a summary matrix (Table 4.1) has been developed which lists the commenter and the corresponding issues raised. The matrix contains the names of all commenters, and has been apportioned into 22 major comment categories, outlined as follows:

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

All comment letters have been reviewed and placed into one or more of the above-outlined comment categories. Each original comment letter can be found in Appendix B of this document. In total 444 comment letters were received during the Draft EIR comment period. Each comment letter has been retyped and divided into individual specific numbered comments. Each numbered comment is followed by a response. Multiple dated comment letters received from individuals were combined together under the author's name for Section 4.5.

All written comment letters are summarized in Table 4.1 and organized as follows:

- Section 4.2 Draft EIR Form Comments/Responses (137 letters)
- Section 4.3 Draft EIR Public Agency Comment/Responses (8 letters)
- Section 4.4 Draft EIR Organization/Businesses Comments/Responses (6 letters)
- Section 4.5 Draft EIR Individual Comments/Responses (180 letters)
- Section 4.6 Additional Environmental Information document Comments/Responses (10 letters)
- Section 4.7 Revised Project Design Summary Document Comments/Responses (6 letters)
- Section 5.5 Public Hearing Comments (97 letters)

Table 4.1. List of Commenters

Comment Section	Commenter	Comment Category
4.2	**Form Letters Comments/Responses**	
4.2.1	**Biology Commenter**	3
	Donna Bersbach – January 1, 2002 (1/15/02)	
	Robert Brigham – January 1, 2002	
	Shardell Carvaliere – January 1, 2002	
	Anna Cox – January 1, 2002	
	Thomas De Long – January 7, 2002	
	Dorothy Grant – January 1, 2002	
	Roger and Adrienne Heath – January 1, 2002	
	Dan, Huffmad – January 1, 2002	
	Jennifer Hughes – January 1, 2002	
	Toni Jesso – January 1, 2002	
	Lisa Kristal – January 1, 2002	
	Allisun, Marshall – January 1, 2002	
	N and R Nonadem – January 1, 2002	
	Michael Rausch – January 1, 2002	
	Tony and Dora Rizzatte – January 1, 2002	
	Allison Roberts – January 1, 2002	
	Dao San Luis – January 1, 2002	
	Vanessa Watters – January 1, 2002	
	Mark and Karel Wild – No date	
4.2.2	**Urban Runoff Commenter**	6
	James, Adkins – January 1, 2002	
	Richard, Bersbach – January 1, 2002 (1/11/02)	
	Robert Brigham – January 1, 2002	
	Maria Borenstein – January 1, 2002	
	Shardell Cavaliere – January 1, 2002	
	Anna Cox – January 1, 2002	
	Thomas De Long – January 7, 2002	
	Joan Devore – January 1, 2002	
	Dorothy Grant – January 1, 2002	
	Roger and Adrienne Heath – January 1, 2002	
	Dan, Huffmad – January 1, 2002	
	Toni Jesso – January 1, 2002	
	Lisa Kristal – January 1, 2002	
	Allisun, Marshall – January 1, 2002	
	N and R Nonadem – January 1, 2002	
	Michael Rausch – January 1, 2002	
	Allison Roberts – January 1, 2002	
	Vanessa Watters – January 1, 2002	
	John and Shannon Wetzel – January 4, 2002	
4.2.3	**Noise/Dust Commenter**	2, 7
	James, Adkins – January 1, 2002	
	Robert Brigham – January 1, 2002	
	Shardell Cavaliere – January 1, 2002	

Comment Section	Commenter	Comment Category
	Anna Cox – January 1, 2002	
	Thomas De Long – January 1, 2002	
	Teresa Fisher – January 1, 2002	
	Josefine Goberville – January 1, 2002	
	Dorothy Grant – January 1, 2002	
	Roger and Adrienne Heath – January 1, 2002	
	Dan, Huffmad – January 1, 2002	
	Toni Jesso – January 1, 2002	
	Gertrude Jolicoeur – January 1, 2002	
	Lisa Kristal – January 1, 2002	
	Eric, Marshall – January 1, 2002	
	Jesus Mendez – January 1, 2002	
	N and R Nonadem – January 1, 2002	
	Michael Rausch – January 1, 2002	
	Allison Roberts – January 1, 2002	
4.2.4	**Fire Services Commenter**	**8**
	James, Adkins – January 1, 2002	
	Patty Allegro – January 1, 2002	
	Robert Brigham – January 1, 2002	
	Shardell Cavaliere – January 1, 2002	
	Anna Cox – January 1, 2002	
	Thomas De Long – January 7, 2002	
	Dorothy Grant – January 1, 2002	
	Leonard Green – January 1, 2002*	
	Roger and Adrienne Heath – January 1, 2002	
	Dan, Huffmad – January 1, 2002	
	Jennifer Hughes – January 1, 2002	
	Toni Jesso – January 1, 2002	
	Lisa Kristal – January 1, 2002	
	Mr. and Mrs. Sam Licursi – January 9, 2002*	
	Eric, Marshall – January 1, 2002	
	N and R Nonadem – January 1, 2002	
	Michael Rausch – January 1, 2002	
	Allison Roberts – January 1, 2002	
	Mark Watters – January 1, 2002	
	Mark and Karel Wild – January 7, 2002	
4.2.5	**Police Services Commenter**	**9**
	James, Adkins – January 1, 2002	
	Lesl Birkhead – January 1, 2002	
	Robert Brigham – January 1, 2002	
	Shardell Cavaliere – January 1, 2002	
	Thomas De Long – January 7, 2002	
	Joan Devore – January 1, 2002	
	Dorothy Grant – January 1, 2002	
	William Griffin – January 1, 2002*	
	Roger and Adrienne Heath – January 1, 2002	
	Dan, Huffmad – January 1, 2002	

Comment Section	Commenter	Comment Category
	Jennifer Hughes – January 1, 2002	
	Toni Jesso – January 1, 2002	
	Lisa Kristal – January 1, 2002	
	Allisun, Marshall – January 1, 2002	
	N and R Nonadem – January 1, 2002	
	Michael Rausch – January 1, 2002	
	Wagman Robert – January 1, 2002	
	Mark Watters – January 1, 2002	
	Mark and Karel Wild – January 7, 2002	
4.2.6	**Traffic Commenter**	**12**
	James, Adkins – January 1, 2002	
	Lawrence Belkin – January 1, 2002	
	Donna Bersbach – January 1, 2002 (1/15/02)	
	Robert Brigham – January 1, 2002	
	Ryan Carroll – January 1, 2002	
	Shardell Cavaliere – January 7, 2002	
	Ana Certa – January 1, 2002	
	Kris Cooper – January 1, 2002	
	Anna Cox – January 1, 2002	
	Joan Devore – January 1, 2002	
	Thomas De Long – January 7, 2002	
	Sherry Gordon – January 1, 2002	
	Dorothy Grant – January 1, 2002	
	Roger and Adrienne Heath – January 1, 2002	
	Dan, Huffmad – January 1, 2002	
	Jennifer Hughes – January 1, 2002	
	Toni Jesso – January 1, 2002	
	Gloria Kcorn – January 1, 2002	
	Lisa Kristal – January 1, 2002	
	Eric, Marshall – January 1, 2002	
	James McCarron – January 1, 2002	
	Doreen Miller – January 1, 2002	
	N and R Nonadem – January 1, 2002	
	Debbie Parker – January 1, 2002	
	Michael Rausch – January 1, 2002	
	Allison Roberts – January 1, 2002	
	Danny Samari – January 1, 2002	
	Melissa Stein – January 1, 2002	
	Gerald Wahlstrom – January 1, 2002	
	Vanessa Watters – January 1, 2002	
4.2.7	**Development Issues Commenter**	**1, 2, 3, 6, 7, 12, 19, 21**
	Toni Jesso – No date	
	N and R Nonadem – No date	
	Michael Rausch – January 7, 2002	
	Allison Roberts – No date	
	Mark and Karel Wild – No date	

Comment Section	Commenter	Comment Category
4.2.8	**Non-Traffic Commenter**	**21**
	Toni Jesso – No date	
	N and R Nonadem – No date	
	Allison Roberts – No date	
	Mark and Karel Wild – No date	
4.3	**Agency Comments/Responses**	
4.3.1	State of California, Governor's Office of Planning and Research – State Clearinghouse, Terry Roberts, Director - January 11, 2002	21
4.3.2	State of California, Business, Transportation, and Housing Agency – Department of Transportation *(CALTRANS)*, Stephen J. Buswell, Chief IGR/CEQA Branch - February 15, 2002	12
4.3.3	State of California, The Resources Agency – Santa Monica Mountains Conservancy, Judi Tamasi, Project Analyst - January 18, 2002	1,3,19,21,22
4.3.4	Southern California Association of Governments, Jeffrey M. Smith, Senior Planner Intergovernmental Review – January 9, 2002	22
4.3.5	City of Los Angeles, City Council, Hal Bernson, Councilman 12th District – January 22, 2002	8,9,10,11, 12,19,21
4.3.6	City of Los Angeles, Department of Transportation, Sergio D. Valdez, Transportation Engineer – June 6, 2002	12,19
4.3.7	Los Angeles Unified School District, Raymond E. Dippel, Assistant Environmental Planning Specialist, Rena Perez, Director Master Planning and Demographics – February 4, 2002 (January 22, 2002)	10,19
4.3.8	Las Virgenes Municipal Water District, C. Eugene Talmadge, RA, Planning Administrator – January 16, 2002	22
4.4	**Organization/Business Comments/Responses**	
4.4.1	Chatsworth Equine Cultural Heritage Organization, Inc., Jerry England, President – January 22, 2002	1,3,6,7,8,9, 10,12,21
4.4.2	Chatsworth Land Preservation Association, Eskander, S.J – January 9, 2002	1,3,5,6,10, 11,19,21,
4.4.3	Equestrian Trails, Inc., Charlotte Brodie, Trail Coordinator – January 8 and 16 (e-mail), 2002 and April 10, 2002	1,3,6,12,19, 21
4.4.4	Recreation & Equestrain Coalition, Ruth Gerson, President – April 10, 2002	21
4.4.5	Santa Susana Mountain Park Association, Dorian Keyser, Vice-president and Lands Committee Chair – January 11, 2002	3,8,9,10,11, 12,21
4.4.6	Twin Lakes Property Owners Association, Mark Watters, President – March 20, 2002 and April 5, 2002	9,12,14,21
4.5	**Individual Comments/Responses**	
4.5.1	Ray Adams – March 11, 2002	22
4.5.2	Dieter and Margaret Asel – March 26, 2002	22
4.5.3	Michael A. Augello – December 14, 2001 and April 10, 2002	21
4.5.4	Debbie and Larry Belkin – April 2, 2002	21
4.5.5	Lawrence Belkin – January 1 and 7, 2002	8,9,10,12
4.5.6	Richard and Donna Bersbach – January 7, 2002	12
4.5.7	Lesl Birkhead – January 7, 2002	2,6,7,12
4.5.8	Laurie and Larry Borenstein – March 8, 2002	12, 21
4.5.9	Cheryl Bowman – March 8, 2002	2,7,12
4.5.10	Gayle Braddock – January 7, 2002	2,7,12,21
4.5.11	Teresa Brady – January 8 and 10, 2002	3,5,6,21
4.5.12	Caren Bramhall – January 7, 2002	3,6,12,21
4.5.13	Robert Brigham – January 7, 2002	1

Comment Section	Commenter	Comment Category
4.5.14	Fredy Buraye – March 8, 2002	7
4.5.15	William Byers – January 9, 2002	2,7,12
4.5.16	Sally and Cal Cantwell – January 5 and 7, 2002	6,8,12
4.5.17	E Cervantes – January 7, 2002	10,12
4.5.18	Leon Chernock – January 5, 7 and 12, 2002	2,3,6,7,9,12
4.5.19	Ramon Condo – January 7, 2002	12
4.5.20	Kris Cooper – January 7, 2002	12
4.5.21	Susan Cordell – January 7, 2002	3,6,12,21
4.5.22	Doug Crawford – March 8, 2002	12
4.5.23	Andrea Cree – March 8, 2002	2,7,12
4.5.24	James and Vera Cunningham – April 1, 2002	7,12
4.5.25	Thomas De Long – January 7, 2002 and March 8, 2002	7,9,10,11, 12,19
4.5.26	Carl and Janet Deierling – March 31, 2002	12,21
4.5.27	Robert Dittmann – January 7, 2002	12
4.5.28	Diana Dixon-Davis – January 11, 2002	10,11
4.5.29	Harvey Dlugatch – January 17, 2002	2,3,8,9,12
4.5.30	Margarett Dolan – January 14, 2002	7,10,12,21
4.5.31	Vincent Dyer – March 27, 2002	4,12,14,20
4.5.32	Alan and Lori Edwards – April 1, 2002	3
4.5.33	Diane Embree – January 7, 2002	2,3,12
4.5.34	Jerry England – January 7, 10 (e-mail), and 17 (e-mail), 2002; April 2 (e-mail), 4 (e-mail), 11(e-mail), and 24, 2002; May 25, 2002 (e-mail); June 2, 2002 (e-mail)	1,3,6,7,8,9, 10,12,21
4.5.35	Wayne and Jan Evanson – January 9, 2002	6,12
4.5.36	Casiomin Fileh and Anne Joelek – March 8, 2002	10,12
4.5.37	Susan Gerke – January 9, 2002	3,6,8,9,10,1 2
4.5.38	Charles and Sharon Goldstein – January 7, 2002	12
4.5.39	Sherry Gordon – January 7, 2002	12
4.5.40	Barry and Tammy Grant – January 7, 2002	12,21
4.5.41	Jonathan Green – March 8, 2002	2,7,12
4.5.42	Ken and Nancy Gross – January 14 and 16, 2002	10,21
4.5.43	Pete Gross – January 15, 2002	12,21
4.5.44	Ubenberk and Jo Ann Grover – January 7, 2002	21
4.5.45	Nicholas Habib – January 7, 2002	2,7,3,12
4.5.46	Raid Haddad – January 7, 2002	2,7,9,12
4.5.47	Barbara Hahn – March 8, 2002	12,21
4.5.48	Gloria Hawbler – January 7, 2002	12
4.5.49	Roger and Adrienne Heath – January 7, 2002	3,4,6
4.5.50	Bruce Herman – January 7, 2002	2,6,12
4.5.51	Roger Herman – January 4, 2002	2,3,6,8,9,10, 12,21
4.5.52	Carley Hermann – March 8, 2002	12
4.5.53	Eugene Hernandez – January 7, 2002	3,12,21
4.5.54	D. Higgiwin – January 7, 2002	3,6,10
4.5.55	Dan Huffman – January 7, 2002	6,10,12
4.5.56	Jennifer Hughes – January 7, 2002	3,12,21

Comment Section	Commenter	Comment Category
4.5.57	Deborah Jackson – January 10, 2002	2,3,6,7,10,12,21
4.5.58	Kathy Jackson – January 7, 2002	2,6,7,8,9,12
4.5.59	Phil Jackson – January 7 and 8, 2002	2,6,7,8,9,12,21
4.5.60	Charles and Linda Jelloian – March 22, 2002	12
4.5.61	Kjeisten Jeppeson – January 7, 2002	3,21
4.5.62	Toni Jesso – January 7, 2002	3,10,12
4.5.63	Gertrude Jolicoeur – January 7, 2002	3,12,21
4.5.64	Phil Kent – December 22, 2001	7,12
4.5.65	Dorian Keyser – January 11, 2002; June 19, 2002	3,8,9,10,11,12,21
4.5.66	William Korek – January 28, 2002	12
4.5.67	Fred and Linda Krauser – March 8, 2002	12
4.5.68	Wen-Tar Kuo and Lih-Er Chang – April 4, 2002	12
4.5.69	Amarillys Ladette – January 7, 2002	2,3,9,12
4.5.70	Kendall Leigh – January 7, 2002	10
4.5.71	Andrea and Joel Levine – March 8, 2002	21
4.5.72	Gary and Maureen Levitt – January 9, 2002	3,5,6,8,9,10,11,12,19,21
4.5.73	Mr. and Mrs. Sam Licursi – January 9, 2002	3,8,12
4.5.74	Lindeson (21309 Candice Place) – January 7, 2002	12
4.5.75	Kathleen and Michael Malley – January 7, 2002	3,12
4.5.76	Eric and Allisun Marshall – January 7, 2002	2,3,7,8,9,10,12,21
4.5.77	James McCarron – January 7, 2002	12
4.5.78	Laura McCormick – June 12, 2002	12
4.5.79	Laura and Steven McCormick – March 27, 2002	21
4.5.80	Bryan McQueeney – January 14, 2002	12,21
4.5.81	Florence and Antonio Mellone – January 7, 2002	12
4.5.82	Jorg Michaels – January 7, 2002	12,21
4.5.83	Dan and Doreen Miller – January 7, 2002	12,21
4.5.84	Marcia Milo – January 7, 2002	3,10,12
4.5.85	Carol Moran – January 7, 2002	12
4.5.86	Faramarz Nabari – January 7, 2002	3,6,21
4.5.87	John Nelson – January 18, 2002	12,21
4.5.88	Lizzie Novotny – January 7, 2002	3,12,21
4.5.89	Rena Ovadia – January 7, 2002	3,12
4.5.90	Mr. and Mrs. Patel – January 7, 2002	3,10,11,12
4.5.91	Ricardo and Krystal Pauliano – March 8, 2002	2,7,12
4.5.92	William and Sherry Payne – January 10, 2002	21
4.5.93	Andrea Pereson – March 8, 2002	12,21
4.5.94	Ernie Perlich – January 15, 2002	21
4.5.95	Ted Perlin – January 7, 2002	7,12
4.5.96	Roberta M. Phillips – March 8, 2002	2,7,12,21
4.5.97	Karen Placek – March 13, 2002	12,19,21
4.5.98	Larry Rader – January 10, 2002	10,21
4.5.99	Karen Randall – March 25, 2002	10,21

Comment Section	Commenter	Comment Category
4.5.100	Liz Ricci – March 13, 2002	1,2,3,10,12, 13
4.5.101	Liz and Richard Ricci – January 8, 2002	12
4.5.102	Tony Rizzatte – January 1 and 7, 2002	21
4.5.103	Allison Roberts – January 7, 2002	2,3,6,7,8,9, 12
4.5.104	Karen Rogers – January 11, 2002	2,7,12
4.5.105	B.M. Schackel – January 7, 2002	12,21
4.5.106	R.L. Schackel – January 7, 2002	12
4.5.107	Lynn Schattelas – January 7, 2002	10
4.5.108	Gary Schwaegerle – February 14, 2002	21
4.5.109	Harry and Terri Seidman – March 28, 2002	12
4.5.110	Linda Sheehan – March 8, 2002	2,3,10,21
4.5.111	Andrew and Steven Shuman – March 11, 2002	3,7,12,19
4.5.112	Hans Siegenthaler – January 7, 2002	2,3,21
4.5.113	Ray Sipots – January 7, 2002	2,12,14
4.5.114	David Sparhawk – January 7, 2002	12,21
4.5.115	Jerome Spilky – January 7, 2002	3,2,6,7,12, 21
4.5.116	John and Susan Stevenson – January 7, 2002	12
4.5.117	Warren Stone – January 3 and 13, 2002	6,9,10,11,12
4.5.118	Teena A. Takata – April 3 and 9, 2002	6,9,12,21
4.5.119	Donna and Manuel Talamantez – March 28, 2002	1,3,12
4.5.120	Lori Terpenny – January 1, 2002	2,6,7,10
4.5.121	Marla Terrel – January 7, 2002	12
4.5.122	Andrew Thomas – March 27, 2002	1,2,3,7,8,12, 21
4.5.123	Rebecca Thompson – January 7, 2002	3,12
4.5.124	Cindy Todd – January 9 and 10, 2002	6,12,21
4.5.125	Arthur Toga – January 7, 2002	9,10,12,21
4.5.126	Deborah Toga – January 7, 2002	3,8,9,21
4.5.127	Unrecognizable (21309 Candice Pl.) – January 7, 2002	12
4.5.128	Unrecognizable (11043 Eton Avenue) – January 7, 2002	19,21
4.5.129	Unrecognizable (21401 Mayan Drive) – January 7, 2002	3,9
4.5.130	Ana Urban- January 5, 2002	2,7,8,9,10, 12,21
4.5.131	Bill Urban – January 4, 2002	2,3,7,8,12, 21
4.5.132	Joanna Urthank – March 8, 2002	8,12,21
4.5.133	Randy Urthank – April 8, 2002	12
4.5.134	Randy and Joanna Urthank – January 8, 2002	8,12,21
4.5.135	Evelyne Vadenois – March 8, 2002	12,19,21
4.5.136	Jeff, Judith and Olivia Vergel de Dios – March 28, 2002	10,12
4.5.137	Mark Watters – April 5, 2002 and May 1, 2002	18
4.5.138	Vanessa Watters – January 1, 11 and 23, 2002; April 5, 2002; June 19, 2002	3,7,18,21
4.5.139	Patrick Weir – March 26, 2002	12
4.5.140	Katherine Weisman – January 7, 2002	3,12,21
4.5.141	John and Shannon Wetzel – January 4 and 7, 2002	3,6,12

Comment Section	Commenter	Comment Category
4.5.142	Mark and Karel Wild – January 7, 2002	3
4.5.143	Heather Williams – January 12, 2002	10
4.5.144	Judy Williams – January 15, 2002	10,12,21
4.5.145	Marv Williams – January 16, 2002	1,2,3,7,10, 12,21
4.5.146	Martin Woll – December 20, 2001 and January 15 and 16, 2002	12
4.5.147	Martin Woll and David Tweet – December 17, 2001	12
4.5.148	Robin Wright – April 15, 2002	3
4.5.149	Lisa Ybarra – January 10, 2002	3,6,10,12,21
4.6	**Additional Environmental Information Document**	
	Agency Comments/Responses	
4.6.1	State of California, Governor's Office of Planning and Research – State Clearinghouse, Terry Roberts, Senior Planner – May 28, 2003	21
4.6.2	State of California, Business, Transportation, and Housing Agency – Department of Transportation (CALTRANS), Stephen J. Buswell, IGR/CEQA Branch Chief – May 22, 2003	12
4.6.3	County of Los Angeles, Fire Department, David R. Leininger, Acting Chief, Forestry Division Prevention Bureau – August 23, 2002	8,12
4.6.4	County of Los Angeles, Public Library, Michele Mathieu, Administrative Assistant – August 14, 2002	11
4.6.5	County of Los Angeles, Department of Public Works. Rod Kubomoto, Watershed Management Division – October 24, 2002	5,6,12,15
4.6.6	County of Los Angeles, Las Virgenes Municipal Water District, C. Eugene Talmadge, RA Planning Administrator – August 13, 2002	13
	Organization/Business Comments/Responses	
4.6.7	Save Chatsworth, Inc., Philip J. Hess, Attorney – July 24, 2002	3,12,21
4.6.8	Twin Lakes Property Owners Association, Mark Watters, President – May 20, 2003	3,6,20,21
	Individual Comments/Responses	
4.6.9	Lorraine D. Deniz – August 2, 2002	1,3,4,6,8,9, 10,11,12
4.6.10	Gary Schwaegerle – November 15, 2002	21
4.7	**Revised Project Design Summary Document Comments/Responses**	
	Agency Comments/Responses	
4.7.1	Southern California Association of Governments, Jeffrey M. Smith, Senior Regional Planner Intergovernmental Review – July 8, 2003	
4.7.2	County of Los Angeles, Fire Department, David R. Leininger, Acting Chief, Forestry Division Prevention Bureau – July 22, 2003	8,12,21
4.7.3	County of Los Angeles, Department of Public Works, Rod Kubomoto, Watershed Management Division – August 11, 2003	5,6,12,15
4.7.4	County of Los Angeles, Sheriff's Department Headquarters – Facilities Planning Bureau, Gary T. K. Tse, Acting Director – July 10, 2003	9
4.7.5	Save Chatsworth – August 29, 2003	
4.7.6	Santa Susana Mountain Park Association, Jan Miller, President; Nancy Razanski, Vice President – August 27, 2002	
5.5	**Comments Received at Hearing**	
5.5.1*	Presidio Chatsworth Partners LLC, Inc. – Richard E. Garlinghouse	
5.5.2	David Tweet	21
5.5.3	Chatsworth Homeowner – August 20, 2002	22
5.5.4	Recreation & Equestrian Coalition, Ruth L. Gerson, President – August 20, 2002	22

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5.5.5	Equestrian Trails, Inc., Charlotte Brodie, Trail Coordinator – July 16, 2002	34, 21, 22, 6
5.5.6	Chatsworth Historical Society, Linda van der Valk, Co-President – August 25, 2002	6, 21
5.5.7	Chatsworth Historical Society – Linda Van der Valk, Co-president, Charles and Linda Jolloian – August 28, 2002	21, 12
5.5.8	Chatsworth Community Coordinating Council, Linda van der Valk, Board Member – August 25, 2002	6, 21
5.5.9	Irene J. Draghi – August 25, 2002	22
5.5.10	Santa Susana Mountain Park Association – Jan Miller, President	3, 21
5.5.11	Liz Ricci/Richard Ricci – August 18, 2002	12, 21, 6
5.5.12*	Save Chatsworth – September 18, 2003	
5.5.13*	Michael A. Augello – September 3, 2003	
5.5.14*	Teena Takata – September 3, 2003	
5.5.15*	Casimir A. Filek – September 8, 2003	
5.5.16*	Collette M. Bertrand – September 1, 2003	
5.5.17*	Dorian Keyser – August 27, 2003	
5.5.18	Various Postcards	10, 12, 22, 3, 1, 21, 6
5.5.19	Susan Condel	12
5.5.20	[illegible name] – 20935 Francine Cn., Chatsworth	6
5.5.21	Christine Behling	22
5.5.22	Susan Jones	22
5.5.23	Rosemarie White, Ph.D., Chatsworth Nature Preserve, Sierra Club	12
5.5.24	Jan Miller	22
5.5.25	Laura McCormick	12
5.5.26	[illegible name]	12
5.5.27	Carl & Janel Deierling	12, 21
5.5.28	B. Hahn	22
5.5.29	unknown	22
5.5.30	unknown	3
5.5.31	unknown	1
5.5.32	unknown	22
5.5.33	unknown	21
5.5.34	unknown	21
5.5.35	unknown	10
5.5.36	Linda van der Valk	21
5.5.37	Allen Welbourn	12, 21
5.5.38	Maureen L. Leuitt	6
5.5.39	unknown	12
5.5.40	unknown	12
5.5.41	unknown	21, 22
5.5.42	Patricia A. Miller	8, 9, 10, 11, 12
5.5.43	Jan Miller	22
5.5.44	Patricia A. Miller	22
5.5.45	H. Wang	12
5.5.46	Mae & Ed Jung	12
5.5.47	Roberta Phillips	21
5.5.48	Patricia A. Miller	1, 22

Comment Section	Commenter	Comment Category
5.5.49	Ray Vincent	21, 6
5.5.50	unknown	21
5.5.51	John Loew	22, 12
5.5.52	Patricia A. Miller	22
5.5.53	unknown	12
5.5.54	Rosemarie S. White	21, 22
5.5.55	Rosemarie S. White, Ph.D.	22, 12, 3, 21
5.5.56	Caren Bromhall	21, 22
5.5.57	unknown	21
5.5.58	Z. Schutz	6
5.5.59	Diane Embree	22
5.5.60	Z. Schultz	21, 3
5.5.61	Z. Schultz	21
5.5.62	unknown	1, 3
5.5.63	unknown	22
5.5.64	unknown	22
5.5.65	unknown	22
5.5.66	unknown	12
5.5.67	unknown	22
5.5.68	unknown	6
5.5.69	Dorothey Ferningham	21
5.5.70	Eric Zentner	3, 21
5.5.71	unknown	10
5.5.72	unknown	22
5.5.73	Dori Daniels	10
5.5.74	Susan Cordell	21
5.5.75	James Ferningham	6
5.5.76	Judy Lucas	21, 22
5.5.77	unknown	21
5.5.78	Mark Watters	6
5.5.79	Mark Watters	21, 22
5.5.80*	Hollie Meyer and Jerry Weiss	21
5.5.81*	J. Weiss and H. Meyer	21
5.5.82*	Jerry Weiss and Hollie Meyer	12
5.5.83*	Don Devore	12

Notes:
* Letter is out of order in the Appendix B.
** Letter received after Planning Commission Hearing (located at the end of Appendix B).

4.2 FORM COMMENT LETTERS/RESPONSES

This section includes form comment letters, which were sent by multiple individuals for the following issue areas:

- Biology
- Urban Runoff
- Noise/Dust
- Fire Services
- Police Services
- Traffic
- Development Issues
- Non-traffic Issues

Individuals who submitted each form comment letter are identified in Table 4.1.

4.2.1 Form Comment Letter – Biology

Topical Response

As stated in the Draft EIR, regional wildlife movement studies have been prepared for The Nature Conservancy and the Santa Monica Mountains Conservancy (SMMC) and include the vicinity of the project site. No onsite regionally important wildlife movement corridors were identified in these studies. Implementation of the revised project would not prevent the regional movement of wildlife. Although many common animals would be adversely affected by direct impact and/or habitat loss associated with the implementation of the project, impacts to local wildlife populations are considered to be below a level of significance. Local onsite wildlife movement would be affected by the revised project, although these species are expected to move to the open space areas located north, west, and east of the project site and the onsite portions of Devil and Browns Canyons. Wildlife would likely continue to utilize open space portions of the project site via Browns Canyon, upper Devil Canyon and the open space to the north, which provide habitat for a variety of species.

Preservation and dedication of the corridor of willow woodland associated with Devil Canyon, which in some areas exceeds 220 feet in width, provides an important resource for avian species for both local and regional movement. Large blocks of riparian habitat (even when surrounded by development) may serve as islands, providing an archipelago effect, whereby migrating or dispersing birds can stop to forage, rest, or seek cover from predators as they move across the landscape. Regional and local wildlife movement for terrestrial species is constrained in the area by development, but the willow woodland is expected to continue to serve an important function for local and regional avian dispersal and migration.

In addition, the 14-acre Horner property located at the northeast corner of the intersection of Canoga Avenue and SR-118 has been purchased by the MRCA with funds provided by the applicant, the County of Los Angeles, and SMMC. This property would be maintained as permanent open space. This acquisition would allow the existing wildlife corridor through this property, between North Stoney Point and Devil and Brown Canyons to be preserved.

The existing Canoga Avenue underpass of SR-118 is approximately 160 feet in length, and ranges from approximately 80 feet wide at road grade, to 130 to 160 feet wide at the top of the buttress slopes under

the freeway bridge. The height of the bridge above the road grade is approximately 25 feet. The existing 16-foot wide Canoga Avenue is paved, with bare earth on both sides and extending up onto the slopes under the freeway bridge. Vegetation is sparse on the slopes on the south side of the freeway bridge buttresses, and virtually non-existent in the shaded areas under the bridge. The area under the bridge is also frequently used for illegal dumping of refuse. Conditions for movement of wildlife through the underpass are presently tenuous, especially during daylight hours.

The revised project would require roadway improvements of Canoga Avenue under SR-118 to 36 feet of paved width, and improvement of a 12-foot wide equestrian trail that would extend along the eastern side of the road. These improvements would leave an area approximately 32 feet wide for a wildlife corridor through the underpass. With growth of appropriate vegetation and placement of other screening improvements to provide cover for wildlife (see Appendix F.5 of this document), the potential adverse impact to wildlife through the underpass connection between North Stoney Point and Devil Canyon would be mitigated to a less than significant level, for this underpass.

As stated in Section 4.3 of the Draft EIR, with implementation of recommended mitigation measures, no significant impacts to biological resources would occur. Implementation of the project would not result in an impact to any state- or federally-listed wildlife species. Impacts to Plummer's mariposa lily are considered significant if left unmitigated, however with mitigation measures discussed below, the impacts would be reduced to less than significant. Impacts to the various vegetation communities other than oak resources are below a level of significance, as discussed below.

Sixty-one of the existing 353 oak trees would require removal in order to construct the revised project. None of these oak trees are of heritage status. Although specific impacts to oak trees and the oak woodland plant community would be significant, impacts would be reduced below a level of significance with mitigation measures (4.3.8, 4.3.10 and 4.3.11) as stated in Section 4.3 of the Draft EIR. As discussed in Section 4.6 of the Draft EIR, a storm water pollution prevention plan (SWPPP) would be in place to direct, prevent, and/or minimize storm runoff from the work site during construction and thereby mitigate stormwater quality impacts. After construction, sediment and other bulk material contained within storm water runoff from the site is expected to be less than pre-project conditions due to a reduction in erodible surfaces and removal of bulk materials by four debris basins on the project site. Storm water runoff is expected to undergo long-term quality changes following project buildout and transformation into an urban setting. As stated in Section 4.6 of the Draft EIR, a Standard Urban Stormwater Mitigation Plan (SUSMP) would be developed to ensure that pollutants from runoff would not lower the surface water quality of watercourses on the site and downstream. However, these impacts would only be expected infrequently during episodes of storm water runoff from the project site and are not likely to result in significant impacts to biological resources.

Impacts to Plummer's mariposa lily would be mitigated through a 2:1 replacement of impacted individuals, and planted on the mitigation parcel (minimum of 62 acres, 1:1 replacement). A total of 4,000 bulbs would be collected on the project site to be used for mitigation of impacts, per the Biological Resource Mitigation Plan (Appendix F.1 of this document). A qualified biologist would oversee all aspects of this mitigation plan including bulb and seed collection and transplanting. Seed collections would occur prior to collection of bulbs from all lilies within the development envelope. The Plummer's mariposa lily mitigation plan would be reviewed and approved by the County prior to issuance of grading permits. Maintenance of the lilies would be monitored for a period of five years, with annual monitoring reports to be submitted to CDFG and the County. The Plummer's mariposa lily salvage, propagation and transplanting program is designed to retrieve a sizable portion of the onsite bulbs for use in both onsite and offsite habitat enhancement. This includes bulbs collected and transplanted directly to a site within

the same year, stored bulbs, and bulbs grown from seed in a nursery. The salvage program would consist of the following components:

- Prior to grading, seed will be collected and all flagged/mapped bulbs (and any uncovered during removal) will be salvaged. A minimum of 4,000 bulbs will be collected (this represents a 2:1 replacement ratio). If 4,000 bulbs do not inhabit the project site, all bulbs found shall be collected.
- All bulbs will be stored at a qualified native plant nursery.
- Forty percent of the bulbs will be used for transplantation to onsite and offsite preserved habitat in the fall/winter immediately following salvage.
- Twenty percent of the bulbs will be propagated at a qualified native plant nursery to collect seed for starting new plants for transplantation to preserved areas both onsite and offsite.
- Forty percent of bulbs will be stored for a period of five years for annual or bi-annual planting in preserved areas, as determined by a qualified biologist.
- All transplanted bulbs will be maintained, including weed control.
- Monitoring and reporting will be conducted.

As stated in Appendix F.1 of this document, the 159-acre mitigation parcel would provide suitable habitat for Plummer's mariposa lily and the species occurs on this parcel in moderate numbers. Much of the upland areas of the mitigation parcel are suitable for the lily and the species is widespread in moderate numbers. Ample area would be available for the relocation of this species from the project site. In addition, the mitigation parcel would provide mitigation for several biotic communities.

Elements of the mitigation parcel would be the inclusion of riparian willow, oak woodland and coastal sage scrub habitat to compensate for the loss of these habitats with project implementation. The revised project would remove a total of 2.39 acres of coastal sage scrub onsite. While the coastal sage scrub on the project site is degraded, a 2:1 offsite mitigation ratio (4.78 acres) would be implemented given the importance of this habitat to wildlife. The project site also supports 5.73 acres of coast live oak woodland, of which 1.30 acres would be impacted by the revised project. Using a 2:1 mitigation ratio, 2.60 acres of coast live oak woodland would be preserved offsite.

The revised project would impact 0.02 acre of the 9.88 acres of willow scrub/woodland located on the site from grading and 0.01 for fuel modification. Using a 4:1 mitigation ratio, a total of 0.12 acre would be preserved offsite as mitigation. In addition, a total of 353 oak trees and on heritage tree exist on the project site. With project implementation, 61 oak trees would be removed. As the oak trees function as woodland habitat, offsite preservation of 61 oak trees (1:1 ratio) would be implemented. This mitigation would be in addition to the County of Los Angeles Oak Tree Ordinance requirements in order to compensate for the loss of habitat values. In summary, the offsite mitigation property would support, at a minimum, the following habitat types:

- Plummer's mariposa lily - 62 acres (potential and/or occupied habitat).
- Coastal sage scrub – 4.78 acres (represents a 2:1 mitigation ratio).
- Coast live oak woodland – 2.60 acres (represents a 1:1 mitigation ratio).
- Oak trees – 61 trees (represents additional mitigation above that required by the County to account for impacts to biological functions of oak trees).
- Willow woodland – 0.12 acre (represents a 4:1 mitigation ratio).

The preservation of the above offsite habitats, in the ratios specified, would effectively reduce impacts to these plant communities to less than significant.

Biology 1 – Comment

I understand that the Presidio Group has promised to dedicated [sic] 70 acres to the Santa Monica Mountains Conservancy, to the west of the Deer Lake Ranch Project. What is the exact location of this acreage? Does it border the Significant Env(sic)ironment l Area #20 (Santa Susana Mountains) and will its preservation help to maintain the integrity of that area? In reading a letter from Elizabeth A, Cheadle of the Conservancy dated July 26, 2000, she expressed concern that 70 acres was not enough to meet the 50% dedication requirement of the total acreage that all large-scale mountain developments are normally required to make. She outlined some alternatives to mitigate this, and I would like to know if all of her recommendations are being implemented. I am aware of the off-site mitigation parcel that is being used to propagate the Plummer's Mariposa Lily – I hope that this parcel would not be expected to suffice for the off-site open space that she recommends should be provided to in her letter?

Biology 1 – Response

Approximately 49 acres of open space within the project site would be dedicated to the SMMC. The remaining open space would be owned by the Homeowners Association (HOA). In addition, a 159-acre mitigation parcel located north of the project site would be dedicated to the SMMC, for a total of 208 acres of dedicated open space (see F.1 of this document). The open space within the project site is not located within an existing SEA, whereas the 159-acre mitigation parcel is located within an existing SEA.

There is no County requirement to dedicate 50 percent of a project site for open space. The County Zoning Code only requires that a project within an Urban Hillside Management Area have no less than 25 percent of its net area as open space, and that a project within a Non-Urban Hillside Management Area have no less that 70 percent or its net area as open space. Open space, as defined by the Zoning Code, includes: undisturbed natural areas, open space for passive recreation, portions of private yards, parks and open space recreational areas, hiking and equestrian trails, landscaped areas adjacent to streets, and greenbelts (including landscaped manufactured slopes). Under these criteria, the revised project includes approximately 78 percent (176.89 acres) of its net area as open space (see Table 2.3 of this document), not including the 159-acre mitigation parcel. This is more than required under the Zoning Code.

Biology 2 – Comment

The Conservancy will retain 14 acres that create a band around the project (minimum width 10 feet). There are three exceptions to this – 1) Two 175 foot-wide and 4 approximately 90 foot-wide gaps along the 4,250 foot-wide northern subdivision boundary 2) An easement for the developer to put a two-lane access road into the southwestern corner of the subdivision area via a clear span bridge across Devil's Canyon and 3) a 2,125-foot gap along the southern boundary where the project contacts existing Twin Lakes. What are the gaps in this northern boundary that the developer will retain ownership of, referenced to in Appendix C, in the northern boundary for? All of the above is referenced in the Project Mitigation and Initial Study report on page 3.

Biology 2 – Response

Subsequent to public circulation of the Draft EIR, all 10-foot "strips" along the northerly site boundary were dedicated by the applicant to the SMMC. This eliminates the "gaps" referenced in the above comment, as the entire northerly boundary is covered by the 10 foot strip..

Biology 3 – Comment

The developer maintains that the band that the Conservancy will own that will surround the project will keep further development from occurring to the north. Does the Conservancy affirm that they will not sell this property to another developer in the future? Would the trail, slopes, and parks be enough to off-set the less than 50% dedication of open space?

Biology 3 – Response

The 10-foot band, which the SMMC owns in fee, is not sufficiently wide to accommodate structural development under County standards. However, it could be used for trails or open space. Further supporting the limited use of the "band" is the following goal for SMMC, which states:[8]

> "Through Direct action, alliances, partnerships, and joint powers authorities, the Conservancy's mission is to strategically buy back, preserve, protect, restore, and enhance treasured pieces of Southern California to form an interlinking system of urban, rural, and river parks; open space; trails; and wildlife habitats that are easily accessible to the general public."

Based on the above goal, it is unlikely that SMMC would propose to develop dedicated land. However, whether SMMC intends to develop the land dedicated as part of the project is beyond the scope of the EIR.

Please see Biology 1 – Response above regarding the 50 percent dedication of open space.

4.2.2 Form Comment Letter – Urban Runoff

Topical Response

All of the proposed storm water collection and discharge facilities would be constructed to County Department of Public Works standards and would be operated and maintained by that department's Flood Control District (LACFD). The project site would become part of that District and pay its fair share of tax revenues to the LACFD. It would become the LACFD's responsibility to ensure that the project's post-development storm water facilities operate properly. However, it is the responsibility of the developer to design the storm drain water collection, sedimentation, and filtration system to achieve the SUSMP goals.

The drainage concept study for the Revised Project Design was approved by LACDPW in connection with the review of the VTTM. In addition, the developer retained the services of Ferro Engineering to prepare a more detailed storm water quality assessment, and that report has been submitted to some members of the community, as well as to the Planning Commission (see Appendix H of this document for a complete report).

In order to ensure that the storm water quality discharged from the project meets, or exceeds, the RWQCB's standards for oils and hydrocarbons, continuous deflective separation (CDS) systems would be installed at each proposed storm drain outlet prior to discharge into the natural water courses. CDS systems, which have been approved by the LACDPW as "Best Management Practices" devices, would remove trash, soil and other particles, and oil and grease with the use of adsorbants. The removal of the oil and grease by the CDS would result in a storm water discharge quality, which is approximately 67 percent below the limits established by the RWQCB standards for these constituents (see Appendix I of this document). The entire project storm drain system, including the CDS devices, would be operated and maintained by the LACDPW upon completion of it's installation.

8 Santa Monica Mountains Conservancy home page, http://www.ceres.ca.gov/smmc.

The project would construct debris basins along the northerly perimeter to remove approximately 4,590 cubic yards of debris from storm waters which discharge into Devil Canyon. Regarding the use of percolation ponds, the *Chatsworth Formation* bedrock that underlies the project site is considered to be essentially impermeable and non-water bearing. In order to be effective for storm water quality enhancement, percolation ponds must be founded on well draining soils, which provide sufficient depth for filtration to take place through a relatively deep blanket. Otherwise, with shallow soils underlain by deep bedrock formations, storm water constituents would clog the thin filtration blanket and the percolation pond effectively becomes a holding pond with increasingly more deleterious waters. Therefore, since this project site does not provide soil nor bedrock conditions favorable to constructing effective percolation ponds, the filtration systems would be utilized.

In addition, due to the construction of four debris basins, which would remove approximately 4,590 cubic yards of bulk matter from the peak storm water runoff volume traversing the project site, the peak runoff volume from the site into the creek would be reduced from 876 cubic yards per second (cfs) to 458 cfs, thereby reducing potential downstream flood hazards during peak storm events. This reduced runoff volume takes into consideration that there would be increased runoff from the impervious surfaces to be constructed (i.e., roads, roofs, driveways, etc.). Also, each of the post-development points of discharge from storm drains would include construction of "energy-dissipating" structures in accordance with LACDPW standards in order to reduce discharge velocities into Devil Canyon to a non-erosive level.

Urban Runoff 1 – Comment

As a resident of Twin Lakes, I am very concerned about the Deer Lake Ranch Project plan to divert all run-off water through storm drains into Devil's Canyon. Devil's Canyon has a very delicate eco-system that has basically never been disturbed. Currently, the area that runs off into that canyon has only 7 homes, 4 of which are occupied. If you add in 484 additional homes and the pollutants that go with that, all the natural habitat and wildlife will be threatened! I fail to see how removing natural vegetation, even if it reduced the run-off, and having polluting chemicals run through the basin instead, would be good for the creek bed's eco-system. There are currently storm drains that take the run-off from lower Twin Lakes into the Brown's Canyon wash. The run-off from the new project should be diverted through storm drains that hook up to these, bypassing the natural bed.

Urban Runoff 1 – Response

As stated in Appendix I of this document, the Clean Water Act (§303) requires states to develop water quality standards for all inland surface and ocean waters. In addition, the California Water Code (§13241) specifies that each RWQCB establish water quality objectives. The RWQCB – Los Angeles Region has developed a Basin Plan that designated beneficial uses for waters in the State of California to protect water quality. They also established water quality objectives that, along with the beneficial use designations, were used to form water quality standards for all surface water of the state.

Surface water runoff from the project would discharge into Devil Canyon which discharges into Browns Canyon Wash (Hydrologic Unit No. 405.21), which is part of the Los Angeles River basin within the Los Angeles Basin. The LACDPW collected samples from 27 different monitoring stations throughout the basin for a period from 1994 to 2000 to determine the quality of storm water runoff from various areas of land use. The land use areas evaluated included: high-density single-family residential, multi-family residential, and mixed residential. The water quality parameters analyzed included chemicals and metals of concern including oil, grease and pesticides.

The testing conducted by the LACDPW identified only Benzo(a)anthracene (primarily attached to particulates) and bacteria at concentrations of concern in storm water. No pesticides occurred at levels of concern. As stated above, the project proposes to use CDS systems. These systems remove trash, soil and other particles and, with the use of adsorbents, oil and grease. The systems, as

proposed, would reportedly remove the Benzo(a)anthracene to below levels of concern, would remove 80 to 90 percent of the oil and grease using sorbents, and would remove all of the bacteria attached to the trash and particulates captured in the CDS. The LACDPW and RWQCB support the installations as acceptable BMPs for residential developments in Los Angeles County. The CDS also satisfies the State Resources Control Board Resolution No. 68-18 (Antidegredation Policy) as the best "practicable" treatment or control of the discharge necessary to assure that: (1) a pollution or nuisance will not occur; and (2) the highest water quality consistent with maximum benefit to the people of the State will be maintained. Further, the CDS system also satisfies the Clean Water Act requirement of, "Reduce the discharge of pollutants from storm water conveyance systems to the Maximum Extent Practicable." Therefore, as proposed, the storm water discharge system meets the requirements of the RWQCB Basin Plan.

As discussed in Section 4.6 and Appendix K of the Draft EIR, the Devil Canyon watershed area includes approximately 5,316 acres which discharge approximately 14,320 cfs of peak storm water runoff, including bulk materials, into that watercourse at its confluence with Browns Canyon. Of the total project area of 230 acres, 225 acres are tributary to Devil Canyon (the remaining 5 acres drain southerly under the SR-118 to a culvert) which represents approximately 4 percent of this tributary area of 5,316 acres. Approximately 179 acres of the total project area within the Devil Canyon drainage basin would be natural open space or planted areas (permeable surfaces), leaving approximately 51 acres, or one percent of the total drainage area, for impermeable surfaces.

The project is part of a 317-acre sub-drainage area of the Devil Canyon watershed. This 317-acre sub-drainage area generates approximately 876 cfs of peak storm water runoff, including bulk materials. However, with the project construction of four debris basins, which would remove approximately 4,590 cubic yards of bulk materials from the 876 cfs runoff volume, the peak storm water runoff after development from the project sub-drainage area would be reduced to approximately 458 cfs of peak runoff volume. Although the project's approximate 52 acres of impermeable surfaces would increase the amount of peak storm water runoff, the net effect of removing 4,590 cubic yards of debris would be to reduce the peak runoff volume by 418 cfs, or approximately three percent of the existing peak storm water runoff volume within Devil Canyon at its confluence with Browns Canyon. Therefore, the project would have no adverse impact on either the volume or the surface level of storm water within Devil Canyon.

Regarding diversion of project storm drain runoff from Devil Canyon directly to Browns Canyon, an engineering analysis has been conducted by B&E Engineers to evaluate the facilities required to implement such a proposal (see *Drainage Study, Diversion of Water Run-Off From Devil Canyon To Brown Canyon, Tract No. 53138*; B&E Engineers, included in Appendix I of this document). This analysis concludes that a system for such diversion of storm water runoff would consist of three large pump stations and approximately 3,200 feet of pressurized pipe (force main). In addition, approximately 1,500 feet of force main would have to be constructed across property, which the applicant does not own. In response to the B&E study, the LACDWP has stated:

> *"Diversion is not acceptable. This may have possible/potential adverse effects to properties downstream of the discharge point and potential adverse effects to canyon habitat as a result of the alteration of the drainage pattern. Any alteration to the existing drainage pattern may require offsite drainage acceptance and possible letter of intent. The use of pump stations to convey diverted flows is not satisfactorily supported."*[9]

In addition, even if it were otherwise feasible to divert the project storm water runoff, the same stringent federal, state, and local water quality requirements, as discussed above, would have to be

9 E-mail memorandum, dated April 3, 2002 from Mo Kajbaj, Department of Public Works.

met. In addition, diversion of stormwater from Brown's Canyon (bypassing Devil Canyon) would impact the sustainability of riparian vegetation and habitat within Devil Canyon.

Urban Runoff 2 – Comment

The developer's plan to mitigate with a SUSMP (Standard Urban Storm Water Mitigation Plan) will not be sufficient- no matter how many signs you post or how much you try to educate people about the hazards of household products and yard wastes, these substances will continue to pollute the water run-off. The amount of polluted run-off from a building project of this scope will be enormous. Will the series of filtration points be adequate to remove all toxins? How will the use of non-toxic pesticides and fertilizers by the developer in landscaping the project be enforced?

Urban Runoff 2 – Response

Please see Urban Runoff 1 – Response of this document.

Urban Runoff 3 – Comment

I feel that the EIR deals with this matter in a totally inadequate manner. If we are to preserve the small amount of untouched areas that we have left amidst our increasing degree of urban development, we must be more creative in solutions to hazardous waste management.

Urban Runoff 3 – Response

The system proposed to storm water management is designed to meet the required SUSMP standards. Hazardous waste management is not considered to be part of these standards.

4.2.3 Form Comment Letter – Noise/Dust

Topical Response

As stated in the Draft EIR, implementation of the project would not result in significant short-term noise impacts associated with construction activities, due to intervening terrain and compliance with County noise ordinances. Traffic noise is also concluded to not result in significant impact. Onsite noise exposure associated with the project would not be significant with implementation of the associated mitigation measures.

Regarding impacts due to dust during construction operations, the developer shall comply with the South Coast Air Quality Management District (SCAQMD) Rule 403 at all times, which requires in part that:

> *"A person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source."*

Mitigation to comply with this requirement includes having water tanks and water trucks available onsite 24 hours per day, 7 days per week prior to and during any grading operation. This would ensure that all disturbed soils can be kept at optimum moisture content in compliance with SCAQMD Rule 403. In addition, SCAQMD Rule 403, Section (f)(3), the applicant would be required to obtain an approved fugitive dust emissions control plan from the District's Executive Officer. This approved plan must "*...demonstrate that the applicable best available control measures, or reasonably available control measures will be utilized and/or installed during all periods of active operation.*"

With incorporation of these mandated mitigation measures, dust emissions from short-term construction activities would not be significant.

Noise/Dust 1 – Comment

I live in the Twin Lakes area, and I am very concerned about the impact of construction from the Deer Lake Ranch development project.

Regarding the impact of construction noise, Section 4.7, mitigation measures for the Twin Lakes area should include some way to assure us of the developer's compliance with County of Los Angeles Noise Ordinance, Title 12, Section 12.08.440. The time limits on construction work should be clearly defined, we need a hotline phone number for complaints, and there should be penalties for non-compliance. We should be advised on how many pieces of machinery can be operating at once and make sure that they are required to use newer equipment with noise-shielding devices. Many of our homes in Twin Lakes are older homes, with exterior walls and windows that were not designed to deflect sound, and many do not have central air conditioning. Will the County standard 45 dB(A) CNEL mandated for the interior of residences to be maintained? Are the typical structures used to determine that 20 dB is normal for indoors with window closed-are any of these older homes, without air conditioning, and located in the San Fernando Valley, which experiences extremely hot weather during the summer months?

Noise/Dust 1 – Response

As stated in Section 4.7 of the Draft EIR, the project shall adhere to the requirements of the County of Los Angeles Noise Ordinance to ensure that construction activities would not result in a significant impact, including to those older homes within the Twin Lakes community (with single-paned windows). In addition, Appendix E of this document includes additional measures to be implemented to further mitigate impacts from construction activities, including the following:

- No Saturday, Sunday or County-observed holiday grading operations shall be permitted.
- Offsite vehicular traffic through the Twin Lakes community by construction equipment and/or contractors vehicles shall be prohibited. In addition, the subdivider shall specify authorized routes for construction-related vehicles, including delivery and contractor employee vehicles, through the area bounded by DeSoto Avenue, Devonshire Street, Topanga Canyon Boulevard, and SR-118. Subdivider shall post necessary signs and/or personnel at all entries to Twin Lakes and streets not permitted as authorized routes to ensure enforcement of these prohibitions.
- No access of heavy construction equipment or vehicles, or delivery of construction materials shall be permitted onto the project site via Canoga Avenue prior to 9:00 A.M. and after 2:00 P.M., Monday through Friday.
- The subdivider shall make available to the Twin Lakes Property Owners Association, the Chatsworth Neighborhood Council, and other interested residential or equestrian groups, and post at the entry points to the project site, the name and 24-hour telephone number of the project's general contractor and the applicant's site representative (which may be the general contractor) to ensure a continuous line of communication between all parties. The telephone number shall be toll free. The representative of the subdivider who monitors the telephone line shall have a weekend/evening contact list for all contractors and subcontractors on the job site. The sign shall be in English and the predominant second language(s) in the area, and shall also include the phone number(s) of the Los Angeles County Regional Planning - Zoning and Enforcement Section, LACDPW - Building and Safety Division, and SCAQMD.

Noise/Dust 2 – Comment

How will the developer be monitored as to controlling dust levels, which will be significant, considering the amount of grading? Who will oversee the project and make sure that they are following through with section 4.2-1 (regarding dust control)? Where is the wind measured- wind levels vary greatly throughout the valley and our ridge is known for extremely gusty winds that some other portions of the valley may not experience? The wind must be measured on-site!

Noise/Dust 2 – Response

Mitigation measures would be implemented in accordance with SCAQMD requirements under an approved fugitive dust emission control plan. as described above. In addition, under SCAQMD Rule 403 Section (d)(4), if sampling is conducted, samples shall be "reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized." It should be noted that under SCAQMD rules, it is not the velocity of the wind that necessarily determines if grading operations must cease, but instead it is the amount of particulate matter in the air downwind of the project site (i.e., particulate matter (PM_{10}) levels shall not exceed 50 micrograms per cubic meter) as determined by the sampler.

Also mitigation measures included in Section 4.2 of the Draft EIR would be implemented in accordance with the Mitigation Monitoring Plan (included in Appendix D of this document), including the following"

- In conjunction with grading activities, clearing of native vegetation shall be done over small areas sufficient to accommodate only short-term grading operations. This will ensure minimum exposure of unprotected soils at any one time.
- Each graded slope shall be mulched and hydroseeded as soon as practical after completed.
- Water tanks and water dispersal trucks shall be brought on site prior to start of grading to ensure that all exposed and/or graded areas are kept sufficiently moist to prevent airborne dust, in accordance with SCAQMD Rule 403.

In addition to monitoring by SCAQMD inspectors, the County grading inspector has legal authority at all times to shut down grading operations if dust is generated by graders due to high winds, and to order that immediate dust control measures be implemented over newly graded areas.

Noise/Dust 3 – Comment

What are the exact hours defined as "peak travel periods" and what are [sic] roads will be permissible for the construction vehicles to park on, per section 4.2-3? Will Canoga be used as a main thoroughfare for construction vehicles and construction worker traffic?

Noise/Dust 3 – Response

Peak travel periods, as applied to peak traffic generation data are defined in Section 4.12 of the Draft EIR as between the hours of 7:00 and 10:00 A.M. and between 3:00 and 6:00 P.M. Regarding permissible hours of travel for construction-related vehicles, no access of heavy construction equipment or vehicles, or delivery of construction materials, will be permitted onto the project site via Canoga Avenue prior to 9:00 A.M. and after 2:00 P.M., Monday through Friday. No such access or deliveries will be permitted on weekends or holidays.

Offsite vehicular traffic of construction equipment and/or contractor's vehicles through the Twin Lakes Community will not be permitted. In addition, the subdivider will specify authorized routes for construction related vehicles, including delivery and contractor employee vehicles, through the area bounded by DeSoto Avenue, Devonshire Street, Topanga Canyon Boulevard and SR-118. The subdivider will post the necessary signs and/or personnel at all entries to the Twin Lakes Community and streets not permitted as authorized routes to ensure enforcement of these prohibitions.

All vehicles construction personnel vehicles (including those of outside suppliers and independent contractors) will be parked onsite. Parking of such vehicles will not be permitted along Mayan Drive, Canoga Avenue, or within any portion of the nearby communities.

Noise/Dust 4 – Comment

I feel that the Draft EIR is incomplete in addressing these areas and needs more study.

Noise/Dust 4 – Response

The Draft EIR was prepared in accordance with the *CEQA Guidelines* and the County of Los Angeles Department of Regional Planning *Environmental Document Reporting and Procedures Guidelines*. In addition, copies of the Draft EIR were distributed to the SCAQMD for review. No additional analysis of noise and air quality issues is required, and the above responses are provided to answer specific comments submitted on these issues.

4.2.4 Form Comment Letter – Fire Services

Topical Response

The revised project would conform to applicable County Fire Department Code and ordinance requirements or standards for construction, access, water mains, fire-flow and fire hydrants and would not impair emergency access to the site or cause an increase in emergency response times. Impacts to fire protection services would not be significant. Mitigation measures are recommended to ensure impacts would remain minimal and would be consistent with County fire protection requirements.

Fire Services 1 - Comment

I live in the Twin Lakes area, and I am very concerned about adequate fire protection if the Deer Lake Ranch project is implemented.

Fire Services 1 - Response

As stated in Section 4.8 of the Draft EIR, the County Fire Department has indicated that the level of staff is adequate to meet fire suppression and emergency medical needs of the project and no additional staff or service would be required. Subsequent to distribution of the Draft EIR at a community meeting (August 1, 2002), Battalion Chief Michael J. Singer (from the County Fire Department Operations Bureau) discussed the fire protection and emergency medical services for the unincorporated area of Chatsworth, including the project site (service area). The following issues were addressed by Chief Singer and were also included in Section 4.8 of the Draft EIR:

County Fire Station

- The nearest County fire station is Station No.75, located on Lake Manor Drive in Chatsworth. It is approximately 5.4 miles from the service area.
- In addition to fire suppression services, Station No.75 provides emergency medical service (EMS) to the service area.

City of Los Angeles Services

- The County and the City of Los Angeles have an "automatic aid" agreement to provide both fire suppression and EMT services to the service area on an as needed basis. County Fire Station No. 75 would also provide such services within the City as needed.[10]
- The most likely City respondents to an emergency under the automatic aid agreement would be City Fire Station Nos. 28, 96, and 7, which are located approximately 2.8, 2.3 and 3.3 miles, respectively from the service area.

In addition to the above, all applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans would be fully enforced. The current fire protection services supplied to the Twin Lakes area would not be reduced. Further with implementation of the revised project, a large source of wild fires would be removed.

10 Note that under the automatic aid agreement, Ventura County Fire Station #43 would also be available for emergency service to the service area.

Fire Services 2 - Comment

A letter from Acting Chief, Forestry Division, Prevention Bureau, David R. Leininger, dated September 5, 2001, requested that a helispot be provided. This is not listed, I believe, in the mitigation measures in section 4.84 of the EIR. Will the county enforce this? Also, where are the other letters referenced by Mr. Leininger from the County of Los Angeles Fire Department? They do not appear to be in the NOP Appendix A.

Fire Services 2 - Response

Section 4.8.2 of the Draft EIR states that the project applicant has agreed to grant the Fire Department an easement over land in the northeast corner of the project site (see Figure 2.7 of this document) as a "heli-spot," as shown on the VTTM included in Appendix C.1 of this document. The construction of the heli-spot is not listed in the Draft EIR as a mitigation measure, as it is part of the project design. However, construction of the heli-spot will be made a condition of approval of the VTTM by the County (see Appendix E of this document).

A letter from David R. Leininger, Acting Chief Forestry Division, Prevention Bureau, County of Los Angeles Fire Department, dated August 28, 2001 and received September 5, 2001 is included in Appendix A.3 of the Draft EIR in response to the County Departmental review of the Draft EIR prior to public distribution. No letters were received from the County of Los Angeles Fire Department on the NOP. Other letters referenced in Section 4.8 of the Draft EIR were various communications (telephone conversations, etc.) used to provide analysis of impacts to fire services.

Fire Services 3 - Comment

Will the developer be required to improve roads within the existing Twin Lakes community, to assure that the fire department will be adequately able to protect these older homes in the event of a large fire and with so many more homes in the development project to service?

Fire Services 3 - Response

There is no requirement to improve the existing private drives (roads) within the Twin Lakes community. However, the applicant has agreed to provide a monetary grant to the Twin Lakes HOA, which could be used to make appropriate improvements to the Twin Lakes internal private road system.

As stated in Section 4.8.2 of the Draft EIR, construction of new or existing roadways to improve fire lane access to the site and to the main entry points of the existing Twin Lakes development would be included as part of the project. This would allow fire and emergency medical vehicles more rapid access to the Twin Lakes community when responding to neighborhood calls. Therefore, operation of the project would result in improved access to the project site and the adjacent Twin Lakes community.

Fire Services 4 - Comment

How will we be assured that the increase in property tax revenue for fire protection generated by the building of these homes will be ear-marked to pay for additional services needed in our own area?

Fire Services 4 - Response

As stated in Section 4.8.3 of the Draft EIR, the project would contribute via property taxes to the County's funding for fire protection services. Property tax revenues go directly to the County's general fund, which is designed to provide adequate County services including fire protection.

In addition to property taxes, the developer is required to pay fees to the Fire Department as a condition of obtaining building permits.

Fire Services 5 - Comment [11]

In the anexation [sic] of the Twin Lakes to the LVMWD it was said that in the future to develope [sic] the Deer Lake area they would require a tank be placed on the hill in that area.

Fire Services 5 - Response

As stated in Appendix K of the Draft EIR, sufficient capacity and water pressure is available in the existing LVMWD (Twin Lakes) tanks to accommodate the domestic and fire flows required for the project and the existing Twin Lakes community. Therefore, no new tanks would be required.

4.2.5 Form Comment Letter – Police Services

Topical Response

Implementation of the project would include physical changes to the environment and would increase resident population. Although this increase would not result in a significant change in the current officer to resident ratio, the Sheriff's Department indicated implementation of the project would require additional officers.

As stated in Section 4.9 of the Draft EIR, the project would contribute via property taxes to the County's funding for police protection services. Property tax revenues go directly to the County's general fund, which is designed to provide adequate County services including police services. Therefore, no significant impacts are anticipated.

Police Services 1 - Comment

I live in the Twin Lakes area, and I am very concerned about adequate sheriff's protection if the Deer Lake Ranch project is implemented.

Police Services 1 - Response

As stated in Section 4.9 of the Draft EIR, implementation of the project would provide an additional funding source for additional officers required to serve the project area as well as improving emergency access to the existing Twin Lakes community. Impacts would not be significant. In addition, subsequent to distribution of the Draft EIR, the applicant has agreed to construct a facility suitable for use as a Sheriff storefront facility to service the project area, as shown on the VTTM in Appendix C.1 of this document. The construction of this facility is included in an additional mitigation measure (see Appendix E of this document):

This would further mitigate impacts to less than significant.

Police Services 2 - Comment

Even though our area is rural in nature and the predominant crime has been determined to be burglary from vehicles, per section 4.9 of the EIR, 484 homes would add significantly to calls to the police. The Sheriff's Department acknowledges that additional deputies may be required. The developer has promised to provide a "storefront" station to house sheriff personnel and a park ranger. Can we be assured that the additional tax revenue collected from these additional 484 homes will go towards staffing this station? Will the providing of this station be detailed in the final EIR?

Police Services 2 - Response

The Sheriff's storefront station would be constructed by the developer as shown on the VTTM and the CUP Exhibit "A" (see Appendix C.2 of this document) (see Police Services 1 – Response). As presently proposed, the facility would be owned and maintained (exterior) by the HOA and provided for the Sheriff's use under a long-term leasing arrangement. The facility could also be dedicated to the County. Appendix E of this document contains additional information regarding the proposed

11 This additional comment was handwritten on the bottom of the Form Letter submitted by Leonard Green.

Sheriff's Department Substation. Tax revenue generated by the project would go into the general fund, a portion of which is allocated for Sheriff services. Exactly where funding is to be allocated is the responsibility of the Sheriff's Department and the County Board of Supervisors and is beyond the scope of the EIR.

Police Services 3 - Comment

Average response time currently to our area in the event of an emergency is 9.5 minutes. Nine and a half minutes is a long time if someone's life is in danger. I would like to know what average response times are in other areas such as Porter Ranch and the section of Chatsworth that is incorporated into the City.

Police Services 3 - Response

As stated in Section 4.9 of the Draft EIR, police protection services within the City of Los Angeles are provided by the City of Los Angeles Police Department. Areas surrounding the project site, within the City of Los Angeles (including Related Project No. 7, Porter Ranch) are served by the City of Los Angeles Police Department (Devonshire Community Police Station), which is located at 10250 Etiwanda Avenue in Northridge, approximately two miles from the southeasterly portion of Porter Ranch. The Devonshire Community Police Station serves an estimated 240,000 residents, which encompasses 53.9 square miles. The average emergency response time in 2001 was 10.1 minutes.[12] Figure 4.8.1 in the Draft EIR has been updated to show the locations of the nearest County facilities in relationship to the site (see Section 3.0 of this document).

Police Services 4 - Comment

I believe that measures need to be taken to ensure additional sheriff's protection if this project is implemented in its current form, or a reduction in size should be considered. Alternative #3 of 171 homes, outlined in Section 5, would help alleviate concerns about adequate protection.

Police Services 4 - Response

Please see Police Services 1 and 2 – Responses regarding adequacy of police services. Although Alternative No. 3 (described in Section 5.4.3 of the Draft EIR) would result in a decrease in demand for police protection services, the response time would be similar to those associated with the project since the physical distance would remain the same. In addition, implementation of Alternative No. 3 would result in less tax revenue that could be used by the Sheriff's Department for improvements.

Police Services 5 - Comment[13]

As a long time resident of the Twin Lakes area it is my considered opinion that in as much as the current protetection [sic] afforded to our area is very sporadic at best, that an increase of at least 35 % more on site patrolling would be very much appreciated.

Police Services 5 - Response

The comment has been received and noted and will be forwarded to the decision makers. Although it is not required through implementation of the project to provide solutions to problems associated with existing developments, it is anticipated that the construction of the Sheriff's Facility (see Police Services 1 and 2 – Responses) would provide the basis for increased Sheriff patrols in the future.

4.2.6 Form Comment Letter – Traffic

Topical Response

Appendix K of this document includes the updated traffic study report by Linscott Law & Greenspan (dated April 9, 2003) for the Revised Project Design. The Revised Project Design with 388 residential

12 Personal Communication with Police Officer Wong, Los Angeles Police Department, March 28, 2002.

13 This additional comment was handwritten on the bottom of the Form Letter submitted by William Griffin.

units is expected to generate 332 vehicle trips during the A.M. peak hour, 364 vehicle trips during the P.M. peak hour, and 3,608 daily trips during a typical weekday over a 24-hour period. These traffic volumes constitute a 20 percent reduction from those identified for the 484-unit project described in the Draft EIR.

Project related impacts are is anticipated at the following intersections:

- Topanga Canyon Boulevard and SR-118 westbound on/off ramps
- Topanga Canyon Boulevard and SR-118 eastbound on/off ramps
- DeSoto Avenue and Chatsworth Street
- Canoga Avenue and Chatsworth Street

However, implementation of the required traffic mitigation measures for the revised project (which will not be reduced from those identified in the Draft EIR) would improve operations at these intersections. The required mitigation measures would mitigate not only impacts associated with the project to a less than significant level, but will also mitigate a significant portion of existing and future traffic congestion not related to the project (see Appendix K of this document).

A Congestion Management Program (CMP) analysis was also prepared (see Appendix K of this document). The CMP is a state-mandated program intended to address the impact of local growth on the regional transportation system (i.e., SR-118). Traffic generated by the revised project would not surpass the minimum traffic thresholds for a freeway impact assessment and therefore, further study of the project's potential impact on SR-118 is not required.

Subsequent to distribution of the Draft EIR, the California Department of Transportation requested that the applicant provide a fair-share contribution toward the long-term traffic improvements at the Topanga Canyon Boulevard/SR-118 interchange within the right-of-way as determined by a Project Study Report (dated February 15, 2002).[14]

The applicant has agreed to contribute $107,753. Caltrans has agreed that this voluntary contribution and the required mitigation (see Appendix K of this document), satisfies Caltran's concerns regarding future long-term impacts on the state freeway system set forth in their letter. .

Traffic 1 – Comment

I am concerned about the increase of traffic on Canoga Ave. and other adjacent streets that will surely take place if the Deer Lake Ranch project is implemented in its current form.

Traffic 1 – Response

The Draft EIR provides an evaluation of potential traffic impacts to Canoga Avenue due to the project (Section 4.12 of the Draft EIR). The forecasted project traffic volumes at key intersections along Canoga Avenue are shown in the Draft EIR on Figures 4.12.7 and 4.12.8 for the A.M. and P.M. peak hours, respectively. The Draft EIR concluded that the project would not create significant traffic impacts on Canoga Avenue, based on the significance thresholds adopted by the City of Los Angeles Department of Transportation (LADOT), which are identified in Section 4.2.12 of the Draft EIR. Therefore, no mitigation measures have been recommended for Canoga Avenue.

Subsequent to distribution of the Draft EIR, an updated traffic study report for the Revised Project Design (388-unit project) was prepared (see Appendix K of this document), which evaluated potential impacts along Canoga Avenue at three intersections: Rinaldi Street, Chatsworth Street, and Devonshire Street. The updated report concluded that the revised project would result in a reduction

14 This is not required per CEQA and is inconsistent with applicable requirements such as "nexus" and "rough proportionality."

of 20 percent in peak-hour and average daily traffic generation as compared to the originally proposed project. The report further concludes that incremental, but not significant impacts would occur at these intersections. Although no mitigation measures are required based on the LADOT significance criteria, the applicant has proposed a list of voluntary traffic improvements, including improvements along Canoga Avenue (see Appendix E of this document). These improvements were approved by LADOT (see letter dated June 6, 2002 in CUP Exhibit A-2 in Appendix C.2 of this document).

Regarding other adjacent streets, it should be noted that mitigation measures were proposed at significantly impacted locations to mitigate all project related impacts to less than significant levels. The assignment of project trips provided in the traffic study was prepared based on the project site plan, existing traffic volumes and characteristics of the local roadway network, as well as regional origins and destinations. Regional traffic distributions (i.e., traffic assigned to the SR-118 freeway) also consider computer traffic model forecasts provided by the Metropolitan Transportation Authority as summarized in the *1999 Congestion Management Program for Los Angeles County*. The project trip distribution pattern was approved for use in the traffic study by the County's Traffic and Lighting Division, as well as LADOT.

Traffic 2 – Comment

I think that the draft EIR has not sufficiently studied the impact that 484 homes will have on all our streets – not just the streets that have 118 freeway access points. It is disturbing to me that the developer conducted a traffic study with not all schools in session and purportedly used incorrect tables to estimate the amount of trips by vehicles per day, given the nature of the houses to be built, and times of day at which these trips would be made. I understand a new study has been done, and feel that additional time should be allotted to review this new study and check it for accuracy.

Traffic 2 – Response

A list of the study intersections evaluated for potential project-related traffic impacts was provided in the Draft EIR as determined by County of Los Angeles Traffic and Lighting Division staff, with confirmation provided by the LADOT. The study intersections were selected based on the anticipated travel routes of project related vehicular trips. An updated list can be found in detailed discussion in Appendix K of this document.

Regarding the distribution of project traffic to the local street system, the methodology utilized for assigning the forecasted project trips to the local street system is described in the Draft EIR on page 4.12-18. Figure 4.12.6 of the Draft EIR provides the project traffic distribution pattern approved for use in the Draft EIR by the County's Traffic and Lighting Division and LADOT. The figure indicates that approximately 62 percent of the project trips are anticipated to use Topanga Canyon Boulevard (via "A" Street) for access with the remaining 38 percent utilizing Canoga Avenue. The project traffic distribution pattern provides a reasonable basis for assessing the traffic impacts associated with the project.

Observations were conducted of trip distribution activity associated with the existing Twin Lakes community located immediately south of the project site. Similar to the project, the Twin Lakes community is located north of SR-118 and has access to both Topanga Canyon Boulevard and Canoga Avenue. These observations concluded that approximately 75 percent of the Twin Lakes traffic utilized Topanga Canyon Boulevard while 25 percent utilized Canoga Avenue. These findings are summarized in a correspondence dated January 9, 2002 (from Linscott, Law and Greenspan) and has been provided to the County's Traffic and Lighting Division and LADOT. Therefore, the trip distribution observations conducted at the existing Twin Lakes community provide further support to the conclusion that the project traffic distribution pattern utilized in the Draft EIR provides a reasonable basis for assessing the traffic impacts of the project. As stated before, an updated traffic study report can be found in Appendix K of this document.

The existing traffic counts used in the Draft EIR were collected in accordance to policies and procedures set forth by the County's Traffic and Lighting Division and LADOT. Upon additional review of the schedules of local schools, only one school (Chatsworth Hills Academy private school located on Rinaldi Street west of Canoga Avenue) was confirmed to not be in session at the time of the traffic counts. Local schools associated with the LAUSD, as well as the Sierra Canyon private school, were determined to be in session at the time of the traffic counts. Therefore, the traffic counts utilized in the Draft EIR traffic analysis provide a reasonable basis for assessing the traffic impacts of the project. Supplemental traffic counts were conducted at the study intersections in December 2001 and January 2002 when all local schools (public and private) were in session. It was concluded that based on a traffic impact analysis using these updated traffic counts that no changes occurred regarding the conclusions with respect to potential traffic impacts of the project and the recommended traffic mitigation measures. These findings are summarized in a correspondence dated January 9, 2002 and has been provided to the County's Traffic and Lighting Division and LADOT. The traffic analysis based on the updated traffic counts further support the conclusion that the traffic counts utilized in the Draft EIR traffic analysis provide a reasonable basis for assessing the traffic impacts of the project.

The trip generation forecast for the project is provided in the Draft EIR on page 4.12-17. The forecast was prepared based on generation rates provided in the *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE). The ITE manual is required for use in preparing traffic studies by the County's Traffic and Lighting Division and LADOT.

The trip generation data provided in the ITE manual is based on traffic studies conducted at 300 existing residential developments. The residential developments evaluated by ITE vary in product size (i.e., number of square feet and bedrooms per unit). Although it is noted in the *Trip Generation Manual* that there is a tendency for developments with larger homes to produce a greater number of trips, these tendencies are not statistically significant and the *Trip Generation Manual* provides no recommendations or procedures for adjusting trip generation forecasts based on product type or size. Therefore, the ITE trip generation rates utilized in the Draft EIR traffic analysis provide a reasonable basis for assessing the traffic impacts of the project.

Observations were conducted of trip generation activity at a nearby existing residential development in Porter Ranch that features a product type similar to the project. It was concluded that trip generation activity at the existing development in Porter Ranch was somewhat higher than the ITE trip generation rates in the A.M. peak hour, but lower than the ITE trip generation rates in the P.M. peak hour. In combining the A.M. and P.M. peak hour data, the number of trips generated by the Porter Ranch development was nearly identical to the number of trips forecasted using the ITE trip generation rates. These findings are summarized in a correspondence dated January 9, 2002, and has been provided to the County's Traffic and Lighting Division and LADOT. Therefore, the trip generation observations conducted at the existing residential development in Porter Ranch provide further support to the conclusion that the trip generation forecast utilizing the trip generation rates from the ITE Trip Generation Manual provides a reasonable basis for assessing the traffic impacts of the project.

Additional studies and evaluations have been prepared in response to questions raised by members of the community. It was concluded that the supplemental studies further validate the data, assumptions, analyses, conclusions and recommendations provided in the Draft EIR with respect to the analysis of project traffic impacts and mitigation measures (see Appendices D, E and K of this document for mitigation).

Per the requirements of CEQA, the Draft EIR was distributed for a 45-day review. However, because of several continued public hearings before the Regional Planning Commission, the additional time requested by this comment has been provided (see Section 1.1 of this document).

Traffic 3 – Comment

Many cars currently travel east primarily in the a.m.-not west- and therefore appropriate studies should be done for Canoga Ave. as to what additional traffic will be generated on this street and adjacent side streets when Topanga Canyon and DeSoto are overloaded. I feel that there is a very real possibility that "A" Street will become an alternate route for people trying to avoid congestion on Chatsworth Street, and that it will become heavily congested itself with people who do not even live in the project.

Traffic 3 – Response

Please refer to Traffic 1 – Response. Please refer to Traffic 2 - Response for a discussion of the distribution of project traffic to the local street system. Based on the circuitous and discontinuous nature of the proposed "A" Street within the project, it is highly unlikely that this roadway would be used to facilitate regional traffic not associated with the project, except in emergencies.

Traffic 4 – Comment

I am also concerned about the joining of Canoga with the existing Twin Lakes community and Deer Lake Ranch road "B". There needs to be a 3-way stop at Canoga, road "B" and Mayan Drive, to alleviate the possibility of accidents and gridlock at that junction.

Traffic 4 – Response

The appropriate measure of traffic control at the referenced intersection will be determined by the County of Los Angeles Traffic and Lighting Division at the time of final design of the project.

Traffic 5 - Comment [15]

In the mornings and evenings the traffic at the 118 Frwy and Topanga is very heavy, I have waited several minutes to be able to enter onto the Frwy.

Traffic 5 - Response

The comment has been received and noted. It is anticipated that with the previously referenced project mitigation measures for these intersections, including synchronization of all traffic signals, such delays would be reduced (see Appendix K of this document).

4.2.7 Form Comment Letter – Development Issues

The following letter was received by various individuals (see Table 4.1) and entitled "Development Issues." The comments included in this letter include traffic, construction impacts, noise/dust, and additional time to comment on the Draft EIR.

Development Issues 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

1 Environment

The developer promises to dedicate some land to the Santa Monica Mountain Conservancy. What assurance is there that this dedication will occur?

15 This additional comment was handwritten on the bottom of the Form Letter submitted by Joan Devore.

Development Issues 1 – Response

See Section 4.2.1 (Biology 1 – Response) of this document. In addition, subsequent to distribution of the Draft EIR, the applicant agreed to various community commitments including the above-referenced dedications to SMMC. These commitments will be imposed as a condition of this project by the County (see Appendix E of this document).

Development Issues 2 – Comment

The developer is going to tear out areas of coastal sage and mature oaks. The tiny (15-gallon) proposed replacement saplings are inadequate compensation for this destruction. The developer should plant replacement trees that are substantially larger and more mature.

Development Issues 2 – Response

The commenter's concern for the potential loss of coastal sage scrub and mature oaks trees is noted. Impacts to vegetation are discussed in the Draft EIR on page 4.3-16. Implementation of the Revised Project Design would result in total site disturbance similar to that discussed in the Draft EIR (see Section 2.0 and Appendix Q of this document). Implementation of the revised project would result in impacts to 2.39 acres of coastal sage scrub and 1.30 acres of coast live oak woodland. In addition, 61 of the 353 oak trees onsite would be impacted. These impacts would not be significant with implementation of the recommended mitigation measures. Unavoidable biological impacts would be mitigated by the preservation of biological resources on the proposed 159-acre mitigation parcel (see Appendix F.1 of this document).

As stated in the Draft EIR, oak trees would be mitigated onsite at a 2:1 replacement with 15-gallon trees. This standard is per the County of Los Angeles Zoning Code. Implementation of the mitigation measures included in the Draft EIR, as recommended by the County Forester, would reduce impacts to biological resources, including oak trees, to less than significant.

To ensure survivability of oak trees, trees and acorns will be planted within one year of the permitted oak tree removals. Additional mitigation trees shall be planted within one year of the death of any tree resulting from permitted encroachment. Mitigation trees will be planted either onsite or at an offsite location as approved by the County Forester. The developer will properly maintain each mitigation tree and shall replace any tree failing to survive. A three-year maintenance period shall begin upon receipt of a letter of the developer or consulting arborist to the Director of Planning and the County Forester indicating that the mitigation trees have been planted. The maintenance period of the trees failing to survive two years will start anew with any replacement trees.

In addition subsequent to the distribution of the Draft EIR, the applicant has acquired property north of the project site to serve as mitigation for onsite biological resources (see Section 2.3 and Appendix D of this document). This will include the preservation of approximately 2.60 acres of oak woodland that will be preserved and further mitigate impacts to oak trees.

Development Issues 3 – Comment

The extensive paving inside the project will result in ambient heat gain, further aggravated by the removal of mature plants. How does the developer propose to mitigate this effect?

Development Issues 3 – Response

Any perceptible ambient heat gain through construction of paved surfaces as part of the project would only be noticed within a few feet of the paved area and not noticeable on a regional scale. In addition, irrigated landscaping within the development would adequately compensate for the removal of existing vegetation. Therefore, no ambient heat impacts would be perceptible to adjacent communities.

Development Issues 4 – Comment

2. *Traffic*

We already have several local intersections that get a failing grade for congestion. The increased traffic from a project of this density will make things worse, yet there will be no improvement of roads, signals or intersections south of the 118 freeway through which all this traffic must pass.

Development Issues 4 – Response

Please see Section 4.2.6 (Traffic 1 – Response) of this document.

Development Issues 5 – Comment

The developer's base traffic data gathering is flawed. The Environmental Impact Report traffic study utilizes traffic counts purportedly but not actually done and counts on days when schools were not in session. They represented otherwise at our community meeting and misled us to the point that we can't trust their study to evaluate the traffic impact of this project. They should do the study over.

The developer has grossly underestimated the total and peak-hour traffic volumes generated by the project. They ignored factors in the authoritative literature and arrived at illogical results. For example, nearly half the homes would have no outbound trips in the peak morning hour – not to work, not to school. We need to see – and have time to analyze – a realistic and honest traffic study.

The developer has virtually ignored all the cars that will travel through the local streets of our neighborhood. Besides projecting too few trips overall, the study assumes too few cars traveling east, taking the Canoga and adjacent streets as the most convenient route. As a result, the developer's study does not reflect likely future traffic flow.

The traffic from this development will further clog already bad intersections and degrade others. The only cure offered by the developer for roads south of the 118 freeway is to contribute money toward an signal-timing project (ATSAC) that's going to be completed anyway. That project won't physically improve any roads or intersections, and ATSAC's hoped-for 10% improvement in traffic flow won't be enough to offset the extra congestion the project will cause.

The developer avoided performing a required freeway impact study by selecting a measurement point at the Ventura County line, away from the main traffic flow. This sort of trickery casts suspicion on the entire traffic study, if not the entire Environmental Impact Report. You should make the developer do a new traffic study from scratch and give the public a chance to evaluate and comment on it.

Development Issues 5 – Response

Please see Section 4.2.6 (Traffic 1 and 2 – Responses) of this document. See also Section 4.3.2 (Caltrans responses), and Section 4.5.145 in this document.

In response to the comment regarding the CMP freeway segment analysis, additional review of the CMP document has been completed. The next closest freeway monitoring station is located on SR-118 east of Woodley Avenue, approximately seven miles east of the project site. Based on the approved methodology and parameters in the traffic impact study (Appendix K of the Draft EIR), the following project-related traffic was forecast at the two freeway monitoring stations closest to the project site:

<u>SR-118 @ Los Angeles/Ventura County Line</u>

A.M. peak hour: 19 trips eastbound/58 trips westbound

P.M. peak hour: 63 trips eastbound/35 trips westbound

<u>SR-118 East of Woodley Avenue</u>

A.M. peak hour: 131 trips eastbound/44 trips westbound

P.M. peak hour: 79 trips eastbound/141 trips westbound

Based on the threshold criteria for conducting impact evaluations on freeway segment monitoring locations,[16] it was concluded that the originally proposed project would not add 150 or more trips, in either direction during the weekday A.M. or P.M. peak hour at either of the two CMP mainline freeway-monitoring locations. As no impact would occur, no further analysis is required.

It should be noted that the above traffic forecasts were based on development of 538 dwelling units (to maintain consistency with the traffic report included in the Draft EIR). Under the revised design (388-units), the peak hour traffic volumes would be reduced by 20 percent, thereby resulting in reduced impacts.

Development Issues 6 – Comment

3. *Construction Period*

   Construction will generate dust, fumes, noise and runoff in our neighborhood for up to five years! There is no enforcement mechanism to ensure either containment of these effects or the developer's compliance with related ordinances and their own proposed measures. There need to be more stringent limits on construction activity, a hot line for complaints, penalties for noncompliance, and public accountability.

Development Issues 6 – Response

Please see Section 4.2.3 (Noise/Dust 1 and 2 - Responses) and Appendix E of this document regarding additional community commitments regarding construction activities. In addition, it is anticipated that project grading and infrastructure construction would take place over an approximate two-year time period. Housing construction would continue for another two years following project grading and infrastructure construction.

Development Issues 7 – Comment

For 3 to 5 years many pieces of noisy construction machinery will be operating at the development site. The developer has not committed to limits on numbers of simultaneous machine operations, on the use of state-of-the-art noise shielding and muffling devices, or on measured noise limits. We want a way to insure that we won't be assaulted in our homes by all this noise.

Development Issues 7 – Response

Please see Development Issues 6 – Response of this document.

Development Issues 8 – Comment

Construction activity will require thousands upon thousands of truckloads of building and road materials to pass through our streets, including right past an elementary and middle school. There is inadequate control over delivery times, routes and frequency. These huge vehicles present not just an inconvenience but a hazard to local school children and residents. The developer should prepare a comprehensive plan to alleviate the effects of so much heavy truck traffic on our neighborhood and give us a chance to provide input to that plan before it is finalized.

The developer asserts that construction vehicles will avoid "peak travel periods" and parking on "heavily traveled roadways". These terms are vague and undefined, giving us no protection, recourse or opportunity to evaluate the conditions of the construction that will overwhelm our neighborhood. There is no assurance that our residential side streets will not have construction vehicles parked on them.

Development Issues 8 – Response

Please see Section 4.2.3 (Noise/Dust 1 - Response) of this document. In addition, construction activities such as deliveries would be controlled by both the developer and the County in accordance with the conditions of approval for the project and the Mitigation Monitoring Program.

16 Threshold criteria is from Traffic Impact Analysis in Appendix D of the 1997 Congestion Management Plan.

Regarding access to the site by construction vehicles, the following is the estimated timeframe and itinerary for such vehicles and equipment:

- All grading equipment would be moved onto the site via Canoga Avenue within an estimated period of five working days during the grading and mobilization period. This would be subject to the daytime limitations (see Section 4.2.3, Noise/Dust 1 – Response). The equipment would stay onsite for the duration of the grading operations. Note: exceptions would include replacement of equipment for mechanical reasons, etc.
- Materials and supply delivery vehicles may use Canoga Avenue only during the construction of the first 150 units. Such deliveries would be intermittent (i.e., bulk deliveries stockpiled onsite) and the frequency is estimated as follows:
    - The delivery of materials such as water, sewer, and storm drain pipes is anticipated to occur at intervals of approximately once every three weeks. This would begin five months after the start of grading operations and last for approximately five months.
    - Delivery of concrete and asphalt would occur approximately once every two weeks. This would begin five months after the start of grading operations and last for approximately three months.
    - Delivery of lumber and other building materials would occur once every two weeks. This would begin nine months after the start of grading operations and last for approximately six months.
- All construction equipment, and material and supply delivery vehicles would use Topanga Canyon Boulevard and "A" Street after the construction of the first 150 units. No such traffic would be permitted on Canoga Avenue thereafter.
- Construction equipment, and material and supply delivery vehicles will be permitted to travel on Canoga Avenue and Topanga Canyon Boulevard only on Monday through Friday between 9:00 A.M. and 2:00 P.M. (i.e., not during peak hours).

Development Issues 9 – Comment

There is no protection against noisy or reckless driving by construction employees and subcontractors commuting to the project site on our local streets. You should require a specific plan approved by the neighbors and having enforcement mechanisms and penalties for noncompliance.

Development Issues 9 – Response

Please see Section 4.2.3 (Noise/Dust Responses) and Appendix E of this document regarding additional community commitments regarding construction activities.

Development Issues 10 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

a substantial reduction in the size and scope of the project;

a more meaningful proposal for mitigation by the applicant; and

postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals

Development Issues 10 – Response

As stated in the Draft EIR, implementation of the project would not result in significant impacts with implementation of mitigation measures. The commenter's objection to the project is noted and will be forwarded on to the decision makers.

As discussed in Section 2.1.2 of the Draft EIR, the General Plan density threshold for the project site is between 176 and 1,052 units. The revised project (388 units) is well below the maximum density allowed for the project site and is a 20 percent reduction in density from the originally proposed project (484 units), as discussed in the Draft EIR.

Mitigation measures have been documented in the Draft EIR to mitigate all impacts to less than significant. The mitigation measures provided in the Draft EIR are applicable to the revised project. In addition, subsequent to distribution of the Draft EIR, additional mitigation and community commitments have been included to further reduce impacts associated with the revised project, which are outlined in Appendix E of this document.

The Draft EIR was distributed to various public agencies, citizen groups and interested individuals on November 27, 2002 for a period of 45 days, as required by CEQA. The comment period on the Draft EIR technically closed January 10, 2002. However, five public hearings were held in which the public was invited to present public testimony to the Los Angeles County Planning Commission (January 23, 2002, April 10, 2002, June 19, 2002, August 21, 2002, and September 3, 2003) and comment letters were accepted by the County through the last Planning Commission hearing. Therefore the comment period for the Draft EIR has greatly exceeded the 45-day requirement as required per CEQA.

In addition, in accordance with Public Resources Code 21092.5 of the *CEQA Guidelines*, this document will be provided to commenting public agencies, organizations, and individuals a minimum of 10 days prior to certification of the Final EIR. Adequate time has been allowed for review and comment on the environmental documentation for the project.

4.2.8 Form Comment Letter – Non-Traffic

The following letter was received by various individuals (see Table 4.1 of this document) and entitled "Observations on Non-Traffic Items." The comments in this letter included land dedication to SMMC, noise/dust, the offsite mitigation parcel, land use and biological resources.

Non-traffic 1 - Comment

Is this ridgeline unsuitable for building such that they're giving up nothing?

Non-traffic 1 - Response

It is unclear as to what the commenter means by the "ridgeline" to be "given up." No appropriate response can be provided. However, it should be mentioned that all appropriate geotechnical studies have been conducted.

Non-traffic 2 - Comment

How much of the 70 acres has been dedicated and how much is yet to be dedicated? What assurance is there that dedication will occur? Do we want land going to SMMC or to something we control?

Non-traffic 2 - Response

Please see Section 4.2.1 (Biology 1-Response) and Section 4.2.7 (Development Issues 1 - Response) of this document. It is the County's opinion that dedicated open space is of the most benefit when held by a public conservation agency.

Non-traffic 3 - Comment

How will any of this be enforced? No County monitoring; need Hot Line for resident complaints. Response should be within 24 hours or less, and log of complaints and dispositions should be maintained and open for public inspection. Repeated noncompliance should result in financial penalties.

Non-traffic 3 - Response

Mitigation measures listed for the project are considered part of the conditions of approval of CUP 99-239 and VTTM 53138. Compliance with these measures is required (see Appendix D of this document). The primary responsibility for the enforcement of the project conditions is the Department of Regional Planning (Subdivision and Zoning Enforcement sections) and the Department of Public Works, Building and Safety Division.. In addition, it is the County Department of Regional Planning's responsibility to ensure that all mitigation is implemented under the Mitigation Monitoring Program, for which the developer agrees to provide additional funding. The Building and Safety Division will ensure that construction-related conditions are met. Violation of the Mitigation Monitoring Program would result in a suspension of project permits and/or criminal prosecution of the applicant (developer).

Compliance with some mitigation measures would be the responsibility of other agencies (i.e., air quality mitigation measures will be the responsibility of SCAQMD). See also Section 4.2.3 (Noise/Dust 1 – Response), and Appendices D and E of this document regarding resident complaint procedures, the mitigation monitoring plan and draft conditions of approval.

Non-traffic 4 - Comment

Where will wind be measured? Van Nuys Airport? Require recording anemometer(s) on site and require wind-caused dust control at all times (similar to requirement for other local projects).

Non-traffic 4 - Response

Please see Section 4.2.3 (Noise/Dust 2 – Response) of this document.

Non-traffic 5 - Comment

Objective standards for emissions (check with SCAQMD) should be imposed in addition to tune-ups, and results should be open for public inspection.

Non-traffic 5 - Response

The air quality analysis was completed per the requirements of SCAQMD and a copy of the Draft EIR was sent to SCAQMD for review. As stated in Section 4.2 of the Draft EIR, with implementation of mitigation measures, impacts regarding air quality impacts would be less than significant.

Non-traffic 6 - Comment

Define off-peak travel periods and heavily traveled roadways. Does this mean our residential side streets (less traveled) will have construction vehicles parked on them?

Non-traffic 6 - Response

Please see Section 4.2.3 (Noise/Dust 1 and 3 – Responses) of this document.

Non-traffic 7 - Comment

How will off-peak deliveries be "encouraged"? No teeth to this; they should be required.

Non-traffic 7 - Response

The requirement of off-peak deliveries (see Section 4.2.3, Noise/Dust 1 and 3 - Responses) would be part of the conditions of approval for the project. If the conditions of approval are not met, it is a violation of the CUP for the project. A violation of the CUP is subject to enforcement by Los Angeles County. Additional discussion regarding these conditions is found in Appendix E of this document.

Non-traffic 8 - Comment

How many truckloads will be involved in whole project? Can we limit the routes and hours?

Non-traffic 8 - Response

Please see Section 4.2.7 (Development Issues 8 – Response) of this document.

Non-traffic 9 - Comment

Enforce rules for workers re. Use of local streets and back up with a fine system.

Non-traffic 9 - Response

Please see Non-traffic 7 – Response of this document.

Non-traffic 10 - Comment

Is this required for a permit anyway?

Non-traffic 10 - Response

The commenter's question is not specific and cannot be answered. No additional response is required.

Non-traffic 11 - Comment

Require compliance with LAMC Art. IX Ch. 1 Div. 70 due to proximity to City.

Non-traffic 11 - Response

The Los Angeles City Code cited by the commenter refers to noise abatement and compliance. As the project site is located within an unincorporated area of the County, adherence to City of Los Angeles standards is not required. However, any activities within the City of Los Angeles would be subject to and comply with the City code.

Non-traffic 12 - Comment

Will measures meet SCAQMD District Rule 403?

Non-traffic 12 - Response

Section 4.2.4 of the Draft EIR included mitigation measures for dust control. Mitigation measures have been designed to meet the requirements of SCAQMD, including Rule 403. Please see Section 4.2.3 (Topical Response and Noise/Dust 2 – Response) of this document.

Non-traffic 13 - Comment

Where is offsite mitigation parcel? Is this just a swap of unbuildable [sic]/undesirable land?

Non-traffic 13 - Response

The mitigation parcel is located north of the project site. Please see Section 2.3 and Appendix F.1 of this document for the location and a description of the biological resources located within the mitigation property. The public dedication of the 159-acre mitigation parcel is not a "swap" of land in the sense of development density transfers. No additional development units will be granted as a result of this dedication. Its sole purpose is to preserve a wide range of habitat areas as part of the biological mitigation for this project (see Section 4.2.1 of this document).

Non-traffic 14 - Comment

Is removal of all eucalyptus trees a good thing? Maybe not.

Non-traffic 14 - Response

As stated in Section 4.3.2 of the Draft EIR, implementation of the project would result in the removal of approximately five percent of the eucalyptus grove located within the site. This impact would result in a beneficial impact for biological resources and would not be significant. In addition, fuel modification requirements mandate that no eucalyptus trees be located within 100 feet of a residence.

Non-traffic 15 - Comment

Does this mean mitigation for destroying 1/3 of sage and oak consists of not destroying the other 2/3?

Non-traffic 15 - Response

It is unclear as to what the commenter is referring. No appropriate response can be provided.

Non- traffic 16 - Comment

Check with nursery as to size and years to maturity of 15-gallon trees. These are wimpy- and cheap! Check relative cost ands [sic] maturity of larger replacement trees and demand the big ones! Be prepared to demonstrate size at the hearing (such as with a 15" box).

Non-traffic 16 - Response

Please see Section 4.2.7 (Development Issues 2 – Response) of this document regarding the size and other aspects of replacement oak trees.

Non-traffic 17 - Comment

Will project have impact on wildlife resources subject to CQ [sic] Fish & Game code sec. 711.2?

Non-traffic 17 - Response

California Fish and Game Code Section 711.2 defines wildlife as "all wild animals, birds, plants, fish, amphibians, and related ecological communities including the habitat upon which the wildlife depends for its continued viability....." Section 4.3 of the Draft EIR includes analysis of all biological resources as defined by Section 711.2 of the Code. As concluded by the analysis, some impacts would occur to biological resources, but they would be less than significant with implementation of mitigation measures.

Non-traffic 18 - Comment

How is ambient heat from paving being mitigated?

Non-traffic 18 - Response

Please see Section 4.2.7 (Development Issues 3 – Response) of this document.

Non-traffic 19 - Comment

Check this ordinance for its requirements. Does it restrict hours acceptably? Does it restrict numbers of simultaneous machine operations? Does it require state-of-the-are noise shielding and muffling devices? If L.A. City rules are tougher, insist on them due to proximity to City.

Non-traffic 19 - Response

The commenter's reference is to the Los Angeles City Code, pertaining to noise, referenced in Non-Traffic 11 – Comment above. Please see Non-traffic 11 – Response of this document.

Non-traffic 20 - Comment

How much is required under Sec.65995 of CA gov't code? How does this compare with per-student cost?

Non-traffic 20 - Response

As stated in Section 4.11 of the Draft EIR, Los Angeles County requires that new residential subdivisions pay a library fee to ensure that new projects mitigate impacts to library services. As the project site is located within unincorporated areas of the County, there is no requirement to pay library fees to the City of Los Angeles. This would require an agreement between the County of Los Angeles and the City of Los Angeles and is not within the scope of this EIR. Further, improvements to or construction of library facilities is under the direction of the County of Los Angeles Public Library and City of Los Angeles and not within the scope of this EIR.

As stated in Section 4.10 of the Draft EIR and Appendix E of this document, although implementation of the project would result in a deficit of space for local area schools, payment of development impact fees would mitigate impacts to less than significant. Please also see Section 4.3.7 of this document regarding student generation factors. The funding provided through these fees would be used by LAUSD to fund new school facilities according to its own planning program.

The requirement to pay developer fees and the amount of fees are derived from state law. Government Code Section 65996 expressly states that payment of mitigation fees is the exclusive

method of considering and mitigating project impacts on school facilities. State law states that payment of such fees is deemed to provide full and complete mitigation of school facility impacts, not withstanding any other provisions of local or state laws (see Appendices D and E of this document). Therefore, no additional mitigation is required.

Non-traffic 21 - Comment

What assumptions are used to determine number of residents (vs. number of dwelling units)?

Non-traffic 21 - Response

As stated in Sections 4.8, 4.9, and 4.11 of the Draft EIR, a factor of 2.95 persons per dwelling unit was used to determine the estimated resident population.

Non-traffic 22 - Comment

Require completion bonds for all promised mitigation measures and improvements.

Non-traffic 22 - Response

Implementation of mitigation measures and assurance of completion is tied to various aspect of development of the project site and is outlined in the Mitigation Monitoring Program (please see Appendix D of this document). In addition, performance bonds for construction of infrastructure improvements, as stated in the draft Conditions of Approval (see Appendix E of this document), is required by the County Department of Public Works.

4.3 AGENCY COMMENT LETTERS

The following public agencies submitted comments on the Draft EIR:

a. State of California, Governor's Office of Planning and Research – State Clearinghouse (January 11, 2002)

b. State of California, Business, Transportation and Housing Agency – Department of Transportation (February 15, 2002)

c. State of California, The Resources Agency – Santa Monica Mountains Conservancy (January 18/22, 2002)

d. Southern California Association of Governments (January 9, 2002)

e. City of Los Angeles, City Council (January 22, 2002)

f. City of Los Angeles, Department of Transportation (January 11, 2002)

g. Los Angeles Unified School District (January 22/February 4, 2002)

h. Las Virgenes Municipal Water District (January 16, 2002)

4.3.1 State of California, Governor's Office of Planning and Research – State Clearinghouse

Terry Roberts. Director, State Clearinghouse

January 11, 2002

SCH 1 – Comment

The State Clearinghouse submitted the above named Draft EIR to selected stated agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period close on January 10, 2002, and the comments form the responding agency (ies) is (are) enclosed. If this comment package is not in order,

please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in further correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resource Code States that:

"A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

SCH 1 – Response

The comment has been received and noted. No response is required.

4.3.2 State of California, Business, Transportation and Housing Agency – Department of Transportation

Stephen J. Buswell, Chief IGR/CEQA Branch

February 15, 2002

Caltrans 1 – Comment

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the proposed development of 484 single-family residences in the Chatsworth area of Los Angeles County.

Please be advised that this letter supersedes our prior correspondence to your office dated January 10, 2002 regarding our comments on the DEIR.

Caltrans has the following comments:

1. *The recommended traffic improvements within the State right-of-way as described in the DEIR are acceptable as partial traffic mitigation for the project. Final design and engineering issues of these improvements need to be addressed through the Caltrans Encroachment Permit process for all work within the State right-of-way.*

Caltrans 1 – Response

As agreed between the subdivider and the California Department of Transportation (Caltrans), the subdivider shall contribute to Caltrans $441,000 as its fair-share contribution toward long-term traffic improvements within State rights-of-way at the Topanga Canyon Boulevard (SR-27) and SR-118 Freeway interchange. The contribution shall be made prior to recordation of the first final tract map for the Project. Caltrans has agreed that payment of this contribution, along with other improvements at this interchange that are the subject of separate conditions, will fully mitigate the Project's potential present or long-term traffic impacts at the Topanga Canyon Boulevard (SR-27) and SR-118 Freeway interchange.

The revised project now contains 388 residential lots and would generate approximately 20 percent less traffic than the original project evaluated in the Draft EIR. The revised traffic study is contained in Appendix K of this document. The comment documents the acceptability of the proposed improvements within the Caltrans right-of-way. The traffic mitigation measures for the project are

summarized in Section 4.12.4 of the Draft EIR, and will not be changed although project traffic generation has been reduced by approximately 20 percent. It is concluded in the Draft EIR (page 4.12-29) that with implementation of the recommended mitigation measures, the revised project would not result in significant impacts to area traffic. The design plans for construction of the improvements within the state right-of-way have been submitted to Caltrans and will be processed through the standard Caltrans Encroachment Permit procedure. Additional discussion regarding traffic mitigation is found in Appendices D, E, and K of this document Traffic related issues were also discussed at a community meeting on June 26, 2002 (see Appendix O of this document).

Caltrans 2 – Comment

2. *To provide complete mitigation, Caltrans requests the project be conditioned to contribute its ultimate fair-share for long-term traffic improvements within the State right-of-way as determined by a Project Study Report (PSR). The costs to prepare such a PSR, can be considered as a credit against the project's fair-share requirements for long-term mitigation. Caltrans recommends that the project's fair-share for long-term improvements be paid into a Bridge and Thoroughfare District, or other similar financial instrument established by the County for purposes of the determination, collection, and distribution of funds for regional traffic improvements.*

Caltrans 2 – Response

A CMP analysis was prepared and included in the Updated Traffic Impact Study (see Appendix K). The CMP is a state-mandated program intended to address the impact of local growth on the regional transportation system (i.e., SR-118). Traffic generated by the revised project would not surpass the minimum traffic thresholds for a freeway impact assessment and therefore, further study of the project's potential impact on SR-118 is not required.Therefore, according to the state mandated CMP, no impact is identified for the freeway monitoring locations in the vicinity of the Project, and no further analysis is required pursuant to the State mandated CMP.

Subsequent to distribution of the Draft EIR, Caltrans requested that the applicant provide a fair share contribution toward the long-term traffic improvements at the Topanga Canyon Boulevard/SR-118 interchange within the right-of-way, as determined by a project study report (PSR) (letter dated February 15, 2002).[17]

The applicant has agreed to contribute $441,000. Caltrans has agreed that this voluntary contribution and the required mitigation (see Appendix K of this document), satisfies Caltrans' concerns regarding future long term impacts on the state freeway system set forth in their letter. Please refer to Caltrans 1-response.

Caltrans 3 – Comment

3. *We understand that project applicant made a voluntary offer, and will prepare, the PSR referenced above to address long-term regional traffic operations at the interchange of Topanga Canyon Boulevard (S.R. 27) and S.R. 118. The PSR will, in part, identify the scope, schedule, and estimated cost of potential future modifications at the interchange. It will also identify funding sources. Caltrans requests the project be conditioned by the County to prepare and submit the PSR to Caltrans prior to the release of Certificates of Occupancy for the 100th residential unit, with approval of the PSR by Caltrans required prior to the release of Certificates of Occupancy for the 200th residential unit. The PSR need not be completed prior to issuance of the Encroachment Permit for the improvements within the State right-of-way as described in the DEIR.*

17 "This is not required per CEQA and is inconsistent with applicable requirements such as "nexus" and rough proportionality."

Caltrans 3 – Response

See Caltrans 2 – Response. Preparation of the PSR is a voluntary measure and therefore, it is not required or recommended that occupancy of the project be subject to submittal and approval thresholds of the PSR as suggested by the commenter.

Caltrans 4 – Comment

4. *The County and the project developer should be notified that California statutes do not legally entitle property owners who are building adjacent to or near, freeways to any noise mitigation program funded by the State. The FEIR should contain a thorough analysis of potential noise impacts to the future residential units and provide recommended mitigation measures as needed.*

Caltrans 4 – Response

As stated in mitigation measures 4.7-1, 4.7-2 and 4.7-3 (see Section 4.7 of the Draft EIR), the project will provide mitigation for proposed housing due to the existing noise impacts associated with SR-118 traffic.

4.3.3 State of California, The Resources Agency – Santa Monica Mountains Conservancy

Michael Berger, Chairperson

January 22, 2002

SMMC 1 – Comment

The Santa Monica Mountains Conservancy and its joint powers entity, the Mountains Recreation and Conservation Authority (MRCA), have been involved in a cooperative fashion with the subject project for almost four years. The MRCA currently owns 31 acres internal to the project boundaries and is about to take title to 70 acres on the western project boundary from a 1980s project dedication. Both agencies continue to work with the applicant in regards to shaping the project and its mitigation measures. To date, the Draft Environmental Impact Report (DEIR) does not encompass the most substantive mitigation measures promised by the applicant. The applicant's representative has stated that they will be submitting comments on the DEIR that will introduce these absent mitigation measures into the record. This letter assumes that the following two mitigation measures to acquire offsite lands will be incorporated into the Final EIR (FIER) mitigation measures.

1. *The applicant shall acquire in fee simple a specific 160-acre parcel located to the north in Browns Canyon as a mitigation parcel. The timely transfer of this parcel into public ownership is critical to mitigate the impacts of the proposed project. Its protection would mitigate the direct loss of habitat and cumulative loss of habitat in the Santa Susana Mountains and the loss of a major population of Plummer's Mariposa Lily. The FEIR must also state which entity will receive this offsite mitigation parcel and at what point in the project approval process. The transfer to a public park agency, preferably the MRCA, should occur as a condition of map recordation. The applicant could still conduct project related riparian and Plummer's Mariposa Lily mitigation on this 160-acre parcel.*
2. *The applicant has submitted and Agreement for Purchase and Sale and Escrow to the owners of APN 2818-021-002 (14-acre Horner Property) located directly adjacent to the project entrance at the northwest corner of the intersection of Canoga Avenue and 118 Freeway. Protection of this parcel is important to maintain wildlife movement conditions at the freeway underpass, to provide a public trail staging area, and to protect viewsheds from the 118 Freeway and public trails in the vicinity. This pre-approval action by the applicant reflects their commitment to a sound recreation, aesthetic and ecological project. Our hopes are that the owners will accept the applicant's offer and that the applicant, the MRCA, and the Board of Supervisors via the Los Angeles County Regional Park and Open Space District will all approve their required share of*

the funding. The MRCA will take title to the property. However, if the Horner transaction fails, the FEIR must include a mitigation measure the requires the establishment of a land acquisition fund. The funds, in the amount of $300,000 should be specifically tied to the acquisition of habitat in the Devil or Browns Canyon watershed. Minus such a fund, the project as proposed does not adequately mitigate habitat loss. The funds should be transferred in full to the MRCA as a condition of map recordation.

SMMC 1 – Response

The comment has been received and noted. Subsequent to distribution of the Draft EIR, the applicant secured an option to purchase the 159-acre mitigation parcel in Brown's Canyon to mitigate project impacts to onsite biological resources. The biological characteristics and suitability of this parcel is discussed in the Biological Resources Mitigation Plan (see Appendix F of this document). Upon project approval, the option will be exercised and transferred to a park agency, such as the SMMC/MRCA, as a condition of recordation of VTTM No. 53138, and subject to an agreement between the SMMC/MRCA and the applicant.

The 14-acre Horner property located along the northeast corner of the intersection of Canoga Avenue and SR-118 has been purchased by the MRCA with funds provided by the applicant, the County of Los Angeles, and the SMMC. The SMMC has indicated that this property would be preserved as open space. In addition, this acquisition allows preservation of the existing wildlife corridor through this property, between North Stoney Point, and Devil and Browns Canyon.

SMMC 2 – Comment

The FEIR must include a map showing the location of all surrounding public parkland and other public facilities-such as land owned by the Los Angeles Department of Public Works Flood Control Division. This information is all located on the map attached to the Conservancy's June 2000 comment letter.

SMMC 2 – Response

The comment has been received and noted. Please see Figure 2.6 of this document, which includes all surrounding public parkland and other public facilities.

SMMC 3 – Comment

The FEIR must include discussion and analysis addressing, the cross-freeway habitat linkage through the Canoga Avenue underpass to Los Angeles City-owned Stony Point Park. The FEIR must include a detailed landscape and mitigation plan to facilitate wildlife movement between Devil Creek and the freeway underpass. Such a plan is critical for decision makers to understand the capability of the wildlife corridor after project completion.

SMMC 3 – Response

Please see Section 4.2.1 (Topical Response 4.2.1 - Biology) and Appendix F.5 of this document.

SMMC 4 – Comment

The Conservancy urges that the project to be conditioned to require only indigenous landscaping in broad areas. Such a requirement would be novel but is entirely warranted in such an ecologically important and visible area. Non-native species should only be allowed on the flat residential pads and the 20-foot Wet Zone (Zone A) areas demarcated on DEIR Figure 2.12 (Fuel Modification Plan). Internal landscape areas not defined on the Fuel Modification Plan need not require native species, but their use is encouraged. The Irrigated Zone (Zone B) in this figure should be restricted to only indigenous plants. We offer our staff's expertise in designing and indigenous plant palette that will succeed with irrigation, look attractive, and will not be a fire hazard. This landscape requirement will offset habitat loss, reduce visual impacts, and create at least one east-west wildlife movement

corridor through the proposed Twin Lakes (lower) housing cluster. We specifically request the opportunity to review the landscape plans before the FEIR is prepared.

However, in order to achieve this east-west permeability to wildlife movement in the proposed Twin Lakes cluster, the FEIR must include permanently enforceable mitigation measures that provide for at least one specific non-fenced gap appropriately located between two houses in the portion of the project between lots 56 and 69.

SMMC 4 – Response

Locally indigenous plants would be used on all manufactured slopes outside of the irrigated zone of the fuel modification areas, and in other areas of the project wherever feasible. This is consistent with County requirements.

The suggestion to "create at least one east-west wildlife corridor through the proposed Twin Lakes (lower) housing cluster" is considered infeasible and impractical since limited habitat is available to the southwest of the project site. This corridor would necessarily consist of a narrow dual-purpose equestrian trail alignment through the tract, alongside "B" Street, which would have excessive length, and be adjacent to incompatible residential and transportation land uses. Such a corridor design would not be expected to be functional for wildlife, and worse, would only serve as a mortality sink - a place where animals are killed more often than not. Animals such as coyote, bobcat, mountain lion, gray fox, and mule deer should be discouraged from attempting to traverse such a long and tenuous narrow corridor for the sake of their own preservation. In particular, animals such as coyote and mountain lion, should they find themselves within such a corridor, and observed by humans, would likely be the object of extermination by animal control, game or law enforcement officers, for posing a potential risk to the human inhabitants.

SMMC 5 – Comment

The FEIR must clearly identify and show the specific open space lots that will be dedicated to a public agency and by when such transfers must occur. Such transfers must occur as a condition of map recordation or earlier.

SMMC 5 – Response

The project open space lots are shown on the revised VTTM (see Appendix C.1 of this document). Transfer of open space lots would occur as a condition of final tract map approval.

SMMC 6 – Comment

The FEIR must include more in-depth analysis regarding the visual impacts of the proposed brush clearance. The FEIR must also better define the allowable extent of clearance in "thinning zones." Our greatest concern with visual brush clearance impacts is in the area of proposed "A" and "E" Streets. The DEIR figures show the brush "thinning zone" extending to the edge the Devil Creek riparian corridor in several places. The ecological integrity of this key block of onsite riparian habitat requires a minimum 50-foot-wide buffer of unaltered, not thinned, chaparral or coastal sage scrub vegetation combined with the thinning zones as shown in the DEIR.

Other obvious avoidable impacts to the viewshed and ecology of this area of Devil Creek include the elimination of grading for the adjacent park site proposed at the terminus of "E" Street. The park site should be integrated into the adjacent open space lot and the MRCA, as the probably open space recipient, should be allowed to design an overlook or sitting area at a future date. It is appropriate that the applicant's cost savings be passed onto the MRCA to construct such a public facility. We recommend the requirement of a $25,000 construction fund for the MRCA in the FEIR to be paid prior to the issuance of any building permits for houses on proposed "E" Street. The MRCA would document all costs to the County and construct the overlook within two years of the receipt of the funds or return them to the County. Accordingly, the length of the culdesac for proposed "E" Street

should also be shortened to the maximum extent possible such as is achieved at the terminus of proposed "D" Street.

The DEIR visual cross section identified as BB shows the subject section of "D" street as being a double loaded with houses. The plans show a single loaded street. The FEIR must rectify this deficiency. The FEIR should also include at least three view cross sections from the existing and the proposed trail system in Devil Canyon.

SMMC 6 – Response

The extension of the fuel modification thinning zone to edge of portions of the Devil Creek riparian corridor is unavoidable, and imposed as a condition by the Los Angeles County Fire Department in order to provide adequate fire protection. However, all such thinning activity would be conducted under the supervision of a biologist to ensure that there is no significant impact to the riparian corridor.

Grading for the proposed park site adjacent to "E" Street, as identified on the previous project tentative tract map, has been eliminated. Under the revised project, the park site will be an integral part of the adjacent open space (see VTTM in Exhibit C.1 of this document).

See Section 2.4.2 (Grading) of this document for revised figures showing revised and additional cross sections.

SMMC 7 – Comment

We urge the County to make substantial exceptions for this project that require the least possible amount and intensity of street lighting, paving and street width, storm drain and debris basin capacity, and quantity of fill slope v-ditches and down drains.

The subject project, with the incorporation of all of the mitigation measures contained in this letter, represents a sound example of how to achieve orderly development within areas containing antiquated Record of Survey subdivisions.

SMMC 7 – Response

The comment has been received and noted. The project is currently designed to meet requested County Standards. However, the commenter's suggested exceptions regarding improvements will be forwarded to the decision makers.

4.3.4 Southern California Association of Governments

Jeffrey M. Smith, Senior Planner Intergovernmental Review

January 9, 2002

SCAG 1 - Comment

We have reviewed the above referenced document and determined that it is not regionally significant per Areawide Clearinghouse criteria. Therefore, the project does not warrant clearinghouse comments at this time. Should there be a change in the scope of the project, we would appreciate the opportunity to review and comment at that time

A description of the project was published in the November 30, 2001 Intergovernmental Review Report for public review and comment.

The project title and SCAG Clearinghouse number should be use in all correspondence with SCAG concerning this project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1867.

SCAG 1 - Response

The comment has been received and noted. No response is required.

4.3.5 City of Los Angeles, City Council

Hal Bernson, Councilman 12th district

January 22, 2002

City Council 1 – Comment

After review of the proposed Deerlake Ranch project, it is my opinion that this is virtually impossible to fully mitigate the traffic impacts of this project. The ingress/egress plan consisting of only two streets, Topanga Canyon Boulevard and Canoga Avenue, are woefully insufficient to handle the traffic in rush hours and in times of emergencies.

City Council 1 – Response

Section 3.3.6 and Appendix K of this document include revisions to the traffic analysis completed subsequent to distribution of the Draft EIR, reflecting an approximate 20 percent reduction in the number of residential units (i.e., from 484 units to 388 units), and a corresponding reduction in traffic generated by the project. Moreover, the revised traffic analysis states that all mitigation measures previously proposed in the Draft EIR will still be implemented, thereby making them even more effective in mitigating project impacts. Therefore, the conclusions included in the Draft EIR, that no significant traffic impact would result afterimplementation of mitigation measures, remains valid under the revised project.

City Council 2 – Comment

There is a lack of recognition that over 450 homes will create additional burdens on the Los Angeles Unified School District's local schools, which are already exceeding their capacities.

City Council 2 – Response

As included in Section 3.0 of this document, and subsequent to distribution of the Draft EIR, the project's anticipated student generation has been reduced by 20 percent, and additional enrollment information became available from LAUSD. However, this additional information did not change the conclusions included in the Draft EIR, that impacts to schools would be less than significant with mitigation. In addition, the applicant has indicated that they will enter into discussions with LAUSD and the Porter Ranch master developer to investigate the possibility of accelerating the Porter Ranch elementary and middle school construction schedule. Please see Sections 2.0, 4.2.8, 4.5.28, and Appendix J of this document for additional information regarding schools.

City Council 3 – Comment

And finally, this project will add burdens on the City of Los Angeles' infrastructure such as libraries, parks, and fire department (due to mutual aide) without compensation to the City. With these deficiencies in mind, I strongly recommend your disapproval

City Council 3 – Response

As stated in the Draft EIR, impacts to libraries, parks and fire department services would be mitigated through payment of fees and through the collection of property taxes. As the project site is located within unincorporated areas of the County, there is no direct requirement to pay fees to the City of Los Angeles. However, the applicant has voluntarily agreed to pay a special fee to the City's Chatsworth Library, as well as to pay a special fee to the City's Parks Department for construction of a child-care facility within Mason Park. Regarding impacts on City fire services, it is understood that the mutual aid agreement between the City and County incorporates appropriate funding arrangements. Therefore, with a 20 percent reduction in the number of units, implementation of these mitigation measures, and payment of voluntary fees, no significant impacts would occur on these facilities due to implementation of the project.

City Council 4 – Comment

Should your honorable body choose otherwise you must take a number of actions to protect the nearby community of Chatsworth:

Rural Community and lifestyle -

This community enjoys a very unique lifestyle of mixed horse keeping and open space. The county must guarantee connections to the City's Equestrian Trail backbone system developed by my office over 20 years ago.

City Council 4 – Response

As stated in the Draft EIR (Section 2.4.3 and Figure 2.11), the project includes recreational trails that would connect to existing trail systems, including the one referenced by the commenter. No significant impacts to the trail system would occur. In addition, subsequent to distribution of the Draft EIR, the applicant has agreed to construct additional trails (Approximately of 4.3 miles) on the project site (see Appendices C.1 and E of this document). Additionally, the project design has been modified in large part to incorporate additional equestrian facilities.

City Council 5 – Comment

Density is also an issue that must be closely looked at to guarantee that the natural and open space qualities of the hillsides be protected.

City Council 5 – Response

Subsequent to the distribution of the Draft EIR, the project density has been reduced by approximately 20 percent, from 484 units to 388 units. This reduction has a resulted in lowering the project density from 2.11 units per acre to 1.68 units per acre. This revised density is consistent with the density of the existing community south of the SR-118, and lower than the adjacent communities of Twin Lakes and Porter Ranch (see Appendix L of this document). As with the project described in the Draft EIR, the natural and open space qualities of the site and surrounding area would be protected under the revised project.

City Council 6 – Comment

Horse keeping is an important element of Chatsworth community. Sufficient horse keeping lots should be included in the project to keep alive this lifestyle. The size of the lots is important as well. Where necessary, lots should be combined in a way to reduce density and provide large enough lots for horse keeping.

City Council 6 – Response

In response to this comment, and similar comments from the community, the project has been revised so that it now provides 155 lots that are over 15,000 square feet, and 55 lots specifically designated for onsite horse-keeping (see Appendix C.1 of this document).

City Council 7 – Comment

Infrastructure -

The City has guaranteed the location of a new elementary and middle school site in the Porter Ranch area. Unfortunately, the LAUSD has chosen not to build those schools until 60% of the homes in Porter Ranch are built. In the meantime, the local schools are at double and triple their originally planned size. I suggest that you limit the number of homes developed until the LAUSD builds new schools.

City Council 7 – Response

Please see City Council 2 – Response. Because the proposed project will take several years to construct, limiting the development does not seem warranted.

City Council 8 – Comment

Libraries are another valid concern. All those living in these homes will want to use the City of Los Angeles Library system. There are NO nearby county facilities. The Developer should be required to make sufficient payment, as deemed necessary by the LA City Library Department, to allow the residents of Deerlake to use our libraries.

City Council 8 – Response

As stated in Section 4.11 of the Draft EIR, the Los Angeles County Public Library operates facilities and services in both unincorporated and incorporated areas of the County. As the developer would pay fees to offset potential impacts, no significant impacts would occur. Under County ordinance, the developer will pay approximately $250,000 ($645/unit) to the County library system. In addition, although there is no provision under the law for the developer to provide funds for the City of Los Angeles library system (i.e., the Chatsworth Library), the developer has committed to voluntarily contribute approximately $125,000 directly to the Chatsworth Library to help offset potential impacts on that facility. This will be in addition to the County fee. As a matter of City policy, future residents of Deerlake Ranch will be able to get "library cards" to use City library facilities, including the Chatsworth Library. Please see City Council 1 – Response regarding payment of fees to the City of Los Angeles.

City Council 9 – Comment

All Quimby funds accrue to the County, yet all park use will be in the City of Los Angeles. A sufficient amount of Quimby funds should be paid to the City of Los Angeles.

City Council 9 – Response

The revised project includes various park areas (see Section 2.0 of this document), including three neighborhood pocket parks and a nature park. The applicant also will provide approximately $424,000 in parks fees to the County, $130,000 to SMMC (for additional open space acquisition), and an additional $300,000 which will be used to offset public funds used for the recent acquisition of a 13-acre community equestrian park at Canoga Avenue, north of the SR-118. In addition, please see City Council 1 - Response above regarding payment of fees to the City of Los Angeles.

City Council 10 – Comment

Traffic Mitigation -

Traffic is probably the biggest concern with this project. The City Department of Transportation has filed a request for certain mitigations, which I concur with and some of which I requested. In my original transmittal to DOT, and their subsequent letter to you of January 11, 2002, an error was made concerning my recommendations. Item #3 is incorrect and should read that we are requesting an "all way" stop sign with flashing lights at "Canoga Avenue" and Rinaldi Street.

In addition to my previous requests, my staff has worked with the community to determine adequate needs to protect the residential neighborhoods. We request the following additional mitigations:

- *Install a three-way stop sign at Canoga Avenue and Candice Place*
- *Install painted road markings and signs, or a special equestrian height push-button activated flashing light, at Candice Place and Canoga Avenue.*
- *Left turn improvements and phasing light at Canoga Avenue southbound onto Chatsworth Street eastbound*
- *Left turn improvements and phasing on Chatsworth Street eastbound onto DeSoto Avenue northbound*
- *Consideration of "No Left Turn" signs from Canoga Avenue southbound onto eastbound Candice Place, onto eastbound Celtic Street, from 7-9 A.M. on weekdays*

City Council 10 – Response

All of the above measures requested by the commenter will be implemented - please see Sections 2.4.3, 3.3.6, and 4.2.6, and Appendix K, of this document for additions/revisions to the traffic analysis and implementation of mitigation measures.

City Council 11 – Comment

The community of Chatsworth and I would appreciate your vigilance in these matters. If the project must be approved by your honorable body, these mitigations are a necessity. If mitigations are not mandated, I shall be forced to ask the City of Los Angeles to file a lawsuit to stop the project. I am sure that those drastic measures will not be necessary.

City Council 11 – Response

The comment has been received and noted. Although the above requests by the commenter were not required for mitigating project impacts to a less than significant level (see the Draft EIR), the applicant has agreed to implement many of them voluntarily, and has requested that the County make them conditions of approval (see Appendix E of this document).

4.3.6 City of Los Angeles, Department of Transportation

Sergio D. Valdez, Transportation Engineer

June 6, 2002

LADOT 1 – Comment

This revised letter supersedes the previously issued DOT letter dated January 11, 2002. The Los Angeles City Department of Transportation (LADOT) has reviewed the Draft Environmental Impact Report (DEIR) for the proposed Deerlake Ranch/Chatsworth Ridge Estates which consists of a 484 single-family homes on a vacant 230.58 acre parcel of land. This project is located within an unincorporated area of Los Angeles County and is bounded by the 118 Freeway to south, Canoga Avenue to the east and Topanga canyon Boulevard to the west. However, the street system that provides access to the site is primarily located within the City of Los Angeles, and 11 of the 13 studied intersections are within the City of Los Angeles.

LADOT 1 - Response

The comment has been received and noted. No additional response is required, except to note that, subsequent to this letter, the project has been reduced in size from 484 to 388 units, a 20 percent reduction.

LADOT 2 – Comment

Discussion and Findings:

LADOT's comments are based upon review of the Draft Environmental Report and reports prepared by Linscott, Law and Greenspan Engineers. The project's size has been reduced from the original 538 single-family homes to a project size of 484 single-family homes, as reflected in the DEIR. The project will generate 363 trips in the a.m. peak hour, 489 peak hour and 4,422 daily trip ends. The trip generation rates are based on the 6th Edition Trip Generation Manual (1997) of the Institute of Transportation Engineers.

As stated below, the proposed project will have significant and cumulative traffic impacts at the following intersections:

1. *Topanga Cyn Boulevard and 118 Freeway eastbound ramps*
2. *Topanga Cyn Boulevard and 118 Freeway westbound ramps*
3. *Chatsworth Street and Canoga Avenue*
4. *Chatsworth Street and De Soto Avenue*

LADOT 2 - Response

The comment has been received and noted. These intersections are consistent with the conclusions in the DEIR. No additional response is required, except to note that both average daily traffic volumes and A.M. and P.M. peak hour traffic volumes have been reduced by approximately 20 percent based on the corresponding reduction in the number of project units.

LADOT 3 - Comment

MITIGATION OF SIGNIFICANT AND CUMULATIVE IMPACTS

Topanga Cyn Boulevard and 118 Freeway Eastbound Ramps

Fund a proportionate share of the cost of the design and construction of the LADOT's 118 Freeway Corridor ATSAC/ATCS System, for the intersection of Topanga Canyon Boulevard & 118 Freeway Eastbound Ramps. This project's proportionate share of the cost of the ATSAC/ATCS System is equal to the number of significantly impacted intersections multiplied by the average ATSAC/ATCS System cost per intersection. The current cost of the Ronald Reagan Freeway Corridor ATSAC/ATCS System is $102,000 per intersection. ATSAC/ATCS improvements shall be guaranteed through a cash payment prior to the issuance of any building permit. Since the cost of ATSAC/ATCS improvements is reviewed and adjusted periodically, the actual cost may change depending on when payment is made.

LADOT 3 - Response

The comment has been received and noted. The applicant will provide the proportionate share of fund for the above-stated transportation improvements. Please see Sections 2.4.3, 3.3.6 and 4.2.6, and Appendices E and K of this document for additions/revisions to the traffic analysis and mitigation measures.

LADOT 4 - Comment

Topanga Cyn Boulevard and 118 Freeway Westbound Ramps

Widen the westbound off-ramp of the Simi Valley Freeway at Topanga Canyon Boulevard by 9 feet from Topanga Canyon Boulevard to a point approximately 260 feet easterly as shown in attachment no. 1. This will be accomplished by widening the north side of the ramp by 5 feet and widening variably by 4 feet on the south side of the ramp to provide two left-turn-only lanes and an optional through-right-turn only lane. Relocate and modify the traffic signal equipment, street lights, curbs and gutters, trees, utilities, etc. as required. This mitigation needs to be approved by all affected municipalities or agencies, including the State of California Department of Transportation (Caltrans) through the Encroachment Permit process.

LADOT 4 - Response

The comment has been received and noted. The applicant will construct the above-stated transportation improvements. Please see Sections 2.4.3, 3.3.6 and 4.2.6, and Appendices E and K of this document for additions/revisions to the traffic analysis and mitigation measures.

LADOT 5 - Comment

Chatsworth Street and Canoga Avenue

Widen Canoga Avenue and Chatsworth Street, within the existing right-of-way to provide a left-turn-only lane and a shared through-right turn lane for southbound Canoga Avenue at Chatsworth Street as shown in attachment no. 2. Modify the signal phasing at this location to provide southbound to eastbound left-turn phase as well as a congruent right-turn arrow for vehicles traveling westbound to northbound at this intersection. Relocate and modify any existing traffic signal equipment, street lights, power poles, trees, signs, curb and gutters, utilities, etc. as required.

LADOT 5 - Response

The comment has been received and noted. The applicant will construct the above-stated transportation improvements. Please see Sections 2.4.3, 3.3.6 and 4.2.6, and Appendices E and K of this document for additions/revisions to the traffic analysis and mitigation measures.

LADOT 6 - Comment

Chatsworth Street and De Soto Avenue

Widen Chatsworth Street at De Soto Avenue to provide dual left-turn-only lanes, a through lane, and a right-turn only lane for eastbound Chatsworth Street at De Soto Avenue as shown in attachment no. 3. Modify the signal phasing at this location to provide an eastbound to northbound left turn phase. Relocate and modify any existing traffic signal equipment, street lights, power poles, trees, signs, curb and gutter, utilities, etc. as required.

LADOT 6 - Response

The comment has been received and noted. The applicant will construct the above-stated transportation improvements. Please see Sections 2.4.3, 3.3.6 and 4.2.6, and Appendices E and K of this document for additions/revisions to the traffic analysis and mitigation measures.

LADOT 7 - Comment

Additional Requirements

Canoga Avenue between Candice Place and 118 Freeway

Widen Canoga Avenue to collector street standards, within the existing right-of-way from Candice Place to the County boundary line at the 118 Freeway including curb, gutter and sidewalks. In addition to these improvements extend the existing equestrian trail, located on the east side of Canoga Avenue, from its terminus located north of Candice Place to an existing dirt trail located just north of the 118 Ronald Reagan Freeway.

LADOT 7 - Response

The comment has been received and noted. The applicant will construct the above-stated transportation improvements. Please see Sections 2.4.3, 3.3.6 and 4.2.6, and Appendices E and K of this document for additions/revisions to the traffic analysis and mitigation measures.

LADOT 8 - Comment

Equestrian Crossing Signals on Canoga Avenue

Install two self actuated equestrian crossing signals on Canoga Avenue. The first location should be at the intersection of Canoga Avenue and Rinaldi Street. The second should be north of the 118 Ronald Reagan Freeway at or near the terminus of the equestrian trail located on the east side of Canoga Avenue.

LADOT 8 - Response

The comment has been received and noted. The applicant will construct the above-stated transportation improvements. Please see Sections 2.4.3, 3.3.6 and 4.2.6, and Appendices E and K of this document for additions/revisions to the traffic analysis and mitigation measures.

LADOT 9 - Comment

The above transportation improvements shall be guaranteed, before the issuance of any building permit for this project, through the B-Permit process of the Bureau of Engineering, Department of Public Works, and must be completed before the issuance of any certificated of occupancy to the satisfaction of LADOT and the Bureau of Engineering. Prior to setting the bond amount, the Bureau of Engineering shall require that the developer's engineer or contractor contact LADOT's B-Permit Coordinator at (213) 580-5320 to arrange a pre-design meeting to finalize the design for the required transportation improvements.

LADOT 9 - Response

The comment has been received and noted. The applicant will comply with the above-stated permitting procedure (see Appendix E of this document).

LADOT 10 - Comment

Neighborhood Traffic Management Plan

Prior to the issuance of any building permit the applicant shall execute and record a covenant and agreement to mitigate cumulative traffic impacts in the residential neighborhoods adjacent to Canoga Avenue in the City of Los Angeles through the development of a Neighborhood Traffic Management Plan. This mitigation shall be guaranteed through either a cash deposit or irrevocable letter of credit or a cash certificate of deposit payable to LADOT in the amount of $200,000 prior to the issuance of any building permit. Three years after the issuance of the final certificate of occupancy of the entire project, the applicant may request a refund of the unused money which shall only be granted if DOT and the 12th District Council Office determine that all of the provisions of the Neighborhood Traffic Management Plan have been fully complied with and no additional improvements are necessary.

LADOT 10 - Response

The comment has been received and noted. The applicant will comply with the above-stated mitigation for a Neighborhood Traffic Management Plan (see Appendix E of this document).

LADOT 11 - Comment

These measures are intended to control the volume of traffic along Canoga Avenue, as well as to restrict the use of local residential streets east of Canoga Avenue. Potential traffic calming measures may include, but are not limited to: the installation of speed bumps, diverters, turn restrictions, signing and marking as determined by LADOT.

LADOT 11 - Response

The comment has been received and noted. The applicant agrees to implementation of the above traffic-calming devices, subject to City approval (see Appendix E of this document).

LADOT 12 - Comment

The City of Los Angeles appreciates your cooperation and assistance in mitigating traffic impacts of the proposed project on City streets and neighborhoods. If you have any questions, you may contact me at (818) 756-9929.

LADOT 12 - Response

The comment has been received and noted. No additional response is required.

4.3.7 Los Angeles Unified School District

Raymond E. Dippel, Assistant Environmental Planning Specialist

February 4, 2002

LAUSD 1 - Comment

Thank you for giving the Los Angeles Unified School District (LAUSD) the opportunity to comment on Deerlake Ranch Draft Environmental Impact Report. The proposed project is located within the Germain Street Elementary School attendance area.

The District's Master Planning & Demographics section has reviewed the DEIR, and provides the attached assessment.

Thank you for your attention to this matter. If you need additional information please call me at (213) 633-3897.

LAUSD 1 - Response

The comment has been received and noted. No additional response is required.

LAUSD 2 - Comment

In reviewing the information you provided to us regarding the Deerlake Ranch development, we saw some areas that we felt had not been properly addressed. What follows is our assessment of the information and any editing we felt might be necessary.

In section 4.10.1, please revise the average classroom loading for fourth – fifth grades to 29:1, sixth – eighth grades to 33:1, and ninth – twelfth grades to 35:1, add 'through third grade' to kindergarten classroom 'ratios'.

Table 4.10.1 – in order to adequately reflect the schools' enrollment profiles, columns with the schools' actual enrollment and resident enrollment projections should be added. The R2 resident enrollment projections are calculated without new housing impacts included. (R2 enrollment differs from R4 in that it 'returns' magnet students to their home school.)

School Facility	Operating Capacity	Capped	Actual Enrollment	Resident Area (R2) Enrollment	Existing Space Available/(Deficit)		Resident (R2) Enrollment Projections
					Actual	R2	
Chatsworth Park Elementary	559	No	496	511	63	48	0
Germain Street Elementary	905	No	803	706	102	199	(20)
Lawrence Middle School	2427	No	1876	1666	551	761	250
Chatsworth Senior High	3351	No	3214	2515	137	36	680
Total	7242		6389	5398	853	1044	910

The operating capacity, actual enrollment and resident enrollment are current as of October 5, 2001. The resident enrollment projections are for five years out, beginning with the 2002-03 school year, for the elementary and middle schools; the projections are for eight years for the senior high school.

LAUSD 2 - Response

The comment has been received and noted. The updated school capacity/enrollment information is hereby incorporated into Section 4.10 of the Draft EIR and is documented in Section 3.3.4 and Appendix J of this document.

LAUSD 3 - Comment

Section 4.10.2, project impact: the map is a little imprecise, but it appears that all of the proposed project will fall within the Germain Street attendance area. For the purpose of analyzing enrollment impacts, consideration should be given only to Germain Street. The appropriateness of a boundary change between Germain Street and Chatsworth Park has yet to be determined. Lawrence Middle School and Chatsworth Senior High School are in circumstances where resident enrollments are expected to increase, without factoring in the impact of new housing in the area. Additionally, any available space in these schools is needed to house students from areas of the District that are overcrowded; use of this space by an increased resident student population due to new housing will impact the District's ability to house students from currently overcrowded areas of the District.

Table 4.10.3 – again, the columns for actual enrollment and resident enrollment growth should be added:

School Facility	Operating Capacity	Actual Enrollment	Resident Area Enrollment (R2)	Proposed Project Enrollment	Total Enrollment		Existing Space Available/ (Deficit)		Resident (R2) Enrollment Projections
					Actual	R2	Actual	R2	
Elementary	1464	1299	1217	208	1507	1425	(43)	39	(20)
Middle	2427	1876	1666	121	1997	1787	430	640	250
Senior High	3351	3214	2515	165	3379	2680	(28)	671	680
Total	7242	6389	5398	494	6883	5892	359	1350	910

LAUSD 3 - Response

The comment has been received and noted. The updated school impact information is hereby incorporated into Section 4.10 of the Draft EIR and is documented in Section 3.3.4 and Appendix J of this document. It should be noted that LAUSD has provided conflicting student generation rates, which yield widely ranging student generation results. The LAUSD Board approved a new School Facilities Needs Analysis (SNA) in 2000, which is the basis of LAUSD current Level 2 fees and student generation rates for residential development. The outdated 1998 Plan indicated a District-wide student generation rate of 0.43 students (K-12) per home. The student generation rates in the 2000 SNA were based upon new development built in the last five years within LAUSD (rather than district-wide rates in the 1998 Plan) by product type. The rates found in the Needs Analysis were significantly lower than the 1998 Plan. Please see Appendix J of this document for updated student generation and project impact analyses, based on both the lower student generation rates, and the reduction in the number of students for the revised project.

Section 17620(a) of the California Education Code and Section 65995(b) of the California Government Code, authorizes school districts to impose and collect school impact fees for all residential and non-residential activities that occur within the jurisdictions to offset the costs associated with the generation of new students. Referencing Section 65995(h) of the Government Code, "the payment or satisfaction of a fee, charge, or other requirement levied or imposed pursuant to Section 17620 of the Education Code in the amount specified in Section 65995 and, if applicable, any amounts specified in Section 65995.5 or 65995.7 are hereby deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization as defined in Section 56021 or 56073, on the provision of adequate school facilities." Payment of applicable fees constitutes full mitigation for those impacts that are directly or indirectly caused by a project upon those school districts potentially impacted by that project.

LAUSD 4 - Comment

Section 4.10.3, cumulative impacts: related project no. 7, Porter Ranch, has more than 1,698 residential units planned; a total of 3,600 units is planned, with 200 units completed to date. The developer estimates approximately 200 units available per year. A full assessment of the need and cost to build a new school(s) within the Porter Ranch development has not been completed, as yet, so no estimate of its capacity to house Porter Ranch students can be made at this time. Currently, all the developed areas in Porter Ranch are assigned to Castlebay Lane Elementary School, while most of the remaining development area is within Germain Street's attendance area. The Porter Ranch students in the most recently completed areas make up 13% of Castlebay Lane's students; the estimate of 2% of Germain's students being resident to Porter Ranch cannot be confirmed. An evaluation of opportunities to reassign boundaries would be one of the steps taken to remedy enrollment impacts to Germain Street. Again, growth in the District is experienced District-wide, and solutions to ease crowding in the District schools are implemented District-wide. The impact of housing growth in areas of the District where there is space to accommodate resident enrollment growth will be felt in

areas that are overcrowded, as space in other District schools shrinks and students can no longer be transported to schools with space.

Table 4.10.4, Cumulative Project Student Generation, should be edited to acknowledge the greater number of Porter Ranch units:

Project Use	Elementary Factor	(K – 5) Students	Middle School Factor	(6 – 8) Students	Senior High Factor	(9 – 12) Students
Porter Ranch – Single-family (3,600 units)	0.43	1548	0.25	900	0.34	1224
Single-Family (52 units)	0.43	22	0.25	13	0.34	18
Multi-Family (159 units)	0.26	41	0.15	24	0.20	32
Single-family (12 units)	0.43	5	0.25	3	0.34	4
Total Project Generation		1616		940		1278

Table 4.10.5, Cumulative School Impacts, should be edited to acknowledge the changes in the previous tables:

School Facility	Operating Capacity	Proposed Project and Current Enrollment		Related Projects Enrollment	Cumulative Enrollment		Existing Space Available/(Deficit)		Resident (R2) Enrollment Projections
		Actual	R2		Actual	R2	Actual	R2	
Elementary	1464	1507	1425	1616	3123	3041	(1699)	(1577)	(20)
Middle	2427	1997	1787	940	2937	2727	(510)	(300)	250
Senior High	3351	3379	2680	1278	4657	3958	(1306)	(607)	680
Total	7242	6883	5892	3834	10717	9726	(3475)	(2484)	910

We have no comment on the mitigation measures; developers' fees will be assessed and paid by the development company.

Thank you for the opportunity to review and comment on this project.

LAUSD 4 - Response

The comment has been received and noted. Please see Section 3.3.4 and Appendix J of this document for revisions to the school analysis. Please also refer to LAUSD 3 – Response.

4.3.8 Las Virgenes Municipal Water District

C. Eugene Talmadge, Planning Administrator

January 16, 2002

LVWD 1 – Comment

We are in receipt of the Draft Environmental Impact Report on Tentative Tract No. 53138 also known as the Deerlake Ranch. The project calls for 484 unit single-family residential lots located on 230.58 acres. Of the total area, 161 acres were previously divided by means of several Licensed Surveyor's Maps in 1927 and 1928 into approximately 2,575 Record of Survey lots.

The district prepared a Water System Design Report (WSDR) for this project at the developer's expense in February of 2001. After comparing the WSDR criteria with the EIR, it appears that the Draft Environmental Impact Report has addressed all important issues, including the construction of a new pipeline from Twin Lakes Tanks to the project site. The potable water demand for this project as shown in our Water System Design Report is consistent with the Draft EIR.

The Draft Environmental Impact Report is consistent with the Los Angeles County General Plan's Land Use Element. The district's demand projections in its Potable Water System Master Plan and

its Urban Water Management Plan (UWMP) are based on proposed development consistent with the County's General Plan land use designations within the LVMWD service area, the proposed project is consistent with the district's Master Plan and UWMP and would not have a significant impact on the LVMWD's ability to meet its objectives as prescribed in the California Water Code.

The Draft Environmental Impact Report has addressed the mitigated measures to the satisfaction of the district stating to build the proposed water supply system to district standards and to use water conservation measures such as low-flow toilets and show-heads to reduce water consumption.

If you have any questions concerning this matter, please feel free to contact me at any time. Thank you.

LVWD 1 – Response

The comment has been received and noted. No response is required.

4.4 ORGANIZATION/BUSINESS COMMENTS

The following organizations/businesses submitted comments on the Draft EIR:

- Chatsworth Equine Cultural Heritage Organization, Inc.
- Chatsworth Land Preservation Association
- Equestrian Trails, Inc.
- Recreation & Equestrian Coalition
- Santa Susana Mountain Park Association
- Twin Lakes Property Owners Association

4.4.1 Chatsworth Equine Cultural Heritage Organization, Inc.

Jerry England, Chatsworth ECHO

January 22, 2002

C ECHO 1 – Comment

In response to request for approval of Vesting Tentative Tract Map No. 53138 the Chatsworth Equine Cultural Heritage Organization, Inc. (Chatsworth ECHO) respectfully asks this Commission to send the project to Staff for restudy because:

1. *The General Plan for the city of Los Angeles has a conservation element that requires the city to "retain, to the extent feasible, the last remaining agricultural features of the city as part of the city's heritage and economy." (City Plan Case No. 2001-0413-GPA, Council File No. 01-1094, Adopted by the city Council September 26, 2001, Approved by the City Planning Commission March 10, 2001)*

Since the project falls within the "sphere of influence" of the city, its small lot concept does not mesh with either the city's General Plan or Chatsworth's rural nature. Most of the homes in the city immediately south of this project exceed ½ acre.

C ECHO 1 – Response

The project site is located within an unincorporated area of the County of Los Angeles. As such it is not subject to the City of Los Angeles General Plan. As discussed in Section 2.1.2 of the Draft EIR, the project is consistent with the Los Angeles County General Plan Land Use Element and the County Zoning Code. The permitted density threshold for the project site is between 176 and 1,052 units.

The proposed project has been redesigned to provide for larger lot sizes.The revised project (388-units) is well below the maximum density allowed for the site. See also Appendix L of this document.

C ECHO 2 – Comment

2. *Why was this project excluded from a Biological Resources Assessment prepared for the County Regional Planning Department in November 2000? The assessment indicates this project is within the proposed boundary of a Sensitive Ecological Area (SEA) that recommends housing density not exceed one dwelling unit per 10-acre parcel.*

C ECHO 2 – Response

The commenter references the document titled *Biological Resources Assessment of the Proposed Santa Susana Mountains/Simi Hills Significant Ecological Area* (PCR, 2000). This document is one of several that were produced pursuant to the Significant Ecological Area Update Study 2000, commissioned by the Los Angeles County Department of Regional Planning. As such, the County of Los Angeles has not adopted the Significant Ecological Area (SEA) boundary recommendations of the Update Study 2000 as land use policy overlays. The project site is not within an existing SEA, and the proposed development is consistent with both the General Plan and the existing zoning. In addition, the General Plan and Zoning Ordinance do not restrict proposed development within existing SEA's to one unit per 10 acres. The criteria for development is based on the General Plan land use designations, including hillside density determinations, and meeting the Burden of Proof within SEA's. Given these factors, there would be no legal basis for requiring the revised project to limit its density to one unit per 10 acres.

Further, the project site would not fit the draft criterion that has been developed for properties to be included within an SEA, as summarized and explained below.

Does the area being evaluated contain?

1. **The habitat of core populations of endangered or threatened plant or animal species?** Numerous biological assessments have been completed for the project site and determined that no endangered or threatened plant or animal species occur.
2. **On a regional basis, biotic communities, vegetation associations and habitat of plant and animal species that are either unique or restricted in distribution?** Onsite vegetation and biotic communities primarily include chaparral with small areas of willow and oak woodland and are not unique or restricted in distribution. Further portions of the project site have been or will be dedicated to the SMMC.
3. **Within Los Angeles County, biotic communities, vegetation associations and habitat of plant and animal species that are either unique or are restricted in distribution?** Onsite vegetation and biotic communities primarily include chaparral with small areas of willow and oak woodland and are not unique or restricted in distribution. Further portions of the project site have been or will be dedicated to the SMMC.
4. **Habitat that at some point in the life cycle of a species or group of species serves as concentrated breeding, feeding, nesting or migrating grounds and is limited in availability either regionally or within Los Angeles County?** The project site does not serve as concentrated breeding, feeding, and/or migrating grounds. Several studies conducted on wildlife movement in the vicinity of the project site by various agencies (SMMC, California State University – Northridge and Los Angeles County) have determined that the project site and immediate vicinity is not a critical wildlife corridor. Devil Canyon has been dedicated to the SMMC and serves as a minor onsite wildlife corridor, but is restricted by existing urban development south of the project site and flood control structures.

5. **Biotic resources that are of scientific interest because they are either an extreme in physical, geographical limitations, or represent unusual variation in a population or community?** As the Draft EIR correctly states, the project site does not contain biotic resources of scientific interest or unusual limitations or variations. The project site is currently affected by typical urban conditions including freeway noise, night lighting, domestic animals, and off-road vehicle use. Therefore, future sustainability of onsite biological resources would be severely limited.
6. **Areas that would provide for the preservation of relatively undisturbed examples of the original natural biotic communities of Los Angeles County?** The project site does not represent a relatively undisturbed example of a natural biotic community. The site has been subdivided since 1927 and several residential structures, roads, power lines and associated infrastructure including a dam and a bridge have been developed onsite.

The proposed SEA configuration in the vicinity of the project site does not appear to be based upon existing biological resource conditions. The proposed development is consistent with existing zoning and land use policy, and is not within an existing SEA.

C ECHO 3 – Comment

3. *The developer has promised the Chatsworth equestrian community it will create a Community Facilities District (CFD) to provide funds to build new equestrian trails, but their proposal is too non-specific:*
   a. *Who will be responsible for building the trails and when will they be constructed?*
   b. *Will new trails be at least 14 feet wide with guard rails on both sides?*
   c. *Will guard rails have breaks at all intersecting trails and road crossings?*
   d. *Will all new road crossings have a rubberized non-skid surface?*
   e. *Will crossings have an equestrian-activated flashing red light for safety?*
   f. *Will roadways have warning signs well in advance of the equestrian crossings?*
   g. *Will signs warn truck drivers that "air brakes" ("jake brakes") are prohibited around equestrian trails?*
   h. *Since the land is controlled by multiple land owners, details need to be worked out to secure maintenance agreements with those owners.*
   i. *Will the County ultimately be responsible for trail maintenance on property owned by others?*

C ECHO 3 – Response

Details of a CFD, if requested by the applicant, will be determined and approved by the County Board of Supervisors after approval of the project. Regarding equestrian trail improvements, they would be constructed by the applicant in accordance with the VTTM (see Appendix C.1 of this document) regardless of the formation of a CFD. Following are responses to specific comments pertaining to trails:

a. Trails would be constructed by the applicant in conjunction with project grading.
b. Trails will be between 8-feet and 12-feet wide and will have guard rails only at locations where mandated for public safety reasons.
c. Yes, new trails will be at least 14 feet wide with guard rails on both sides.
d. Road crossing materials will be subject to approval by the County Department of Public Works and Department of Parks and Recreation.
e. Road crossings will have vehicular stop signs for safety.
f. Yes, in accordance with County traffic standards.

g. Yes, along Canoga Avenue.

h. The land that constitutes the project site is owned by the applicant, who will construct all trails shown on the VTTM in Appendix C.1 of this document.

i. All trails shown on the VTTM will be dedicated to the County Department of Parks and Recreation, which will operate and maintain the trails.

C ECHO 4 – Comment

4. *The developer has promised to keep all equestrian trails open during the estimated five-year construction of improvements, but has not provided a detailed plan of how and when this will be accomplished.*

5. *Finally, the City of Los Angeles has not properly addressed traffic vs. equestrian concerns on Canoga Avenue between Chatsworth Street and the project. Equestrians need time to meet with the City to workout details to keep horses and riders safe.*

C ECHO 4 – Response

During grading and until completion of the permanent trails within the project site, the applicant will coordinate with representatives of the various local equestrian groups to locate and build temporary equestrian trails which, when physically possible, will connect to existing trails from Devil Canyon and Browns Canyon north of the site. These temporary trails may be redirected from time-to time due to the need to accommodate construction activity. The County Trails Coordinator will review the proposed locations and construction of the temporary trails.

See Section 4.3.5 (City Council 8 – Response) of this document.

C ECHO 5 – Comment

Summary:

This project does not mesh with the existing rural nature of Chatsworth. It will further endanger a sensitive ecological area, it adds significant traffic to a neighborhood road system that is already failing, it generates more students for local schools that are already at capacity, and it creates additional public safety concerns for a community that has too few existing services.

C ECHO 5 – Response

Please see C ECHO 2 – Response andsee Sections 3.3.4, 4.3.7, 4.5.28, and Appendix J of this document regarding revisions to the EIR analysis for school services. As stated in the Draft EIR, project impacts related to public services and safety would be mitigated to less than significant.

C ECHO 6 – Comment

The Chatsworth ECHO asks this Commission to consider our recommendation to help mitigate our neighborhood's concerns by reducing the density of the project.

We suggest increasing lot sizes to a minimum of 17,500 sq. ft and zoning them residential agriculture. This will allow the developer to recover additional income from the sale of larger tennis court or horse-keeping sized properties. This concept of horse-keeping lots is already planned for nearby Porter Ranch.

The addition of horse-keeping lots also helps eliminate a conflict between two cultures—our Rural Equine Culture and a new Suburban Culture that has not yet discovered the unpleasant aspects of living in a rural community populated with livestock--flies, dust, noise, manure, etc.

C ECHO 6 – Response

The applicant has redesigned the proposed project with a lower density, larger lot sizes, and has incorporated additional equestrian features into the revised project design. See Section 4.3.5 (City Council 3 – Response regarding project density, and City Council 4 – Response regarding horse-keeping lots) of this document.

C ECHO 7 – Comment

If the Commission allows this developer to create a CFD that requires future taxpayers to pay for trails they can't use because they don't own horses, it will only worsen the cultural conflict.

The Chatsworth ECHO asks that the Commission please require this project to include horse-keeping properties that will help save the rural nature of our town and allow our equestrian culture to thrive and expand, which is the intent of the conservation element of the city's General Plan.

C ECHO 7 – Response

See C ECHO 3 and C ECHO 6 – Responses regarding CFD and trails and Section 4.3.5 (City Council 4 – Response) regarding horse-keeping lots.

4.4.2 Chatsworth Land Preservation Association

Eskander, S.J., Chatsworth Land Preservation Association

January 9, 2002

CLPA 1 - Comment

This letter is to express my concerns with regard to the Environmental Impact Report of the Deerlake Ranch project, CUP/Oak Tree Permit No. 99239, Tentative Tract Map 53138, as well as other concerns regarding the development in general and it's impact on the Chatsworth community and on unincorporated areas of Los Angeles County.

CLPA 1 - Response

The comment has been received and noted. No additional response is needed.

CLPA 2 - Comment

Environmental Impact Report is Inadequate

The Environmental Impact Report for this project is inadequate as it is incomplete in some areas and inaccurate in others. I am neither a biologist nor a botanist, but I do have more that 20 years of experience riding every inch of the project site by horseback. After reviewing the EIR, it is plain to see that there are many false and inaccurate statements contained in its pages.

CLPA 2 - Response

The commenter provides no specific examples of incompleteness, or of inaccurate or false statements in the Draft EIR, and provides no substantiation of the claim of inadequacy. The Draft EIR was prepared and the review of the document is conducted per the requirements of CEQA, the *CEQA Guidelines*, and the County of Los Angeles Department of Regional Planning *Environmental Document Reporting Procedures and Guidelines*. As discussed in the Draft EIR, analysis of impacts to various environmental elements indicated no significant impacts are anticipated. The comment has been received and noted. No additional response is needed.

CLPA 3 - Comment

Section 4.5-1 thru 4.5-3- Landslides

"A landslide mapped along the south side of Devil Canyon within the southwest portion of the project site is a large block failure (Yerkes, 1995). This landslide is indicative of the type of landsliding that occurs within the Chatsworth Formation and suggests that similar east-facing bluffs underlain by adversely oriented bedding may also be susceptible to landsliding (see Figure 4.5.2)."

I can tell you from personal observation that there are many such landslides throughout Devil's Canyon including some on the Westerly facing slopes just a bit northwest of the old bridge/dam. In fact, one of the slides was large enough to remove 20 feet of flat level trail that we used to traverse by horseback. We have now found another way through, but it is a matter of time before another large slide occurs in Devil's Canyon. Landslides happen quite frequently during the rainy season along

this canyon, not just in the two spots that were identified in the report back in 1995 that is sited in the EIR. Perhaps a newer, more in-depth study would reflect the actual erosion that takes place in the area.

CLPA 3 - Response

As discussed in Section 4.5 of the Draft EIR, areas within Devil Canyon (including the side slopes) would be left in their natural state. In addition, adequate construction setbacks would be provided to ensure that the project has no impact on potential slide areas, and that the potential slide area would have no significant impact on the revised project.

CLPA 4 - Comment

Section 4.6-Hydrology

The EIR does not take into account the effect of storm water runoff from residential streets will have on Devil's Canyon. Many mammals including bobcats get their water during the summer months from this Canyon-I have seen it every year for the last five years. Bobcats, and other wildlife, that have been displaced from the Porter Ranch development are now using our creek beds as a summer habitat. Additionally, many horses drink from the creek bed during trail rides. Birds, such as the Cooper's Hawk, and also the homeless humans that camp in Devil's Canyon may also be harmed by drinking tainted water from this creek bed. There is absolutely no provision in this EIR on the environmental impact of oils, chemicals, soaps, antifreeze, animal feces, fertilizers, and other pollutants that might be present in water that is collected from the streets and drained into Devil's Canyon. The EIR only states that problems of this nature will only arise "infrequently during episodes of storm water runoff from the project site and are not likely to result in significant impacts to biological resources." This EIR assumes that pools will not be drained, that runoff will not occur from washing cars or landscaping or other occurrences that will wash high concentrations of chemicals into Devil's Canyon for animals and the homeless humans in the area to consume. Additionally, other eco systems that exist farther North of this development will be affected by the contaminants in the water, and this is not addressed.

CLPA 4 - Response

In response to this comment, a more detailed analysis has been prepared (see Appendix I of this document) to address surface water runoff quality from the project and its potential impact on Devil Canyon. Please also see Section 4.2.2 (Urban Runoff 1 - Response) of this document for a summary of the detailed analysis.

The commenter indicates that "many mammals including bobcats get their water during the summer months from [Devil] Canyon - I have seen it every year for the last five years." "Bobcats and other wildlife that have been displaced from the Porter Ranch development are now using our creek beds as the summer habitat." These comments are noted as informational, and not requiring a specific response. These comments also support the proposed open space dedication of Devil Canyon as wildlife habitat.

CLPA 5 - Comment

Additionally, the EIR does not adequately address the issue of flooding in the creek bed during the rainy season caused by channeling storm water directly into the natural canyon instead of directing it through storm drains to the flood control system. As it stands today, the creek over flows and changes dramatically every year that we have a heavy rainy season. At times, the bridge/dam and the creek bed cannot hold any more water and water nearly flows over the top of the bridge. As was demonstrated in the recent Porter Ranch stormwater catastrophe, channeling the water down city streets and into wildlife habitats and natural canyons is poor planning and results in environmental devastation. Add this together with the soil characteristics in the creekbed (and the fact that the

landslide factor has not been adequately addressed) and major environmental impact can be forseen. This EIR must address this issue in a more detailed fashion.

CLPA 5 - Response

Please see Section 4.2.2 (Urban Runoff 1 – Response) of this document.

CLPA6 - Comment

In conclusion, I ask that the County review the Limekiln Canyon catastrophe caused by the Porter Ranch development. Because the Environmental Impact Report did not sufficiently address the potential devastation of Limekiln Canyon due to the storm water run off from the streets, a city park and equestrian trail had to be closed forever due to the devastating effects of such poor planning. Limekiln Canyon has been destroyed due to a flaw in the EIR. I demand that the County request the developer to conduct further environmental review with regard to storm water run off. Untreated storm water must be channeled to a treatment center, such as the Donald C. Tillman Plant, via the County Flood Control System instead of draining it into Devil's Canyon.

CLPA 6 - Response

Please see Section 4.2.2 (Urban Runoff 1 – Response) of this document. In addition, currently, there are four natural points of discharge for storm water runoff from the sub-drainage area, including most of the project site, into Devil Canyon, and four natural points of discharge into the Browns Canyon watershed by way of existing watercourses easterly of the project site. After development, there would be three points of discharge from storm drains into Devil Canyon and four into the Browns Canyon watershed. Each of these points of discharge from storm drains would include construction of "energy-dissipating" structures in accordance with LACDPW standards in order to reduce discharge velocities to a non-erosive level.

CLPA 7 - Comment

Section 4.3-20-Wildlife Impacts

It appears that this EIR relies on wildlife movement studies conducted for the Nature Conservancy and the Santa Monica Mountains Conservancy. The EIR does not site the dates of these studies or which specific areas were covered in the field studies. The EIR just states that the studies were in the "vicinity" of the project site. Were these studies conducted for Porter Ranch or for what purpose? When where they conducted? Where were they conducted? Who conducted them? There appears to be a serious conflict between the information in this EIR and in prior studies on the area that reflect a wildlife corridor that is contiguous from this project site to the Porter Ranch Development project site. Bearing this in mind, the County should exercise its authority in requesting a postponement of its decision until a complete, accurate, and current study that is more relevant to this project site is produced.

Since the development of Porter Ranch and the building of homes at the top of Mason Avenue, this area of the proposed project site has experienced a huge influx of displaced wildlife. An up-to-date report that takes into account the ACTUAL environmental impact of the development of Porter Ranch, and the future development of the Porter Ranch Flood Control System in Brown's Canyon, should be made to ensure that we are not displacing wildlife that has just been evicted from Porter Ranch. It is possible that the project site is now home to many new animals that have not lived there in the past due to the encroaching development in the area. This area needs to be studied further. I ask that the County request a supplemental environmental review so that we completely understand the ACTUAL impact on our wildlife.

CLPA 7 - Response

The Nature Conservancy and SMMC conducted the studies referenced in the Draft EIR (Edelman 1990). The study indicates that the study area includes the Santa Susana Mountains, the Simi Hills,

and the Santa Monica Mountains. The area of Deer Lake Highlands (project site) was included in the study, as shown on Figure 3 of the report. Details of field studies, including dates or specific locations examined, are not included in the report. The report was not prepared in connection with the Porter Ranch Development, nor does the report identify onsite or nearby offsite regionally important wildlife corridors, as such corridors do not exist.

The commenter indicates "since the development of Porter Ranch and the building of homes at the top of Mason Avenue, this area of the proposed project site has experienced a huge influx of displaced wildlife." This is informational, and requires no specific response. Furthermore, the commenter requests "an up-to-date report that takes into account the actual environmental impact of the development of Porter Ranch, and the future development of the Porter Ranch Flood Control System in Brown's Canyon, should be made." The impacts of present and future Porter Ranch Developments were addressed in the EIR for that project and are not the subject of this EIR.

See also Section 4.3.1 (Topical Response) of this document.

CLPA 8 - Comment

Insects

The EIR does not address insects at all. There are species of insects including very rare tarantulas that live on the project site. Bees, fire ants, and many other insect species are observed all the time on the project site, but the EIR does not address this at all. In fact, no insect species at all are mentioned in the Environmental Impact Report. A supplemental environmental review must be conducted on insects that live in this area.

CLPA 8 - Response

An entomological field evaluation was conducted in March 2002 of the project site for potential species and habitat. A number of sensitive species are know to occur within the region, although no sensitive arthropod species have ben identified onsite. The invertebrate fauna of the project site reflects the floral diversity. Species observed are those of the southern Coast Ranges, and the San Gabriel Mountain foothills and canyons. The report regarding the field survey for arthropods can be found in Appendix F.4 of this document. Additional studies are not required by CEQA.

CLPA 9 - Comment

Section 4.3.3 Cumulative Impacts

The subject site that the developer has purchased to mitigate the impacts on the Mariposa Lily is a commonly used horse trail that brings many equestrians from Brown's Canyon through to the back side of the project site. In order to preserve the equestrian trail and the Plummer's mariposa lily, a railed bridle trail must be constructed to keep the trail open and the equestrians off of the plants. It seems unfair to restrict all access from view of the Plummer's mariposa lily that we have enjoyed for generations on our visits to the project site. What good is a preservation plan that excludes the public from enjoying its fruits?

CLPA 9 – Response

The commenter indicates, "the subject site that the development has purchased to mitigate the impacts of the Mariposa lily is a commonly used horse trail." Furthermore, "in order to preserve the equestrian trail and the Plummer's mariposa lily, a railed bridal trail must be constructed to keep the trail open and the equestrians off of the plants." Mitigation of impacts to Plummer's mariposa lily is one of several purposes served by the proposed acquisition and dedication to the SMMC of the 159-acre parcel in Browns Canyon. According to the Draft EIR page 4.3-22, "the applicant is proposing to mitigate all impacts to biological resources to less than significant levels through acquisition of a minimum 60-acre parcel of undisturbed natural open space in the immediate vicinity of the project site." Thus, the site has been selected for the purpose of mitigation of adverse and unavoidable

impacts to biological resources, and not, however, recreation. There is no proposal to construct a trail on the mitigation parcel.

The commenter questions, "what good is a preservation plan that excludes the public from enjoying its fruits?" Preservation of lands solely for their intrinsic biological properties and ecological services that they perform is a valid action when the preservation of biological resources is the primary objective, as in the case of this project. Also serving direct human purposes might be incompatible with the intended preservation.

CLPA 10 - Comment

Section 4.3.4 Mitigation Measures

Although it is commendable that the developer is turning over 60 acres of Devil's Canyon over the Santa Monica Mountains Conservancy, the developer is also planning on using the Canyon as a flood control channel and dump site for the disposal of construction dirt and debris. These actions circumvent the intention of "mitigation" and should not be allowed, as they will lead to the devastation of Devil's Canyon over time. Further environmental review must be conducted on the developer's intentions for use of the Canyon before this can be approved as a mitigating measure. The current EIR does not sufficiently address the community's concerns.

CLPA 10 - Response

Neither channelization nor any grading activities would take place within Devil Canyon as shown on the project's VTTM, Drainage Concept Study, and numerous related sections of the Draft EIR. The canyon within the project boundary is proposed for dedication as natural open space.

CLPA 11 - Comment

Animal Regulation

This Environmental Impact Report is insufficient in that it does not take into account the impact on Animal Control and Regulation offices in the City and County. What are the response times for animal control? Who will handle feral animals in the area? There are many concerns due to the nature of the impacts on wildlife in the area—including bobcats and coyotes. There will be incidents and confrontations with these animals and more review should be made as to which agency will respond to calls in the area and how those calls will be handled. There will be an impact and we need to know and understand the process before the County's approval process begins.

CLPA 11 - Response

Animal services within the County are provided by the Los Angeles County Animal Control. The project would be served by the Los Angeles County Agoura Shelter located at 29525 Agoura Road in Agoura. The average response time to the project area for emergency calls is under one hour. The average response time to the project area for non-emergency calls is under 24 hours. Officers often respond from the field and areas in and around the project vicinity. This can lead to quicker response times.

Feral animals (feral cats) will be retrieved as long as they are trapped. The Los Angeles County Animal Control will attempt retrieval of bobcats and coyotes, however the California Department of Fish and Game (CDFG) may be contacted for further assistance. . It is estimated that no increased "incidents and confrontation" with animals are likely to occur, although new residential areas may be exposed to encounters with wildlife

CLPA 12 - Comment

Schools

The Environmental Impact Report does not state which SPECIFIC schools these children will attend and if these SPECIFIC schools have stated that they have room for 494 students. As I understand it,

our elementary schools are overcrowded and so are our middle schools and high school. So, I ask that the EIR be more specific in how it addresses school capacity.

CLPA 12 – Response

Section 4.10 of the Draft EIR stated that the project is located within the attendance boundaries of the following public schools: Chatsworth Park Elementary, Germain Elementary, Lawrence Middle School, and Chatsworth Senior High School. Please see Sections 3.3.4, 4.3.7, 4.5.28, and Appendix J of this document for additional information regarding school capacity

CLPA 13 - Comment

Libraries

The EIR is misleading in that it implies that the Chatsworth branch library is a county facility. It is a CITY LIBRARY and it belongs to the citizens of the City of Los Angeles, NOT THE COUNTY. There is NO COUNTY LIBRARY facility for these 500 new families in Chatsworth. The EIR needs to sufficiently address this fact. The library is going to be expanded to meet current demand for city residents. Funds collected from the developer will be applied to the COUNTY libraries, while the burden of this development is placed upon the CITY. The City should receive the $626.00 per household, not the County OR a County library should be built to accommodate this development. It is unfair to ask the Citizens of LA City to par for this burden.

CLPA 13 - Response

See Section 4.3.5 (City Council 6 – Response) of this document.

CLPA 14 - Comment

The General Plan

My other concerns regarding this development stem from the project's high density as compared to the rest of the Chatsworth community. Developments such as this have absolutely no place when compared to the rest of our community of large lots and horse keeping. As I understand it, the General Plan for this area of the County has not been reviewed or updated since the 1920's. Although the County Plan has been updated to reflect the affects of progress in other areas, this area of the Plan has remained unchanged since the lots were divided up into "postage stamp" sized lots intended as giveaway prizes in cereal boxes. Last year, the County conducted an environmental study in which it made some recommendations to limit the density of developments approved for Unincorporated areas of the County. This development is one of those that requires more scrutiny. When compared with the developments that surround this project, this project is obviously too dense for the area. Our schools, roads, fire, police, and other services must be sufficiently cultivated to support such a large impact on the community.

CLPA 14 - Response

See Section 4.3.5 (City Council 1 and 3 – Responses) of this document.

CLPA 15 - Comment

I urge the County to postpone its decision until the developer can produce an accurate and complete EIR. This EIR is filled with inaccuracies and relies on data that was not produced for this specific development. The County must require the developer to not only conduct the aforementioned supplemental environmental reviews, but to also require a less dense development in this area. Ideally, to support the Chatsworth community, an equestrian development would be built in these hills. Since that will most probably never come to pass, the best thing we can hope for is a development that fits in with the rest of the community in its density and scope.

CLPA 15 - Response

Please see CLPA 2 – Response regarding the adequacy of the EIR. Please see Section 4.3.5 (City Council 1 and 3 – Responses) of this document regarding the density of the project.

CLPA 16 - Comment

Additionally, on the subject site for the Plummer's Mariposa Lily sanctuary. I request that a railed bridle trail be constructed through this parcel so that continued equestrian access will be allowed without disrupting the endangered plants.

CLPA 16 - Response

Please see CLPA 9 – Response.

4.4.3 Equestrian Trails, Inc.

Charlotte Brodie, Trail Coordinator, Equestrian Trails, Inc.

January 8, 2002/April 10, 2002

ETI 1 – Comment

I would like to comment on several areas of this report starting with:

Plummer's Mariposa Lily. Figure 4.3.1 shows a widespread Lily population that is mostly in the flat land of the development with the most dense populations at the south western edge. The Lily is listed as a Sensitive Plant Species, page 4.3-6, paragraph 4, and reports the Lily is on 61.04 acres with approximately 400 to 1,800 individual plants, depending on the year, with the Lily being replaced at a 2:1 ratio in a mitigated parcel, page 4.3.23 paragraph 4.3-4 and page 4.3.24.

Specifically, where are these bulbs to be stored? Who is going to plant and maintain them. Where are the preserved planting areas located? I'd like to suggest that bulbs could also be planted along all equestrian/hiking trails throughout the development. Who will be monitoring this operation to see that is completed over a five year timeline? When will the planting start occurring? Will it be after all development is completed will it be after all development is completed which could be 2007 or later? If this is the case, then monitoring will go on to at least 2012. If planting is done during each phase of development, then the monitoring could start in 2003 and conceivable go on for 9 or more years. Who will this monitor be reporting to?

ETI 1 – Response

Please see Section 4.2.1 (Topical Response) of this document. Bulbs of Plummer's mariposa lily salvaged prior to grading would be stored at a qualified nursery, in this case, at "Tree of Life Nursery", in San Juan Capistrano, because they have direct experience with this species. A qualified horticulture contractor, overseen by the project biologist, would perform transplanting and maintenance for a period of not less than five years. The preserved areas would be located generally within areas of potential habitat (see Figure 7 of Appendix F.1 of this document).

The commenter's suggestion that "bulbs could also be planted along all equestrian and hiking trails throughout the development" is noted. The plan is to mitigate impacts on Plummer's mariposa lily in an area of preserved, intact habitat, and not to use them as urban landscape material.

An approved biological monitor shall report to the County of Los Angeles, which will be responsible to oversee and ensure compliance with the mitigation plan. The CDFG will also receive monitoring reports, for their concurrence with the County.

ETI 2 – Comment

Coastal Live Oak trees and heritage oak trees as defined on page 4.3-5, paragraph 3. It states that there is only one heritage oak on the property. There are many more that qualify as heritage. The developer wants to remove 65 oaks, page 4.3-18, paragraph 3, which is approximately 23% of the woodlands. Oak tree locations are shown on Figure 4.3.3. Today I, and several of my friends, rode through the some of woodlands to measure a few trees. We found that Oak #199 is over 80", #197 is 67", #196A is 39", #26 is 41", two Oaks near #24 measured 50+" and 40+". These are just a few of

the trees that meet the requirements to be considered heritage Oaks. I'm sure these trees have not grown exceedingly fast in the last year or so to have the measurements be so different.

These Coastal Live Oaks are very special to all of us and took more years to get the way they are then you and I put together. What can we do to save these beautiful old trees? It is very easy to say. "Oh, we'll just replace two for everyone we remove." Oak trees give so much character to the land.

ETI 2 – Response

As stated in the commenter's subsequent e-mail to the applicant, Oak Trees, dated January 16, 2002, it was acknowledged that the trees were measured incorrectly, in that the dimensions given above were tree circumferences, not diameters (see Appendix B.1 of this document). For heritage trees, the criteria per County ordinance is 36 inch diameter or greater. Therefore, the above trees are not considered heritage oak trees and the project Oak Tree Report included in Appendix H of the Draft EIR is correct and has been verified by the county forester.

ETI 3 – Comment

We need to work at saving our heritage, our land and the natures gifts to us. What is so wrong with saving our natural landscape as much as possible rather then rearranging and destroying it's beauty?

ETI 3 – Response

The sentiment to "work at saving our heritage, our land and the natures gifts to us" is noted. As the comment consists of a general statement, no specific response can be given.

ETI 4 – Comment

Killdeer. Many birds are listed as being within the development site, page 4.3-9 to 10 under the heading. Birds. However, there was no mention of the Killdeer that has been seen in and around the area

ETI 4 – Response

The observation of killdeer in the project area is noted. Killdeer, although not mentioned specifically in the text body of the Draft EIR, are included as an expected species in the faunal compendium included in Appendix G of the Draft EIR. Killdeer are not considered a sensitive species.

ETI 5 – Comment

Bears. Also not mentioned in the Mammals section, page 4.3-10, was no word of black bears. Occasionally, they are sighted in our area. I believe it was last spring that a baby bear was behind the homes that skirt the edge of Aliso Canyon about 4 miles to the east of this proposed development.

ETI 5 – Response

This information and the potential for the occurrence of black bear are acknowledged. It should be noted that black bear are an infrequent occurrence, and they are not indigenous to these mountains. According to McLaughlin (1959) "eleven black bears were introduced from Yosemite Park into the San Gabriel Mountains in 1933." They are now established in the San Gabriel and San Bernardino mountain ranges, mostly in forested habitats at the higher elevations. Occasional bears that wander to the foothill regions are considered "problem bears," presenting a risk to human safety, and are, therefore, usually tranquilized and relocated to remote mountain regions by game officials. The proposed development is not likely to have any direct impact on black bears.

ETI 6 – Comment

Wildlife Corridor. The EIR states there is no important wildlife movement corridor for landbound animals, page 4.3-12, paragraph 1 and page 4.3-20, paragraph 5. Many hikers and riders have seen the footprints of many animals coming up the trail from Devils Canyon just above the debris basin, so they can go across Deer Lake highlands is a major route of several trails to Browns Canyon, and visa versa. Deer Lake Highlands is a major route for animals to travel from one canyon to the other. Is it

the need and right of humans to continue pushing wildlife farther and farther back until we drive them to extinction? Already the Coyotes are becoming urbanized to some extent, because we've taken so much of their hunting range. Bears, Mountain Lion, Bobcats and others are being killed because their wilderness and food source is disappearing at such a high rate because of development. We need to work with our environment to save it for our future.

ETI 6 – Response

The Draft EIR states (on page 4.3-10, not 4.3-12) that "the project site does not represent a regionally important [emphasis added] wildlife movement corridor for land bound animals due to the existing development to the south and west of the site and the impending development to the east." The distinction is that a regionally important corridor would be one that is necessary to maintain as a linkage between core areas of habitat found in the mountain ranges, such as between the Santa Susana Mountains and the San Gabriel Mountains or the Simi Hills. The proposed project is not part of such a linkage. However, as stated previously (see Section 4.3.3, SMMC 3 – Response, of this document), mitigation measures will be implemented under SR-118 to ensure that a local wildlife corridor connection will be retained between North Stoney Point and the 13-acre Horner property.

The commenter indicates, "many hikers and riders have seen footprints of many animals coming up the trail from Devil Canyon just above the debris basin, so they can get across Deer Lake Highlands." Furthermore, the commenter contends, "Deer Lake Highlands is a major route for animals to travel from one canyon to another." The Draft EIR acknowledges "local wildlife movement does occur onsite and to the open space areas to the northeast of the project site" (page 4.3-10). Although animals may traverse the highlands between Browns Canyon and the upper reaches of Devil Canyon, the project would not preclude future movement between the canyons, as the entire Devil Canyon corridor will be preserved as permanent open space. Also, please see Section 4.3.1 (Topical Response) and Appendix F.5 of this document.

The commenter's concern for continuing urban encroachment into wildlife habitats, and opinion to work with our environment to save it for our future is noted.

Also, see Section 4.4.2 (CLPA 7 – Response) of this document.

ETI 7 – Comment

Storm Drainage. I am very concerned about storm water and normal drainage from this proposed development. The developer is planning 4 debris basins to catch the solids and have filters so there will be less to go into the canyons, page 4.6-7, paragraphs 3, 4,5,6,7,& 8, page 4.6-9, paragraphs 1,2 & 3 and Figure 4.6.2. At present water is soaking into the ground over the entire area. Once the proposed development is in, the water wtill be all funneled into only a few places to enter the canyons. The water drainage will end up being more and faster at these places and ensuring faster erosion and destruction of the canyon, unless it is slowed down. This is visible in the Porter Ranch development (Moonshine Canon, Limekiln Canyon & the small canyon their trail ends up in west of Sesnon & Porter Ranch Rd.) where trails and canyons have been eroded and destroyed.

ETI 7 – Response

The debris basins would remove vegetation and other debris only. The quantity of actual storm water, which would be discharged into Devil Canyon, would remain the same.

As part of the proposed public storm drain system, which would be owned and operated by the Los Angeles County Flood Control District (LACFD), an outlet structure would be constructed at each proposed discharge point which would include energy dissipating devices. These devices will be engineered to LACFD standards to ensure that they reduce the velocity of storm water to less than erosive levels prior to discharge into Devil Canyon. In any event, none of the proposed discharge points would be upstream of any proposed trails.

ETI 8 – Comment

The Mitigation Measures, page 4.6-9 to 4.6-10 all sound good. but in the end we are concerned that we will end up with and inundation of very fast water that will have erosion that will not allow plant life to grow. What is different about this system and Porter Ranch?

ETI 8 – Response

It is not known why there are alleged problems with the Porter Ranch system. However, with implementation of the mitigation described in ETI 7 – Response, the discharge velocities of storm water from the project site would not preclude propagation of plant life in areas where it currently propagates.

ETI 9 – Comment

Bees

There is a beehive in a eucalyptus tree on the western side of the property near the old fireplace/chimney. Can we save them by calling a bee keeper. Bee's don't care if you are encroaching with a bulldozer, they'll just go down with the tree.

ETI 9 – Response

Honeybees (*Apis mellifera*) originated in southern Asia (Hogue 1993), and are non-indigenous to Europe and the New World. The European honeybee is now considered to be at least partially "Africanized" throughout southern California. Three active hives of the European honeybee were noted on the project site during a field visit in March 2002. Impacts to the colony would not be considered a significant impact upon biological resources. Honeybees are non-native and are not considered a sensitive species at the state or federal level, nor is it a species of concern. Queens from these hives may be salvaged or extirpated by contracting with a licensed beekeeper or exterminator. The applicant will consult with a certified beekeeper to determine the feasibility of saving the colonies.

ETI 10 – Comment

Equestrian & Hiking Trails. The only reference to a trail is that there will be one. We need to have the trails listed showing route, with stop signs or signals (with rider high buttons) at each street crossing. Trails should be done prior to each development phase to ensure the riders/hikers safety by providing a route out of the immediate construction area. The trail needs to also connect with the existing trail that is next to the rental condos on Poema. This trail could join in just to the north of the grassy area to allow 90% use of the existing trail.

With trails converging at Topanga Canyon Blvd. & the 118 Freeway and Stoney Park trails to the south of the freeway, a trail needs to be dedicated under the freeway to connect these two trails. This route has been used long before the freeway was there.

ETI 10 – Response

Subsequent to distribution of the Draft EIR, the applicant agreed to various community commitments for the project, including additional trails and signage. The revised project design includes and depicts proposed trails. Please see the VTTM in Appendix C.1 of this document.

ETI 11 – Comment

Staging Area. This needs to be added to the EIR describing it's location with parking, turnaround, and amenities along with the conditions that will ensure that the equestrian community will not have to wait years for it's use. Note: An average equestrian event will have 25 figs with varying lengths of trailers, with the shortest being about 25 feet.

ETI 11 – Response

This project will not provide an equestrian staging area.

ETI 12 – Comment

Traffic. Traffic problems will inevitably be increased. I understand no street improvements will be made on Canoga Ave. The evaluation study, page 4.2-6 & 6, under Study Intersections, did not take into account Rinaldi & Variel, Rinaldi & Independence, Chatsworth & Varies, Chatsworth & Independence, Tulsa & Independence, and Tulsa &DeSoto. This area is inundated every morning and afternoon because of the two schools to the east and west of Canoga on Rinaldi. The neighborhoods along Variel and Independence are already up in arms because of the speeding Mom's on these two routes. The traffic study that was done shows Canoga an A, page 4.12-21, paragraph 2, was done when the two schools were closed for the holidays, so is an inaccurate study.

At this point intersections along Topanga Canyon Blvd. from Devonshire north to the 118 are rated E or F, and the same for DeSoto from Devonshire to the 118, page 4.12-14. I truly question the expected trips to be generated from this proposed development. Most people must be at work between 8-9 in the morning. These homes will be costing between $500-800,000, meaning most homes will probably be two income families. If there are 484 homes, how can there be only 290 outbound trips in the morning rush hour, page 4.12-17, last paragraph? Also, if Topanga Canyon and the 118 are already rated F, then we will be seeing a lot of drivers coming down Canoga Ave. With no improvements to Canoga, a signal at Rinaldi of widening between Rinaldi and Chatsworth, this will become a bottleneck. The drivers from the new development will also start using Variel, Independence and Tulsa.

ETI 12 – Response

The Draft EIR provides an evaluation of potential traffic impacts due to the project in Section 4.12. The definitions and existing Levels of Service (LOS) at the study intersections are shown in Table 4.12.1 and 4.12.2 of the Draft EIR, respectively. As shown in the table, LOS E and F conditions at an intersection is indicative of "severe congestion." Review of Table 4.12.2 indicates that six of the study intersections experience LOS E or F conditions during the A.M. and/or P.M. peak hours.

The trip generation forecast for the project is provided in the Draft EIR on page 4.12-17. The forecasted project traffic volumes at the study intersections are shown in the Draft EIR on Figures 4.12.7 and 4.12.8 for the A.M. and P.M. peaks hours, respectively. The addition of traffic due to the project may increase congestion at the study intersections. The Draft EIR provides a definition as to when the addition of traffic due to a project is deemed significant. The significance thresholds provided in the Draft EIR are based on standards published by the LACDPW Traffic and Lighting Division, as well as LADOT.

As shown in Tables 4.12.4 and 4.12.5 of the Draft EIR, application of the City's and County's significance thresholds indicates that three of the study intersections are anticipated to be significantly impacted by the project during the A.M. and P.M. peaks hours (prior to consideration of traffic mitigation measures). Incremental, but not significant impacts would occur at the remaining ten study intersections. The traffic mitigation measures for the project are summarized in the Draft EIR in Section 4.12.4. It is concluded in the Draft EIR that with implementation of the recommended mitigation measures, the project would not result in significant impacts to area traffic.

Subsequent to the distribution of the Draft EIR, an updated traffic study for the revised project (388 units) was prepared (see Appendix K of this document), which evaluated potential impacts along Canoga Avenue at three intersections: Rinaldi Street, Chatsworth Street, and Devonshire Street. The updated report concludes that the revised project would result in a 20-percent reduction in peak-hour and average daily traffic generation as compared to the original project analyzed in the Draft EIR. The report further concludes that incremental, but not significant, impacts would occur at these intersections. No mitigation measures were required based on LADOT impact significance criteria.

However subsequent to the release of the Draft EIR, the project applicant proposed a list of voluntary traffic improvements, including improvements along Canoga Avenue (see Appendix K of this document), which were approved by the LADOT and incorporated into its letter, dated June 6, 2002.

Please refer to Section 4.5.145 of this document for a discussion of the existing traffic counts, the project trip generation forecast and the distribution of project traffic to the local street system. As shown in the revised traffic study (Appendix K of this document), the study intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street are forecasted to operate at good levels of service (LOS A) during the A.M. and P.M. peaks hours following in the future build-out year with occupancy of the project. Based on the good levels of service provided at the Canoga Avenue intersections, it is not anticipated that project-related trips will divert to local streets such as Variel Avenue or Independence Avenue for alternative travel. Therefore, the analysis of intersections on Variel Avenue and Independence Avenue for project-related traffic impacts as suggested by the commenter is not required.

ETI 13 – Comment

Public Transportation. The EIR states that with public transportation we can eliminate 3.5 percent of the vehicle trips, page 4.12-18, paragraph 1 page 4.12-27, paragraphs 2& 3. The problem with this is, all public transportation is on Devonshire (bus & train) and Topanga Canyon & Chatsworth (bus), so how are the trips cut down on Topanga Canyon and Canoga. Also, there are no park & ride lots for car-poolers in the area other than at the train station on Devonshire. So how is public transportation going to be a help with these intersections that are E & F now, and will surely be F+ with the proposed development?

ETI 13 – Response

See ETI 12 - Response for a discussion of the analysis of potential traffic impacts.

The assumptions in the Draft EIR, and reiterated within the revised traffic study (Appendix K of this document) regarding the potential increase in the utilization of public transit due to the project are based on rates required for use by the Metropolitan Transportation Authority (MTA) in evaluating potential impacts to public transit. It is acknowledged that there are no public transit facilities in the immediate vicinity of the site; thus, most project-related users of public transit are assumed to drive, or be dropped-off at public transit bus stops or stations. Therefore, as noted on page 4.12-18 of the Draft EIR, and reiterated in the revised traffic study, the traffic analysis did not assume any reductions in potential vehicular trip generation due to the utilization of public transit by residents and/or visitors to the project, thus providing a conservative assessment of the potential traffic impacts related to the project. The traffic mitigation measures are based upon the trip generation estimates for the proposed project.

ETI 14 – Comment

I am, Charlotte Brodie, Trail Coordinator, representing Equestrian Trails, Inc. Corral 54 in Chatsworth. ETI has a total membership of 5700 with approximately 200 in Corral 54. Our area is unique and beautiful which draws many riders, and hikers, from countless other areas to enjoy it.

I would like to give the developer credit for having several meetings with the community to try to solve problems and provide things that were asked for. I have never experienced such willing involvement before.

We do however, have concerns about this project. The density gives rise to the issues of equestrian safety, traffic, schools, wildlife, plant life and drainage into Devils Canyon.

ETI 14 – Response

See Section 4.4.1 (C ECHO 3 – Response) of this document.

ETI 15 – Comment

With the influx of "city folks" to a country/rural area, the equestrians have good reason to be concerned for their safety. These new folks do not understand the horse and it's fear of speed and noise. Many riders have been injured because of someone honking their horn or putting on their truck breaks to see the horse jump. Or not understanding that a horse has senses, unlike a car, and is very fearful when a vehicle passes close. These things and more have occurred to me many times and fortunately so far, I have survived all these helplessly feebleminded people. We need to have good trails with access through and beyond this proposed development that will be deeded to the County. This is horse country, but our trails and access are decreasing constantly. All trail routes that cross streets need to have safe footing with some type of traffic control with stop signs or on demand signals. The trail route from the proposed development at Topanga Canyon Blvd., needs to connect with Stoney Point Park and it's trails just south of the 118 Freeway and be dedicated as well. The realignment of the existing trail from Topanga and the 118 next to the condos in the Poema development eliminates access to the trail route by the condos and places it on the County Flood Control access road. Using the road is fine as an alternate, but access needs to be maintained next to the condos as well. There are many trails that will be lost with the proposed development; this dedicated trail cannot be lost.

ETI 15 – Response

Subsequent to release of the Draft EIR, the applicant has held numerous meetings with the equestrian community, including representatives of Equestrian Trails, Inc. and Corral 54. As a result, several revisions to the proposed trail system have been made which address the commenter's concerns. Please see the VTTM in Appendix C.1, the Draft Conditions of Approval in Appendix E, and Section 2.0 of this document regarding these trail revisions. Regional trail systems and improvements are a county-wide issue and not the sole responsibility of the project.

ETI 16 – Comment

A staging area is badly needed in the area and should be added to the final EIR describing it's location with parking, a turnaround, and any amenities along with conditions that will ensure its completion before turning the property over to another party.

ETI 16 – Response

Please see ETI 11 – Response. No staging area will be provided.

ETI 17 – Comment

With intersections having a falling grade on Topanga and DeSoto from Devonshire north, traffic is a major problem. If this development goes in, and the additional proposed development of 159 apartments at the north/west corner of Topanga and Poema, traffic could become a "Z" in the community's opinion. Canoga Avenue is already inundated in the morning and afternoon because of schools at each end of Rinaldi. The Mom's are also using Variel, Independence and Tulsa as alternate routes for short cuts at high speed, endangering the community. The two schools have tried to keep this from happening, but to no avail. We can see no way to stop the influx of sort cut speeders from this proposed development from taking the same alternate routes. We also feel there will be more traffic using Canoga than Topanga, due to fewer traffic lights. The city has asked the developer for no improvements to the roads, intersections, etc. We find this tragic in the face of an additional 2,000+ trips each morning and night.

ETI 17 – Response

Please see Section 4.4.1 (C ECHO 3 – Response), ETI 12 – Response, Section 4.2.6 (Topical Response), and Appendix H of this document. Traffic patterns associated with other neighborhoods are beyond the scope of analysis contained within the draft EIR.

ETI 18 – Comment

The local schools are already at their capacity and are complaining about traffic issues. Where are the children going to go, and safely?

ETI 18 – Response

Please see Sections 4.4.2 (CLPA 12 – Response), 4.3.7, and Appendix J of this document regarding schools.

ETI 19 – Comment

The County has no schools, libraries, law enforcement, shopping etc. and only limited fire protection in this area of the County, so all the residents will be using city amenities. Will any monies be going to the City or will everything be going to the County.

ETI 19 – Response

See Section 4.3.5 (City Council 1, 6, 7 and 8 – Responses) of this document.

ETI 20– Comment

We are also concerned about the wildlife that lives in the area of the proposed development. There is a wildlife corridor area between Devils Canyon and Browns Canyon across Deer Lake Highlands. Is it our right as human beings to keep pushing wildlife farther and farther back until we drive them into extinction? We have fox, bobcat, mountain lions, deer, and even bear on occasion, in the area. It wasn't too long ago that a black bear was caught in Aliso Canyon a couple of miles to the east of Chatsworth. It is such a thrill to see any of these animals first hand.

ETI 20 – Response

Please see ETI 6 – Response concerning potential impacts to wildlife movement corridors.

ETI 21 – Comment

All the birds were mentioned in the EIR, except the Killdeer. This beautiful little bird nests on the ground in the fall of the year. You never see them unless you get near their nesting area, then Mom tries to run someplace else to divert your attention from the nest. These birds are around the area.

ETI 21 – Response

Please see ETI 4 – Response. The Killdeer is not considered a sensitive species.

ETI 22 – Comment

The plant life in the proposed development will obviously be decimated. The Mariposa Lily is to be moved to another area and will hopefully survive. Who will be monitoring this to see it is done? If the EIR states that there are 400 to 1800 plants there now – depending on the season. How will we ever know if the 4000 moved and/or replaced plants will have lived? The proposed development should have the same chaparral on its hillsides and along the trails to keep from irrevocably changing the Chatsworth environment. Some of these Lillie's could be planted along the equestrian trails.

ETI 22 – Response

Please see ETI 1 – Response.

ETI 23 – Comment

Okay trees are an important part of our environment. Sadly we know the developer is planning on removing 65 of these great trees. Where are the 130 going to be planted? Will someone be walking through the development when completed and count them? Who?

ETI 23 – Response

Oak trees would be mitigated onsite. Section 4.3 of the Draft EIR included mitigation measures for oak trees. The County Forester has the responsibility of ensuring that all oak tree mitigation measures

have been implemented in accordance with the Oak Tree Report and the Oak Tree Permit. The oak tree report is included as Appendix F.3 in the Draft EIR. The County Forester is responsible for verifying that oak permit conditions are satisfied.

ETI 24 – Comment

Lastly, after knowing the destruction that has occurred in Limekiln, Moonshine and another unnamed canyon within the Porter Ranch development, we have good reason to be concerned about the runoff in Devils Canyon from this proposed development. Right now there are no hazardous materials going into the canyon from Deer Lake Highlands, but 484 homes will provide a plethora of opportunity for this type of destruction to our beautiful canyon. Supposedly, measures are to be taken that will clean up the water and slow it down before it reaches the canyon.

ETI 24 – Response

See Section 4.4.2 (CLPA 4, 5 and 6 – Responses) of this document.

ETI 25 – Comment

There are so many mitigating measures in the EIR that solve everyone's problems. However, many times mitigating means an excuse to get around something so the one mitigating can do precisely whatever they want. I believe you've heard the one about the mitigated homework – the dog ate it! Who will be the responsible party or parties to see that the proposed development is done according to plan. Does it ultimately fall on the community to watch dog it daily?

ETI 25 – Response

The County Department of Regional Planning has the overall responsibility to ensure that all mitigation has been effectively implemented in accordance with the approved EIR and the Conditions of Approval for this project. In addition, County inspectors will be onsite at all times during construction operations. Compliance with all County ordinances, as well as all conditions of approval is mandatory for the developer. Non-compliance can result in either a shutdown of the project until compliance is achieved, or in criminal prosecution to force compliance and/or to seek punitive actions.

The project site will be posted with, and the community will be made aware of, 24-hour-a-day, 7-days-a-week, emergency telephone numbers for the project superintendent, County personnel, as well as the Sheriff's office. See Appendices D and E of this document.

ETI 26 – Comment

We would like to see the development smaller with impacts minimal and land use in conformance with today's rural, housekeeping, and nature preserving environment.

ETI 26 – Response

Please see Sections 4.3.5 (City Council 3 and 4 – Responses) and 4.4.1 (C ECHO 3 – Response), and ETI 14 – Response.

ETI 27 – Comment

Equestrian Trails Inc., Corral 54 (ETI) represents over 200 members living in the communities of Chatsworth, San Fernando and Simi Valley. Our organization has been responsible for the construction and maintenance of many of the trails in this community. We promote the responsible use of public lands and trails, and we are very interested in assuring that the equestrian lifestyle in the Chatsworth area is maintained and expanded.

We would like to provide the following comments on the Presidio project proposed at Deerlake Highlands.

We recognize that this property has unique qualities and entitlements that make planning for development a very complex undertaking. We acknowledge the Presidio Partners team for making

efforts to satisfy the often-competing interests and wishes of neighboring communities and organizations. Their efforts have resulted in project changes and amenities that will benefit existing, as well as future, residents. There are some elements of their proposal that we support. There are other provisions that we feel need further clarification; and there are some issues which are beyond the expertise of ETI, that we believe need careful study and examination by the Commission and their technical experts.

ETI 27 – Response

The comment has been received and noted. No additional response is necessary.

ETI 28 – Comment

ETI Corral 54 endorses the network of trails proposed for the Deerlake Ranch project. We believe that the developer has provided a reasonable network of trails and connector routes to replace the existing trails that traverse this private property. We also support the developer's proposal to work with the community to establish temporary trails connecting Devil's Canyon and Brown's Canyon during the period of construction. Most importantly, we want to encourage the establishment of a long sought equestrian staging area on the adjacent Horner property. We applaud the developer's efforts to facilitate the acquisition of this much-needed public facility. Our vision is of a primitive parking area with minimal improvements to avoid becoming an attractive nuisance.

We would like to see the applicant provide equestrian sized lots to allow some of these new residents to maintain horses on their property. Such a development will ensure that the equestrian lifestyle in the Chatsworth community will continue to grow and prosper.

We encourage the Commission to require that whatever signage and traffic improvements on Canoga, Rinaldi, Chatsworth, Topanga Canyon and Candice Place are adopted, be completed prior to commencement of construction. This will provide an additional margin of safety for pedestrians and equestrians as a result of the increased construction and residential traffic.

ETI 28 – Response

Please see Sections 4.4.1 (ETI-10 and 11 – Responses), 4.3.5 (City Council 2 – Response), and Appendix K of this document.

ETI 29 – Comment

ETI Corral 54 would like to seek clarification from the developer and the Commission on the following items. DOTTED LINE TRAILS – How are they going to be completed? What recourse is available to insure their construction and connection? Can a condition be drafted to give us that guarantee

ETI 29 – Response

Dotted line trails are existing trails which are not located within the project site, but which are an integral part of the area's trail system. In most cases, these existing trails are located on publicly-owned property within sensitive habitat areas, such as Devil Canyon, which is owned by the SMMC. Because of the sensitivity of the habitat, no improvements will be permitted. Please see Appendix E of this document regarding Draft Conditions of Approval. The Conditions of Approval state the following:

> *"As agreed, the subdivider will construct and offer to dedicate additional onsite loop trails in addition to those depicted on the approved tentative tract map on the subdivider's property. Such additional trails are depicted as a solid line designated "Project Trails" on Exhibit "A" to the Conditional Use Permit. As further agreed and subject to the approval of the appropriate agencies and property owners, the subdivider will construct additional portions of the loop trails on property owned or*

regulated by others. Such proposed trails are depicted as a dashed line designated "Proposed Trails" on Exhibit "A" of the Conditional Use Permit."

The proposed trails shown on the VTTM (Appendix C.1 of this document) would be constructed to County standards and dedicated to the County for public use. These are requirements imposed by the County as conditions of approval of the project. The dedication of the trails rights-of way will take place concurrently with the recordation of the final tract maps. This is standard procedure for all tract maps within the County.

ETI 30 - Comment

? OAK TREE MITIGATION Can planting be required rather than payment "in lieu"? Can locations be selected where there is no future likelihood of removal? Can a monitoring program be developed to ensure proper watering and replacement of unhealthy trees for a three-year period?

ETI 30 – Response

Please see Section 4.2.1 (Topical Response) of this document regarding oak tree mitigation and mitigation for Plummer's mariposa lily.

ETI 31 – Comment

MARIPOSA LILY – What assurance is there that the replacement site is adequately protected and that continued propagation of the lilies is assured?

ETI 31 – Response

Please see Section 4.2.1 (Topical Response) of this document regarding oak tree mitigation and mitigation for Plummer's mariposa lily.

ETI 32 – Comment

TRAFFIC – What can be done to reduce the speed and the volume of vehicles using the intersection of Rinaldi and Canoga? Can additional measures be included to protect equestrians and pedestrians at this wide intersection?

ETI 32 – Response

Please see Section 4.3.6 and Appendices D and E of this document regarding traffic. The project applicant will work closely with LADOT to mitigate cumulative traffic impacts in the residential areas adjacent to Canoga Avenue (including the Canoga/Rinaldi intersection) through the development of a Neighborhood Traffic Management Plan. A self-actuated equestrian signal is proposed at Canoga/Rinaldi (i.e., will only flash when actuated by a person on horseback).

ETI 33 – Comment

ENVIRONMENTAL ANALYSIS – Can an independent consultant be retained to review the items identified as inadequate by the community? Shouldn't seasonal changes on the site have been examined more closely?

ETI 33 – Response

Technical studies regarding the project were conducted and the Draft EIR was prepared according to the requirements of CEQA. Reports for the technical studies were included in the Draft EIR as appendices and updated studies were conducted and are included as appendices in this document. These technical reports wererevieved by various county departments having expertise in these areas. Although an outside consultant could be retained to review these reports, it is the opinion of the county that this is not warranted.

ETI 34 – Comment

Finally there are potential project impacts which could have significant impact on the quality of life for both the existing and new residents. These are viewed by ETI as critical matters, beyond the scope of our equestrian focus, which must be satisfactorily resolved before any approval of this

project is contemplated. We recognize that the amenities offered for the equestrian community are very beneficial, but they cannot supercede the potential negative environmental impacts that may be caused by traffic, school overcrowding, disruption of wildlife movement and increased stormwater runoff in Devils Canyon. We request that the Commission carefully review the EIR and its supporting documents and take appropriate actions to assure that this project will not negatively impact the mobility, safety, convenience and lifestyle currently enjoyed by the Chatsworth community. It is this lifestyle after all, that brought most of us to the community; and it is important that is not be disrupted or modified by incompatible development within and adjacent to the community.

ETI 34 – Response

The comment is noted and will be forwarded to the decision makers. A complete and appropriate environmental analysis is contained in the EIR for traffic, schools, wildlife movement and flood hazard factors.

ETI 35 – Comment

Specifically, we would like the Commission to examine the following. TOPANGA AND THE 118 FREEWAY – Did the traffic analysis accurately depict the current "level-of-service" and properly account for the future development activity and it's [sic] likely impact on the intersection? Are there improvements that need to be made for this future growth? Should the developer and subsequent developments be required to contribute to a fund for those future improvements? Can the developer assist in securing the dirt trail under the 118 and in gaining access through Cal-Trans' fences in to the North Stoney Point Park? Can the trail connections from Topanga to the Groupe' Project be completed prior to commencement of construction? (Please see the attached map for trail clarification.)

ETI 35 – Response

Please see Sections 4.3.2, 4.3.6 (LADOT responses), and Appendices D, E, N, and K of this document regarding traffic.

ETI 36 – Comment

WILDLIFE CORRIDOR – How will the wildlife movement between Devil's and Brown's Canyons be accommodated with this project design?

ETI 36 – Response

Please see Section 4.3.1 (Topical Response) of this document regarding wildlife corridors

ETI 37 – Comment

SCHOOLS – What mechanism can be developed to assure that the project will not overburden the local public schools, particularly Chatsworth Elementary? What can be done to correct the problem if there are project related impacts once the homes are completed?

ETI 37 – Response

Please see Sections 4.3.7 and 4.5.28 of this document regarding schools

ETI 38 – Comment

STORM WATER – How will the increased volume and speed be of the runoff be controlled to prevent erosion of Devil's Canyon and the Santa Monica Mountains Conservancy and City park lands? On behalf of ETI Corral 54 we would like to thank you for your attention to this matter, and for your willingness to visit our community and see first hand our lifestyle and the nature of our neighborhood. Our members are available for further discussions with your staff or Commission members.

ETI 38 – Response

Please see Sections 4.2.2 and 4.4.2 (CLPA 4, 5, & 6 – Responses) of this document regarding stormwater.

4.4.4 Recreation & Equestrian Coalition

Ruth Gerson, President Recreation & Equestrian Coalition

April 10, 2002

REC 1 – Comment

The Recreation and Equestrian Coalition (REC) represents the interests of over 10,000 outdoor enthusiasts throughout Southern California. REC was created to "inform the public and policy makers about access to and the use of diverse recreational opportunities available throughout Los Angeles County." We have been very active in promoting the development of appropriate public access to all publicly owned lands.

I am writing to express my support for the extensive recreation improvements proposed by the Presidio Partners for their Chatsworth project at Deerlake Highlands.

REC does not take positions on specific development proposals, however, we do monitor closely the impact those proposals will have on both the current and future use of publicly owned lands. We believe the amenities proposed by the Presidio: an extensive network of trails and trail connections with traffic control at road crossings; funds for ranger support; acquisition of additional open space in Brown's Canyon; and creation of an equestrian staging area at Canoga and the 118 Freeway will provide a significant benefit to the general public and should be clearly included as conditions in any approval you may grant the applicant.

We would also like to endorse the applicant's proposal to work with the equestrian community to establish temporary connector trails for use during the period of reconstruction.

Since Chatsworth is well known for a rural, equestrian lifestyle, we believe that the developer should be required to include some lots of sufficient size to allow the keeping of horses by the new homeowners. This would clearly signal the County's commitment to maintaining the equestrian culture and heritage of this community.

Finally, we would like to request that you pay particular attention to the comments and concerns raised by the local equestrian community and ETI Corral 54. Their familiarity with the local community is an important resource for identifying specific project issues and impacts.

REC 1 – Response

The comment has been received and noted. Draft conditions of approval for the project are included in Appendix E of this document.

4.4.5 Santa Susana Mountain Park Association

Dorian Keyser, Vice-president and Lands Committee Chair, SSMPA

January 11, 2002

SSMPA 1 – Comment

Under Mr. Garlinghouse's able leadership, the Presidio Group has prepared a very impressive DEIR. We await the final EIR, which, hopefully, will include revisions that reflect the written and oral comments of the public. Will full public comments to the EIR be allowed on all of it, not just those parts that have been changed from the DEIR?

SSMPA 1 - Response

All comments received and noted and any revisions/changes to the Draft EIR are included in this document.

SSMPA 2 – Comment

We are concerned that the Presidio Group is planning to sell the property to one or more developers who will implement the approved plans. The latter will be responsible for the grading, the streets and sidewalks, plus the water, electricity, and natural gas to the entry of each lot so that its implementation will follow the requirements in the documentation regardless of who becomes responsible.

1. *Can/will Mr. Garlinghouse supply us with detailed information one or more major projects in southern California where the Presidio Group did all of the planning, etc. and sold the property to another group that successfully carried it out with little change from the plans?*
2. *Will Mr. Garlinghouse agree to remain as an advisor until the infrastructure of the project has been successfully completed? Will one of the conditions for the sale of the property by that Mr. Garlinghouse is reimbursed for his expenses?*

SSMPA 2 – Response

This comment is not a CEQA related issue. No additional response is required.

SSMPA 3 – Comment

We recommend that the size of each park be increased to be at least as big as the legal requirements.

SSMPA 3 - Response

There is no legal requirement regarding the minimum or maximum size of private parks.

SSMPA 4 – Comment

The July 26, 2000 comments from the Santa Monica Mountains Conservancy should be fully incorporated in Volume 1 of the DEIR. This should include an up to date version of the Conservancy's map with changes:

1. *North of Stony Point is now owned by the L.A. City Dept. of Rec. and Parks. A part of its south border connects to L.A. City's Stoney Point Park. An exact map of this addition should be incorporated*
2. *The railroad tracks and the railroad tunnel should be shown.*
3. *The map should show the privately owned 14 acre Horner and 28 acre Smith properties which start on the east side of Browns Canyon Road (north of the 118 freeway) and Smith meets the L.A Flood Control District property.*
4. *The map should show the Deyoung, Mineo, and Swertington properties that go from the west side of Topanga Canyon Blvd. Opposite North of Stoney Point to the Santa Monica Conservancy owned "Garden of the Gods" and from there via a public trail to Chatsworth Park South.*
5. *Chatsworth Park South connects to publicly owned Corriganville Park which is part of the main wildlife corridor between the Santa Monica mountains and the Los Padres and Angeles National Forests vial the Santa Susana Mountains and Simi Hills.*

SSMPA 4 – Response

Please see Section 4.3.3 of this document for the County's response to the Santa Monica Mountains Conservancy's January 22, 2002 comment letter. Publicly owned open space properties within the vicinity of the project site are depicted in Exhibit 2.6 of this document.

SSMPA 5 – Comment

Wildlife Corridors

The DEIR questions the significance of the wildlife corridors in the Deerlake Ranch and its environs. However, Browns Canyon is a very important wildlife corridor which is used by numerous species of animals. Mountain lions, bob cats, coyotes, eagles, hawks, etc. are not easily observed but they are there, especially at night!! Historically, this corridor has been especially critical during massive

wildfires which prevent animals from escaping via other corridors. Wildlife presently reaches the Canoga Ave. underpass of the 118 Freeway via Browns and Devil Canyon. The importance of this corridor has been increased due gating of the privatized roads into Indian Falls and Indian Springs via Iverson Road and Poema Place.

SSMPA 5 – Response

See Section 4.2.1 (Topical Response) of this document.

SSMPA 6 – Comment

We are concerned about the response time of the distant Lost Hills L.A. County Sherifs [sic] Sub-station. The plan to have a "kiosk" on-site with back-up from the nearby L.A. City Devonshire Division Sub-station is inferior to delegating the responsibility to the local Devonshire Station.

SSMPA 6 - Response

See Section 4.2.5 (Police Services 3 - Response) of this document.

SSMPA 7 – Comment

The L.A. City Fire Department should supply emergency services but the L.A. County Fire Department should be responsible for wildfires.

SSMPA 7 - Response

This determination of which two agencies would supply specific services to the site is not within the scope of this EIR. No additional response is required. Also see Section 4.2.4, Fire Services 1 – Response.

SSMPA 8 – Comment

The homeowners should pay taxes to pay for the costs of cleaning the catch basins. L.A. County is responsible for flood control.

SSMPA 8 - Response

The project will be a part of the Los Angeles County Flood Control District, which will maintain the project storm drain system. Therefore, each future property owner will pay his/her fair share of flood District taxes.

SSMPA 9 – Comment

The "N.A.P" on the maps need to be updated since many of these items have been acquired by the Presidio Group. Especially the N.A.P Table on street 1 or the 10-19-01 DEIR.

SSMPA 9 - Response

The revised VTTM in Appendix C.1 of this document reflects the updated status of the "NAP" lots.

SSMPA 10 – Comment

We assume that the 10 foot wide "NAP" which surrounds the entire property will be deeded to the Conservancy as per the agreement with them. I suggest that this be given a NAP number and its ownership be fully defined. The equestrian trails need to be more clearly defined. I think that L.A. County will maintain the equestrian trails but who will maintain the Conservancy's 10-foot easement?

SSMPA 10 - Response

The 10-foot strip along the perimeter of the project, as shown on the VTTM in Appendix C.1 of this document is owned, and will be maintained, by the MRCA.

SSMPA 11 – Comment

Who will make sure that the 353 oak trees are properly cared for after the development has been completed? The DEIR is inconsistent in that it stated in several places that the 130 replacement oak trees will be cared for the two years and other places say for five years. All places should say a minimum of five years." An oak tree in a fifteen gallon container is small and many will die. How

will they be replaced? What provisions will there be to prevent homeowners form damaging oak trees on their on their property?

SSMPA 11 - Response

The County Ordinance that covers replacement oak trees states they will be maintained for a minimum of two years. If any tree dies within the two-year period it must be replaced by the developer. The conditions of the oak tree permit will determine how many and what size trees shall be replaced. After completion of the project, the oaks will be maintained by the HOA within common areas, and their long-term preservation will be dependent on local climate conditions as the majority of trees will remain in open space areas.

SSMPA 12 – Comment

Volume II. Table 6.3 should be corrected to state that the total jurisdiction area for Devil Canyon is 353,443 sqft. not 6,575 sq ft.

SSMPA 12 - Response

The comment has been received and noted.

SSMPA 13 – Comment

All of the Arundo Donax should be completely removed from Devil Canyon before it takes over and spreads. It is very invasive!!

SSMPA 13 - Response

Complete removal of all the Arundo donax from Devil Canyon would not be considered feasible, as this invasive species is well established within the drainage, including upstream areas that are not within the control of the applicant. Effective control of Arundo must necessarily begin in the most upstream areas of infestation, and progress downstream from there. Such control efforts, if undertaken, would probably require the joint efforts of the SMMC and Los Angeles County Flood Control District.

SSMPA 14 – Comment

The trails will be used by equestrians, hikers, and, unfortunately, mountain bikers. Trails need to be wide enough to allow safe passage in the same direction and in opposite directions. They should also have numerous signs.

SSMPA 14 - Response

Trails included in the project have been designed per the requirements of the County of Los Angeles General Plan, Highway Plan. Since the trails will be dedicated to the County, their use will be subject to the regulations of the Department of Parks and Recreation, including the placement of appropriate signage.

SSMPA 15 – Comment

We are surprised by the comment by James E Hartle in the August 28, 2000 DEIR that Browns Canyon Road is major highway in the L.A. highway plan which requires a 100 foot right of way plus necessary necessary [sic] slope easement. Implimentation [sic] of this would open up the entire region north of the Deerlake Highlands project to development, as has been the case with the Porter Ranch.

SSMPA 15 - Response

The designation of Browns Canyon Road is under the jurisdiction of the County of Los Angeles, and not within the scope of this EIR. The road does not, and would not, serve this project. However, the comment is noted and will be forwarded onto the decision makers.

SSMPA 16 – Comment

Despite presentations by various people, the public believes that there will be serious traffic congestion at Topanga Canyon Blvd., Canoga Ave., and DeSoto which would cause significant delays during morning and evening rush hours. They also believe that three these streets and other major ones in the area will be heavily impacted. I suggest that a committee be formed consisting of interested people and public experts be tasked with fully exploring the situation. The experts should include both L.A. County and L.A City people.

SSMPA 16 - Response

Please see Section 4.4.3 (ETI 12 – Response) of this document for a discussion of traffic impacts Both County and City traffic experts have reviewed the traffic studies..

SSMPA 17 – Comment

Schools

The principal of the Chatsworth Park Elementary School testified that her school is already operating at capacity and that table 4.10.1 of Volume 1 of the DEIR which states that there are 125 available spaces at her school is not correct. She also stated that it is hazardous to be let out of cars at her school due to hazardous traffic. We suggest that the Germain Elementary School be investigated.

SSMPA 17 - Response

Please see Sections 2.0, 3.3.4, 4.3.7, 4.5.28 (Dixon-Davis -1 Response) and Appendix J of this document.

SSMPA 18 – Comment

Libraries

The DEIR requires a library facilities mitigation fee of $626 per residential unit and states that a bookmobile from the Los Virgenes Public Library will provide library services. However, would be very inadequate for the children and the adults. The nearby Chatsworth Branch Library should receive this fee and any tax revenue since it is much more convenient and complete than a bookmobile.

SSMPA 18 - Response

See Section 4.3.5 (City Council 6 – Response) of this document.

SSMPA 19 – Comment

Fire Protection.

We suggest that the fire department be consulted the review the adequacy of the water supply and water pressure since all of the reserve will now available from the existing source will be used up. We think that some over capacity should be preserved for safety.

SSMPA 19 - Response

The Preliminary Water System Design Report, prepared by Boyle Engineering for the LVMWD (see Appendix N of the Draft EIR) states that the water consumption analysis prepared for this project took into account water storage requirements for both fire suppression needs and stand-by reserves for the entire water tank service area. As stated in Section 4.8 of the Draft EIR, the project would comply with all applicable County Fire Code and ordinance requirements. The revised project, with approximately 20 percent fewer units, would have even less demand on the LVMWD's facilities. The county fire department has reviewed the DEIR.

SSMPA 20 – Comment

In deference [sic] to those whose views will be degraded by the grading and construction and the dust, it is recommended that the developer be helped by prompt granting of permits, completion of inspections, and other support of public officials consistend [sic] with requirements.

SSMPA 20 - Response

No specific environmental comment is made. The comment is noted and will be forwarded to the decision makers.

4.4.6 Twin Lakes Property Owners Association

Mark Watters, President, Twin Lakes Property Owners Association

March 20, 2002

TLPOA 1 – Comment

As we have been in communication over the last few months regarding certain community improvements, the Twin Lakes Property Owners Association would like to request that the following items be included in the conditional use permit and conditions of approval for the Deerlake Ranch development project:

1. *Complete installation of mainline sewer within the Twin Lakes community if the community favors by 60 percent. The county would require 60 percent approval for the implementation of such a project. Subdivider will pay for installation costs of main line and house laterals. Residents will be responsible for the hook-up fee of $3,900.00 and for construction of the private connection between their house and the mainline sewer. Following the installation of sewers, all roads affected in the community are to be paved. If the 60 percent approval is not given, a dollar amount will be negotiated to pay for the paving of the roads, based upon estimates obtained by the Twin Lakes Property Owners Association.*

TLPOA 1 – Response

Please see Appendix E of this document for a complete list of the project's Draft Conditions of Approval regarding sewers in Twin Lakes. It is inappropriate to require this applicant to be solely responsible for improvements to the existing Twin Lakes community.

TLPOA 2 - Comment

2. *Provision for a sheriff's substation at the Topanga Canyon Blvd. entrance to Twin Lakes, to be paid for by the subdivider. This station is to be built when Road "A" is completed and Mayan Drive is relocated.*

TLPOA 2 – Response

Please see Section 4.2.5 and Appendix E of this document regarding the Sheriff's Storefront facility.

TLPOA 3 – Comment

3. *Payment of the sum of $230,000.00 to the Twin Lakes community, for paving remaining roads not covered in item 1, construction of signs, monuments, and any other community improvement that the Association deems appropriate. The developer or subdivider will pay this amount to Twin Lakes Property Owners Association.*

TLPOA 3 – Response

Please see Appendix E of this document for a complete list of the Draft Conditions of Approval regarding payment to the Twin Lakes community for paving.

TLPOA 4 – Comment

4. *Construction activities shall adhere to the regulations outlined in the attached Revised Supplemental Conditions of Approval – Twin Lakes Community Suggestions.*

TLPOA 4 – Response

Please see Appendix E of this document for the draft Conditions of Approval pertaining to construction activities.

4.5 INDIVIDUAL COMMENTS/RESPONSES ON THE DRAFT EIR

This section includes individual comments on the Draft EIR and responses to the comments. Actual individual comment letters are included in Appendix B. It should be noted that the majority of these individual comment letters were prepared for the 484 unit project that was evaluated in the Draft EIR. Where applicable, responses to these comments have been prepared in the context of the Revised Project Design (388 units) evaluated in the Revised Project Design Summary Document (see Appendix Q of this document). Many of the responses refer the reader back to the Section 4.2 topical responses, where a comprehensive response has been prepared for specific issues of concern.

Individual comment letters received on the Draft EIR, have been retyped with the response immediately following each individual comment.

4.5.1 Ray Adams

March 11, 2002

Adams 1 – Comment

This is to advise you and the Regional Planning Commission that the Board of Directors of the Indian Falls Homeowners Association have no objections to the subject project.

Our support is based on several meetings with the applicants wherein they committed to implementing various project mitigation measures and voluntary community improvements to our satisfaction.

Adams 1 – Response

The comment has been received and noted and will be forwarded to the decision makers. No additional response is required.

4.5.2 Dieter and Margaret Asel

March 26, 2002

Asel 1 – Comment

We are writing today to voice our concern regarding the deer lake development planned for the area directly north of our Heritage neighborhood. We have lived here since the home was built in 1981 and are now retired. Four of our original neighbors are also still living here. As you can see, we really treasure this special part of Chatsworth. However, when the 118 freeway was completed, we seriously thought of moving because the quality of life had seriously decreased due to the increased noise level. With the planned expansion of Canoga Ave. to a 4-lane thoroughfare, the noise level will be intolerable. How will we be able to ever enjoy outdoor living again. In Simi Valley, just over the hill from us, expansion is carefully planned taking care to preserve the quality of life through limiting population density as well as preserving open spaces. Los Angeles has always profited from the citizens of the San Fernando Valley since our income structure supports the tax base of the larger, lower income city. We had to sacrifice a great deal to live here. We have very few entertainment or good dining facilities and long commutes to earn the income that supports the city. But we endured because we truly loved to live and retire here. Now this is all jeopardized, if our local representatives are unable to protect our established way of life. Instead of wilderness and hiking trails we will have urban sprawl, congestion and noise. Please don't let this happen. When you go to the south side of the valley you can already see what the Porter Ranch development has done to this last vestige of nature. It truly looks like a sore on the flesh of mother nature.

Asel 1 – Response

The comment has been received and noted. Please see Section 2.0 and Section 4.4.1 (C ECHO 1 and 2 - Responses) of this document. Noise mitigation is addressed under the noise analysis in

Section 4.7 of the Draft EIR. Please refer to Section 4.2.3 of this document for a comprehensive response to noise comments.

Asel 2 – Comment

Mr. Members of the Planning Commission, we urge you to lend your support to preserve the serenity and flavor of this area of ½ acre home sites and help limit the density of the homes to be built. But most important, please don't widen Canogo [sic] Ave or make it an access road to the Deer Lake Development.

Asel 2 – Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue. Please see Section 4.4.1 (C ECHO 1 and 2 - Responses) of this document. Please refer to Section 4.2.7 of this document for an additional discussion of land use issues.

4.5.3 Michael A. Augello

December 14, 2001/April 10, 2002

Augello 1 – Comment

Presidio Chatsworth Partners has presented a tentative tract map, which re-subdivides the Deer Lake Highlands subdivision of 1927 recorded book 22 page 3 record of surveys. A copy of this map exists in the draft EIR #99-239. This new subdivision provides access for most lots in the original subdivision units numbered on two and three. However the new subdivision (tentative tract map 53138) ignores the Deer Lake Highlands addition subdivided and recorded in 1934, (see exhibit #1). These lots would be completely cut off from their access if the tentative tract map is approved in its present form.

I have included an index map of the original Deer Lake Highlands subdivision as copied from the office of the county assessor, (exhibit #2). The index shows the county assessors map book of 2816. the location of the southern border of the Deer Lake Highlands Addition begins at the northwest corner of the assessor's map and continues along the northern border 1314 ft. I have highlighted in yellow this zone. Clearly the assessor's map shows two points of access provided in the original map. The original subdivision clearly intended to provide access for the later addition.

Presently many retirees own the Deer Lake Highlands addition. Some owners are the original purchasers of these parcels. Most have been owned for many years. These landowners have faithfully paid their property taxes every year with the anticipation that one-day these properties would be worth something of value. I am writing this letter upon the direction of twelve of these landowners. If the tract map is approved without modification to add access for road and utilities, these properties will become worthless with the stroke of a pen.

As a remedy we suggest a simple modification of the northern border of the tentative tract map, i.e. "The Deerlake Ranch Project". This modification would consist of the granting of ingress and egress road and utility rights in at least two areas topographically suited for this purpose along the 1314 ft. connecting property line. These rights of way would naturally need to connect with the other proposed routes.

Augello 1 - Response

The applicant hasaggregated numerous substandard parcels subdivided in 1927 and 1928 ("Old Lots") in the Deer Lake Highlands subdivision. Records of Survey were filed with the Los Angeles County Recorder for Deerlake. Record of Survey Book 24, Page 15 constitutes approximately the western third of the northern portion of the subdivision. Record of Survey Book 24, Page 15 is contiguous

with Lot 5. Record of Survey Book 24, Page 15 reserves a network of private access easements, which were never dedicated to the public, which run in both the east-west and south-north directions.

The easements reserved by the subdivider of Record of Survey Book 24, Page 15 terminate at separate lettered Parcels "A", "B", and "C." These lettered parcels are located between the northern terminus of south-to-north Easement Avenues "VV", "W", and "Y", respectively, and the northerly boundary of the Record of Survey.

The legal issue presented by the commenter is whether the current owners of any parcels in Lot 5 have any existing legal access rights which would either: (1) permit those owners to utilize the private easements reserved in Record of Survey Book 24, Page 15 for access across the subdivision to their lots; or (2) require the applicant to provide those owners with alternative access through the public and/or private streets in the subdivision.

An abstract of title confirms that "government lot" 5 ("boundary lot") was never under common ownership with the property comprising the subdivision during the relevant time period of 1925 to 1928. Security Title Insurance Co. was the record owner of the property comprising Record of Survey Book 24, Page 15, which was filed September 12, 1927. At no time were any of the boundary lots included in any of the Records of Survey comprising the Deerlake subdivision. The property comprising Lot 5 and Record of Survey Book 24, Page 15 were conveyed at different times to the commenter's predecessors in interest and security by different grantors. Security was conveyed the bulk of the property comprising Deerlake in a single transaction in a deed from Willard and Peggy Marble recorded on May 13, 1926 in Book 4646, Page 60, Official Records. Lot 5 and other property was conveyed to Jay J. Howell by Trustee's Deed Upon Sale, recorded March 25, 1920 in Book 7117, Page 237 of Deeds. The Howells were the record owners of Lot 5 until the Commissioner's Deed recorded March 25, 1933 (Book 12085, Page 190 of Official Records) vesting title in the Holcombs.

An easement can only be created by implication when the following four criteria coincide at the time of the conveyance: (1) the common ownership of the dominant and servient tenements; (2) the common owner's apparent and continuous use of one part of the commonly-owned parcel to benefit a different part of the larger parcel; (3) the transfer of one of the parcels or a portion of the parcel; and (4) the necessity, after the conveyance severing the parcels, for the pre-existing use to continue. Since there was no common ownership of Lot 5 and the Record of Survey Book 24, Page 15 parcel, there can be no implied easement.

There are two requirements for the creation of an easement by necessity: (1) the common ownership at the time of severance of ownership of two affected parcels such that the owners of the dominant and servient tenements stand in the relationship of grantor and grantee to one another; and (2) as a result of the conveyance, one of the two parcels becomes landlocked without other means of access. The facts set forth above establish that there was no common ownership of Lot 5 and the parcel comprising Record of Survey Book 24, Page 15, so the first legal test is failed and there can be no easement by necessity. The County of Los Angeles subdivision ordinance requires that the applicant provide an access easement to legal lots adjacent to the northern project boundary.

Augello 2 – Comment

Presidio Chatsworth Partners has presented a tentative tract map, which resubdivides the Deerlake Highlands subdivision of 1927. This new subdivision ignores the access necessities of nearly eighty small lot, (8,000 square foot average), landowners located in the Deerlake Highlands Addition of 1934, (see key map for location). I directly represent twelve of those landowners. If the proposed tract map were to be enacted in its present flawed form, then all eighty landowners would become landlocked. There is no other access for these lots.

The original tract map created in 1927 clearly demarcates up to four access points along a 1,314 foot shared boundary. I have included a copy of the pertinent section of this map showing the original easements creating access to the Deerlake Highlands Addition of 1934, (Exhibit 1).

I have also included the identical portion of the newly proposed subdivision, (Exhibit 2). This flawed proposal eliminates the previous access points without creating any new ones.

The Presidio Group's response to my queries has been an attempt to foist the responsibility for our problem onto the back of the SMMC. The SMMC is NOT currently involved in filing for a new tract map. Therefore, the primary concern must be the proper creation of access leading directly to SMMC's ten-foot wide hiking/biking/equestrian trail. After this is assured we can discuss matters with the SMMC.

The Presidio Group has also claimed that their title search did not turn up a text version indicating an access easement granted to the Deerlake Highlands Addition of 1934. They choose to ignore the pictorial recordation of the easements in the original maps of 1927. It is obvious that at the creation of the subdivision in 1927the surveyors who drew up the map made provisions for future expansion into the Deerlake Highlands Addition, by placing easements right to the edge of the then current subdivision.

Whether somebody forgot to properly record a written deed or the written portion has been misplaced cannot be determined. What can be determined is that the original map survives and the planning commission can prevent the permanent landlocking of nearly eighty small properties. Exhibit 3 shows two simple road modifications to the proposed tract map that would prevent the landlock of these parcels.

Augello 2 – Response

Please see Appendix M of this document regarding access to the north.

4.5.4 Debbie & Larry Belkin

April 2, 2002

Belkin, D & L 1 – Comment

We just wanted to take a minute and let you know how we feel about the Deerlake Development. To be blunt, we are vehemently opposed to it. We feel very strongly that it will negatively affect the quality of life that our family currently enjoys in this neighborhood.

We, as taxpayers, are asking you, our elected official, to take whatever steps necessary to halt this project. We do not have enough schools, teachers, police or firefighters as it is. This project will only place a greater burden on the city's meager resources. The traffic congestion alone is enough to send shivers down our collective spines. Although we are not horse owners, we are very concerned with the damage that the project will do to the environment and wildlife habitats that will be adversely affected.

If there is anything that we can do to assist you towards this goal, please feel free to contact us at any time.

Belkin, D & L 1 – Response

As stated in Section 4.10 of the Draft EIR, school impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4 and 4.3.7 and Appendix J of this document regarding additional discussion of schools and teachers.

As stated in Sections 4.8 and 4.9of the Draft EIR, impacts regarding police and fire protection services would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.3 and 4.2.5 of this document for additional discussion of police protection impacts. Please see Section 4.2.4 of this document for additional discussion of fire protection impacts.

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6 and Appendices K of this document regarding additional discussion of traffic impacts.

As stated in Section 4.3 of the Draft EIR, biological impacts would not be significant with implementation of recommended mitigation measures. Please see Section 4.2.1 and Appendix F of this document regarding additional discussion of biological resources.

4.5.5 Lawrence Belkin

January 7, 2002

Belkin, L 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following: The lack of adequate street and traffic controls, increased traffic, also the lack of additional schools, fire stations and police facilities.

Belkin, L 1 – Response

The commenter's objection to the project is noted and will be forwarded on to the decision makers. As stated in the Draft EIR, project impacts to traffic, schools, and fire and police services would not be significant with implementation of mitigation measures. Please see Sections 3.0 and 4.2 and Appendices K, and J of this document for updated information regarding traffic and schools.

Belkin, L 2 - Comment

I am extremely disappointed in the lack of concern the the [sic] Board is displaying to the voters and taxpayers that put them in office.

Belkin, L 2 – Response

The comment has been noted and will be forwarded on to the decision makers. No additional response is needed.

Belkin, L 3 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Belkin, L. 3 – Response

As stated in the Draft EIR, implementation of the project would not result in significant impacts with implementation of mitigation measures. The commenter's objection to the project is noted and will be forwarded on to the decision makers.

As discussed in Section 2.1.2 of the Draft EIR, the General Plan density threshold for the project site is between 176 and 1,052 units. The revised 388-unit project (as discussed in Section 2.0 of this document) is well below the maximum density allowed for the project site. A reduced density alternative was discussed in Section 5.4.3 of the Draft EIR (Alternative 3 – 171 residential units). However, this alternative would not meet all of the objectives of the project. When cost is factored with the already incurred land acquisition costs and market sales process, this alternative becomes economically unfeasible.

Mitigation measures have been documented in the Draft EIR (see Appendix D of this document) to mitigate all impacts to less than significant. In addition, subsequent to distribution of the Draft EIR, additional mitigation has been included to further reduce impacts associated with the project, which are outlined in this document.

Please see Section 1.1 of this document regarding the comment period for the Draft EIR.

4.5.6 Richard and Donna Bersbach

January 7, 2002

Bersbach 1 – Comment

I have lived on Independence Ave since 1978. Our street is rural in nature, That is to say that it is dedicated but it is unimproved. It is a dirt road. I have been fighting for years to see traffic that comes off of Desoto on to Tulsa and then down Independence towards Chatsworth street as a bypass to Desoto Backups. This is a continual problem on week day mornings. In the afternoon the traffic created by the Private schools in the area clogs Chatsworth Street Already.

Bersbach 1 – Response

As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operate at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

Bersbach 2 - Comment

The Housing development that is proposed is going to add to this problem. I am sure that as traffic coming south on Canoga, from the development backs up on Canoga, some will go east on Renaldi [sic] and then south on Variel, or Independence. This will compound an existing problem.

Bersbach 2 – Response

Please see Bersbach 1 - Response of this document. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

Bersbach 3 - Comment

I'm sure you know that Sierra Canyon. [sic] School and its parents/students are banned from using Independence (its part of their C.U.Z Permit) some of their Parents use our street anyway. There really is no over sight. It is put on the people living in our neighbor hood to police it. And we have no authority, or time for such things.

Bersbach 3 – Response

The comment is not CEQA related and is out of the scope of the EIR. No response is required.

Bersbach 4 - Comment

Seriously the traffic on Chatsworth Street is already a serious problem. Unless the city widens Chatsworth to a four lane road from. Topanga to Desoto, there is nothing you or I or any one else can do to create any thing but shear chaos during peak traffic in the mornings and afternoons.

Bersbach 4 – Response

See Section 3.3.5 of this document regarding project traffic and mitigation measures, which have been revised from those discussed in Section 4.12 of the Draft EIR. See also Appendices E and K of this document.

Bersbach 5 - Comment

The number of trips a day from this new community has been way UNDER estimated. There are too few streets to come and go from the project area and so it will concentrate the traffic on the areas that are left.

The project should be scaled down to less homes on bigger lots. There should be another way for traffic to go besides towards Topanga and towards Canoga.

Bersbach 5 – Response

Please see Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Additional vehicular access points as suggested by the commenter are not required to mitigate the traffic impacts related to the project (see Appendix N of this document). Additionally, there are no other north-south roads for access to this property. The revised project design has scaled down the number of lots which are larger in size.

4.5.7 Lesl Birkhead

January 7, 2002

Birkhead 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Illness producing agents becoming airborne during land disturbance (molds, fungus, spores etc.)

Birkhead 1 – Response

As stated in Section 4.2 of the draft EIR, all grading operations will be watered to keep fugitive dust to a minimum, thereby reducing the possibility of microscopic airborne contaminants.

Birkhead 2 – Comment

- carbon monoxide due to - traffic on 118 fwy and surrounding streets.

Birkhead 2 – Response

As stated in Section 4.2 of the Draft EIR, the project would not create new violations of the CO standard. Therefore, no significant impacts are anticipated.

Birkhead 3 – Comment

Damage to my home (settlement, cracks, dirt, NOISE) from equipment etc...

Birkhead 3 – Response

Implementation of the project would not result in settlement or cracks to occur to existing homes within the Twin Lakes Community, because construction vehicles would be prohibited from using the existing roads within the Twin Lakes community. As stated in Sections 4.2 and 4.7 of the Draft EIR, no significant impacts would occur with respect to dust and or noise with implementation of the recommended mitigation measures. See also and Section 4.2.3 of this document for additional discussion regarding noise and dust impacts.

Birkhead 4 – Comment

Drainage/runoff from storms etc. as the area around my residence already often floods.

Birkhead 4 – Response

Please see Section 4.2.2 (Urban Runoff 1 – Response) and Section 4.4.2 (CLPA 4 and 5 – Responses) of this document. The majority of the project site drains directly into Devil Canyon, away from the Twin Lakes community.

Birkhead 5 – Comment

NOISE

Birkhead 5 – Response

As discussed in Section 4.7 of the Draft EIR, no significant noise impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Birkhead 6 – Comment

Traffic- waiting time to merge into traffic from Mojave Trail; waiting time at lights for Topanga/or 118 Fwy.

Birkhead 6 – Response

The Draft EIR provides an evaluation of potential traffic impacts due to the project in Section 4.12. As shown on Table 4.12.5 of the Draft EIR, the project would result in a significant traffic impact at the intersection of Topanga Canyon Boulevard and the westbound SR-118 on/off ramps based on the significance thresholds adopted by the County's Traffic and Lighting Division. However with implementation of the recommended mitigation measures, the project would not result in significant impacts to area traffic. Please also refer to Appendix K and Section 4.2.6 of this document for additional discussion of traffic-related impacts.

The project proposes to realign Mojave Trail to intersect "A" Street east of Topanga Canyon Boulevard. The realigned Mojave Trail would provide vehicular access to four existing homes within the Twin Lakes community. Based on the relatively low volume of traffic generated by the homes on Mojave Trail, as well as the forecasted amount of traffic on "A" Street, residents along Mojave Trail are anticipated little or no delay in accessing "A" Street is anticipated.

Birkhead 7 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Birkhead 7 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.8 Laurie & Larry Borenstein

March 8, 2002

Borenstein 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic already too much with 2 private schools.

Borenstein 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Borenstein 2 – Comment

Are they going to build new parks – local parks are already crowded making Canoga (which is a quiet street) into a Highway.

Borenstein 2 – Response

Please see Section 2.0 of this document regarding private onsite parks and Appendix E of this document regarding contributions to existing public parks. Further, the construction of private onsite parks would help minimize park-related traffic on Canoga Avenue.

Borenstein 3 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Borenstein 3 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.9 Cheryl Bowman

March 8, 2002

Bowman 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

1. *excessive traffic on Canoga Ave and Chatsworth St. and De Soto which already backs up to Varial.*

Bowman 1 – Response

Please see Section 4.5.6 (Bersbach 1 – Response) of this document. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

Bowman 2 – Comment

2. *Blowing dust, dirt, and diesel fumes on my neighborhood – our winds reach 60MPH here often.*

Bowman 2 – Response

As stated in Sections 4.2 and 4.7 of the Draft EIR, no significant impacts would occur with respect to dust or noise with implementation of mitigation measures. Please see Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document for additional discussion of these issues.

Bowman 3 – Comment

3. *noise pollution which is already increasing as more people are using the 118 Freeway, but especially having all that heavy construction equipment in use.*

Bowman 3 – Response

As stated in Section 4.7 of the Draft EIR, no significant impacts would occur with respect to noise with implementation of mitigation measures. Please see Section 4.2.3 of this document for additional discussion of this issue.

Bowman 4 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Bowman 4– Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.10 Gayle Braddock

January 7, 2002

Braddock 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic on Canoga, Topanga Blvd, Chatsworth St.-DeSoto.

Braddock 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5, 4.2.6, 4.5.6 (Bersback 1- Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Braddock 2 - Comment

Horse Trails- horse and rider

Braddock 2 - Response

Please see Section 4.4.1 (C ECHO 3 and 4 – Responses) of this document.

Braddock 3 - Comment

Safety during construction due to increased traffic and large trucks (Noise)

Braddock 3 - Response

Please see Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document.

Braddock 4 - Comment

Dust

Braddock 4 - Response

As stated in Section 4.2 of the Draft EIR, dust impacts would not be significant with implementation of recommended mitigation measures. Please see Section 4.2.3 (Noise/Dust 1 – Response) of this document for additional discussion of this issue.

Braddock 5 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Braddock 5 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.11 Theresa Brady

January 8, 2002/January 10, 2002

Brady 1 – Comment

I am concerned about the proposed Deerlake highlands estates. Project number 99-239. I have several questions after reading briefly through EIR section one.

This project appears to narrow the wildlife corridor to about 100 feet. Much more than this is needed. Biologist Ray Sauvajot has done research regarding wildlife migrations and has come to a conclusion regarding what the minimum contiguous area needed for wildlife to pass through an area. Have biologists with National Park Service been consulted regarding their evaluation of the impact of the project on wildlife migration?

Brady 1 – Response

It is presumed that the commenter is referring to "the corridor of willow woodland associated with Devil Canyon, which in some areas exceeds 110 feet in width," according to the discussion in Section 4.3 of the Draft EIR. To our knowledge, Mr. Sauvajot's conclusions have not been published, and Mr. Sauvajot (National Park Service) has not commented on the Draft EIR. Therefore, these comments are not project-specific and cannot be evaluated for further response. Please see Section 4.2.1 (Topical Response) of this document regarding additional discussion concerning wildlife corridors. These are the National Park Service areas within the project vicinity.

Brady 2 – Comment

Coyotes regularly pass through the yards of the current Twin Lakes residences. A friend of mine who lived up there lost several cats. Are the people who will want these homes prepared for coyotes passing through their yards?

Brady 2 – Response

The loss of domestic cats (or dogs or other pets) is not considered a significant impact on biological resources. However, the developer shall provide disclosure of these issues to potential buyers, and make recommendations to keep their pets indoors, in order to prevent them from becoming prey for coyotes.

Brady 3 – Comment

The EIR states that Coastal Sage Scrub supports several species of concern. They show CSS as previously disturbed but also state that "a diverse habitat supports numerous mammal species" and they note that mammals of every size from deer mouse to mountain lion have left evidence of their presence. There is very little of the CSS habitat on the site. However the predominant habitat type of the property is chaparral. They describe chaparral in this way "chaparral communities provide potential habitat for ... deer mouse ... mountain lion, and mule deer." Though they do not indicate if

they have seen these species in this habitat or not. I would like to know have their biologists sought to observe whether wildlife evidence, similar to what they found in the CSS, is found in the chaparral? Some home owners in the area have seen mule deer in the chaparral. Since it is the majority of the site, I thought it should be clear whether the wildlife are using that habitat. To say they could, and not observe whether they are, seems like a major omission and an inadequacy in the EIR.

Brady 3 – Response

Section 4.3 of the Draft EIR discusses the observed and expected occurrence of vertebrate wildlife species. Comprehensive wildlife inventories are costly, require long periods to conduct, and are notoriously incomplete, and therefore, they not generally undertaken for the purposes of an EIR, unless listed species are potentially involved. The occurrence of many wildlife species on the project site, and including those utilizing chaparral habitat, if not actually seen, can be reasonably inferred on the basis of previous observation and experience, coupled with knowledge of the range and habitat preferences of the animals in the region. Numerous species known to use the coastal sage scrub are also likely to use the adjacent chaparral habitat. Appendix A of the Draft EIR includes a comprehensive faunal compendium of observed and expected species, using this reasoned approach. See also Section 4.2.1 and Appendix F.2 of this document.

Brady 4 – Comment

A misleading element of their map of Impacted Biologic features (4.3.2) is the color green being used for both the important Coastal sage scrub and for non native grasslands. The shades of green were so slightly different that only on Xeroxing them in black and white could I clearly tell which was which. Why were two such similar shades of green chosen for two such different areas in their importance to wildlife?

Brady 4 – Response

The contrast in color in Figure 4.3.2 of the Draft EIR was sufficient to distinguish between coastal sage scrub and non-native grasslands. The comment has been noted.

Brady 5 – Comment

The topographic map (geologic) shows that there are several steep slopes on the property. Most of the steep slopes they are avoiding, they are part of devil creek [sic]. The entire southern end of the project is steeply sloped and is slated for grading. This is esthetically [sic] displeasing as well as harmful to wildlife. Has it been considered whether these steep slopes are the result of centuries of seismic activities? We know that in the Northridge earthquake, the Santa Susana mountains [sic] rose, I believe by a foot or more. Is there knowledge of how this particular area fits into that? Furthermore, on the north east and southwest corners of the property there are also steeply sloped sections with housing planned on them. One was identified as an area of high possibility of landslide. Will these two areas at a minimum for human safety, be omitted from the proposed plan?

Brady 5 – Response

As discussed in Section 4.1 of the Draft EIR, impacts with regard to aesthetics/visual resources would not exceed significance criteria in accordance with the County's General Plan, and therefore, not result in a significant impact. Further, no significant impacts to wildlife would occur with implementation of mitigation measures (see Section 4.3 of the Draft EIR).

Section 4.5 of the Draft EIR stated that with compliance with all state and County of Los Angeles building and seismic regulations would ensure that no significant impacts related to earthquakes would occur.

Please see Section 4.4.2 (CLPA 3 – Response) of this document regarding additional discussion of potential landslides.

Brady 6 – Comment

In the light of the mounting evidence of global warming, I thought another consideration should be made of protecting all existing trees especially oak trees. If the drainage into Devil Canyon is altered, as it appears it will be from comments at the hearing January 8, the oak trees that are to be saved there will be damaged or killed. Will the drainage into devil canyon change? Furthermore regarding oaks, redesigning the project around the oaks, designing them into yards as landscape, would increase property values as well as protecting the trees. Often trees slated for "protection" in a project are dug up and boxed to be replanted and then die elsewhere. What does "protecting" oak trees encompass in your plan?

Brady 6 – Response

Please see Section 4.4.2 (CLPA 4 – Response) regarding drainage into Devil Canyon, and Section 4.2.1 and Appendix F of this document regarding biological mitigation.

As stated in Section 4.3 of the Draft EIR, 65 existing oak trees would require removal in order to construct the project. However, the revised project (388 units) would preserve of an additional five oak trees. Appendix F.3 of the Draft EIR outlined the protection measures for other oak trees on the project site. None of these oak trees are of heritage status. Impacts would be reduced to less than significant with implementation of mitigation measures, which would be implemented under the review and approval of the County Forester and Fire Warden, and Los Angeles County (see Appendices E and F.3 of this document).

Brady 7 – Comment

Furthermore the entire north end of the project, the plateau, is covered with the rare "species of concern" plummer's [sic] lily. As Rosi Dagit says you can dig up the plant but you can't move with the intact ecosystem. Could avoidance be considered for the north end, where these lilies currently are?

The chaparral that contains the lilies, probably does more to protect us from climate change than does pavement. I know it is not currently considered, but believe it ought to be. I wondered if the county is considering the value of standing trees and wildplants as counter balance to the pavement and cars the county already contains.

Brady 7 – Response

See Section 4.2.1 and Appendix F.1 of this document.

Brady 8 – Comment

I have looked through the EIR and find no mention of low income housing. How was the requirement that each new housing development accommodate some low income housing satisfied for this project?

Brady 8 – Response

There is no requirement by the County of Los Angeles for low-income housing within the project site.

Brady 9 – Comment

I am writing regarding my concerns about Deerlake Highlands project #99-239. My concerns regarding oak trees are as follows: trees are only saved when they are left in place. How much water drains into Devil's canyon now? How will it change? Will you be adding more water? Do you expect more water drain into the canyon? Do you expect to have to irrigate adjacent slopes for fuel modification?

Again thank you for the opportunity to comment, and I hope to hear from your responses to these concerns.

Brady 9 – Response

See Section 4.2.2 (Topical Response) and Appendix C.4 of this document regarding County fuel modification specifications and irrigation requirements.

4.5.12 Caren Bramhall

January 7, 2002

Bramhall 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Loss of use of the trails I have ridden the last 26 years,

Bramhall 1 – Response

Please see Section 4.4.1 (C ECHO 3 and 4 – Responses) of this document.

Bramhall 2 – Comment

increased traffic that will impact all adjoining streets

Bramhall 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 4.5.6 (Bersbach 1 – Response) and 4.5.8 (Borenstein 1 – Response) of this document.

Bramhall 3 – Comment

removal of oak trees

Bramhall 3 – Response

As stated in Section 4.3 of the Draft EIR, impacts to biological resources including oak trees would not be significant with implementation of recommended mitigation measures. Please see Section 4.5.11 (Brady 6 – Response) of this document for additional discussion regarding oak trees.

Bramhall 4 – Comment

Environmental impact of Devils Canyon to be used as run off. (Can't you leave a beautiful place alone.)

Bramhall 4 – Response

Please see Section 4.2.2 (Urban Runoff Topical Response) and Appendices H and I of this document.

Bramhall 5 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Bramhall 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.13 Robert Brigham

January 7, 2002

Attachment to this letter can be found in Appendix B.1 of this document.

Brigham 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

I am concerned about 15 new homes that are North of Devils Cyn & south of the Big Bridge facing Twin Lakes Community regarding privacy & my view of the mountains & the lights shining through our windows.

Brigham 1 - Response

As stated in Section 4.1 of the Draft EIR, aesthetic and visual resource impacts would not be significant. Implementation of the project would not introduce new elements, which would substantially detract from the existing aesthetic character or primary aesthetic resources of the site. Further, lighting for the project would be low profile and designed so as to direct lighting away from roadways and structures.

Brigham 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Brigham 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.14 Fred Buraye Family

March 8, 2002

Buraye 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

We will loose [sic] the quiet privacy, secured and peacefull [sic] environment [sic], that I pay for, when I decided to move my family to this area.

Buraye 1 – Response

The comment has been received and noted. No additional response is necessary.

Buraye 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact. I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant: and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Buraye 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.15 William Byers

January 9, 2002

Byers 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth as presently planned. I live in Twin Lakes and my property is adjacent to the proposed development and I am particularly concerned about the following:

Construction noise Section 4.7 of the DEIR, mitigation measures for the Twin Lakes area must include some way to assure the residents of the developer's compliance with County of Los Angeles Noise Ordinance, Title 12, Section 12.08.440. The time limits on the construction work should be clearly defined; we need a hotline phone number for complaints and there must be effective penalties for non-compliance, i.e. a halt to construction until the violation is stopped. Will the County standard 45dB(A) CNEL mandated for the interior of residences be maintained?

Byers 1 – Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document for additional discussion of impacts and mitigation.

Byers 2 - Comment

Construction dust How will the developer be monitored as to controlling dust levels, which will be significant considering the amount of proposed grading? Who will oversee the project and make sure that they are following section 4.2-1? What will be the effective penalties for non-compliance? There must be a halt construction until violations are stopped. Where will the wind velocity be measured? It must be measured on site because of the known and frequent Santa Ana winds that blow down Oat Mountain and directly across the development and on to the Twin Lakes residences. Winds there have exceeded 75 mph. What will our homes and property look like down wind from all of that loose soil? Who will measure the solid particulates in the air that all of us must breath [sic] during the 5 plus years of construction? Who is going to pay for the resulting health problems? What are our immediate remedies for injury? Will Los Angeles County be liable for failure to enforce compliance with the law and/or permits?

Byers 2 – Response

Please see Section 4.2.3 (Topical Response and Noise /Dust 2 – Response) of this document.

Byers 3 - Comment

I suggest that all planned houses south of Devil's canyon be deleted from the proposed plan and that all land south of Devil's Canyon [sic] be left undisturbed with the exception of the bridge across the canyon.

Byers 3 – Response

The commenter's suggestion is noted and will be forwarded to the decision makers.

Byers 4 - Comment

Traffic

I am concerned about the increase of traffic on Canoga Avenue, Topanga Canyon Boulevard and other adjacent streets that will surely take place of the proposed project is implemented in its current form.

The DEIR has not sufficiently studied the impact that 484 homes will have on our streets. It is disturbing to me that the developer conduced a traffic study with not all schools in session purportedly used incorrect tables to estimate the amount of trips by vehicles per day, given the nature of houses to be built and the times of day at which these trips would be made. If a new study has been done then additional time must be made to review it and further check for accuracy. I suggest that the amount of homes proposed for this project be reduced by one-half to avoid overloading already congested streets and intersections.

Byers 4 – Response

See Section 3.3.5 and 4.2.6, and Appendix K of this document for a discussion of traffic impacts associated with the revised project. As with the original project, traffic impacts associated with the revised project would not be significant with implementation of mitigation measures.

Byers 5 - Comment

I light of the significant adverse impact this project would have on my residence and my neighborhood and the lack of meaningful measures to alleviate that impact, I request that youi [sic] not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation or [SIC] the applicant's revised proposals.*

Byers 5 – Response

Please see Section 4.5 (Belkin, L 3 – Response) of this document.

4.5.16 Sally and Cal Cantwell

January 5, 2002/ January 7, 2002

Cantwell 1 – Comment

We have been residents of the Twin Lakes area for over 18 years. We are very disturbed over the proposed 484 home development project named Deer Lake Ranch.

We are especially concerned about the traffic situation and its potentially serious effects on our community. We already have several local intersections that get a failing grade for congestion. The increased traffic from a project of this density, with an estimated 1200 additional vehicles, will make things beyond absurd- yet there will be no improvement of roads, signals or intersections south of the 118 freeway through which all this traffic must pass.

Cantwell 1 – Response

See Section 3.3.5 and 4.2.6, and Appendix K of this document for a discussion of traffic impacts associated with the revised project. As with the original project, traffic impacts associated with the revised project would not be significant with implementation of mitigation measures.

Cantwell 2 – Comment

The developer has grossly underestimated the total and peak-hour traffic volumes generated by this project. They have ignored all the cars that will travel through the local streets of our neighborhood. The roads and traffic will be terribly over-loaded, especially during prime morning and evenings, making it heavily congested not only with these vehicles but also, by people who do not even live in the project.

Cantwell 2 – Response

Please see Cantwell 1 – Response of this document. The traffic study has been carefully reviewed by both the Los Angeles County Department of Public Works and the City of Los Angeles Department of Transportation. Both reviews have found the study to be credible in the estimated traffic generation of the proposed project.

Cantwell 3 – Comment

This developer avoided performing a required freeway impact study by selecting a measurement point at the Ventura County line, away from the main traffic flow. This type of diversion has a tendency to make me question the entire traffic study, perhaps even the entire Environmental Impact Report.

Cantwell 3 – Response

See Section 4.2.6 (Topical Response) of this document.

Cantwell 4 – Comment

Our community and way of life is being threatened. Studies that are inaccurate and biased toward the Deer Park project have been submitted. We would like to have an accurate traffic study done that would also reflect future traffic flow, something else that was not done.

We have other concerns that have not been in the least satisfied by the developer, including water run-off and pollution.

Cantwell 4 – Response

See Section 3.3.5 and 4.2.6, and Appendix K of this document for a discussion of traffic impacts associated with the revised project. As with the original project, traffic impacts associated with the revised project would not be significant with implementation of mitigation measures.

Please see Section 4.2.2 and Appendix H and I of this document regarding impacts to Devil Canyon.

Cantwell 5 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Primarily-Traffic Flow-totally unacceptable

Cantwell 5 – Response

Please see Cantwell 1 – Response of this document.

Cantwell 6 – Comment

Increased Fire hazards

Cantwell 6 – Response

As stated in Section 4.8 of the Draft EIR, impacts to fire protection services would not be significant. See also Section 4.2.4 of this document for additional discussion of this issue.

Cantwell 7 – Comment

Pollution-uncontrollable

Cantwell 7 – Response

It is unclear as to what the commenter is referring to regarding "pollution". However, it is assumed that the reference is to storm water runoff. Please see Sections 4.2.2 and 4.4.2 (CLPA 4 – Response) and Appendix I of this document.

Cantwell 8 – Comment

Water- run-off

Cantwell 8 – Response

Please see Section 4.2.2 and Appendices H and I of this document.

Cantwell 9 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of, meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Cantwell 9 – Response

Please see Section 4.5 (Belkin, L 3 – Response) of this document.

4.5.17 E. Cervantes

January 7, 2002

Cervantes 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home school. and I am particularly concerned about the following:

Chatsworth Park Elementary is at near capacity enrollment already! Topanga and Devonshire traffic endangers our students and parents daily. Additional traffic near and/or to our school will exacerbate our safety problems and safe access to the school.

Cervantes 1 - Response

As stated in the Draft EIR, impacts to schools and traffic would not be significant with implementation of mitigation measures. Please see Sections 3.3.4 and 4.3.7 and Appendix J of this document for additional discussion of school impacts. Please see Section 3.3.5 and 4.2.6 and Appendix K of this document regarding additional discussion of traffic impacts.

Cervantes 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Cervantes 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.18 Leon Chernock

January 5, 2002/January 7, 2002/January 12, 2002

Chernock 1 – Comment

I am writing to express my objections to the proposed Deerlake Ranch development in Chatsworth. {Project No. 99-239{5}] for which you have scheduled a January 23 hearing.

Living Twinlakes [sic] for many years I am very much concerned about the impact that this project will have on this area.

The proposed project will have a VERY adverse impact on this neighborhood adequate measures have not been taken to preserve the integrity of this area.

Chernock 1 – Response

The Draft EIR documents impacts that would be expected to result from implementation of the proposed project.. Please see Appendix E of this document regarding conditions of approval.

Chernock 2 – Comment

It is clear that EIR has not sufficiently studied the impact that 484 homes will have on this areas streets. The actual traffic flows and patterns have obviously not been taken into consideration. It dose [sic] not allow for the schools is [sic] session. The problems that will occur when parents try to drop off and pick up their children.

Chernock 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Chernock 3 – Comment

Adequate studies haven't been taken for the additional traffic that will travel on Canoga Ave. People will just naturally use our community for short cuts to De Soto Ave. and Topanga Canyon on ramps to the 118 fry.

Twinlakes have privately owned and maintained streets and absolutely cannot handle additional traffic.

The gridlock situation that this project will incur will create a nightmare for everyone living in this area.

Mr. Chih, we need someone with your influence to take the right road to correcting this problem that this project will create.

Chernock 3 – Response

Please see Chernock 2 – Response of this document. Subsequent to the distribution of the Draft EIR, additional mitigation measures have been included (improvements at the Canoga Avenue/Chatsworth Street intersection) for traffic-related impacts (see Appendix E of this document) as well as an updated traffic study to analyze the revised project (see Appendix K of this document). Also see Section 4.2.6 (Traffic 1 & 2 – Responses) of this document.

Chernock 4 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic Gridlock. Dust and dirt, increased wind problems due to cutting down of existing surrounding hills. Water and sewage run off into our canyons and its effect on the existing eco system. Increase in crime due to higher population.

Chernock 4 – Response

Please see Chernock 2 and 3 – Responses of this document.

As stated in Section 4.2 of the Draft EIR, dust impacts would not be significant with implementation of recommended mitigation measures. Please see Section 4.2.3 of this document for additional discussion of this issue.

As stated in Section 4.6 of the Draft EIR, hydrology and water quality impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 4.2.2 and 4.4.2 (CLPA 4 – Response) and Appendix I of this document for additional discussion of this issue.

As stated in Section 4.9 of the Draft EIR, impacts to police services would not be significant. Please see Sections 3.3.3 and 4.2.5 of this document for additional discussion of this issue.

Chernock 5 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Chernock 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

Chernock 6 – Comment

As a long time resident of the Twin Lakes area, I want to appeal to you to reconsider the plans now in place for the Deerlake Ranch Development. The impact that this project will have on our neighborhood will drastically effect our life style and be detrimental to your traffic situation which is already at a point where we, who live here, can hardly get in and out of our neighborhood at peak hours. The studies that have been taken, by an agency hired by the developer, do not represent the actual traffic flow. It is imparative [sic] that an agency, not paid by the developer, take a new study of the actual traffic patterns as they exist on normal usage days.

Chernock 6 – Response

Please see Chernock 2 and 3 – Responses of this document.

Chernock 7 – Comment

I am not sure if you agency is aware of the terrifically high wind condition that we experience here. There is no area in the San Fernando valley [sic] that has windier conditions then we experience here. When the developer cuts down the existing ridges that surround Twin Lakes, it will create a wind condition that is even heavier then we now experience. It will make it almost unlivable for the houses, like mine, that are at the top of the ridge on Mayan Rd. This situation must be considered by your agency. This doesn't even take in the added dust and dirt conditions that will occur during the wind season, while construction is under way, and this will be a condition that will continue for years.

Chernock 7 – Response

The Santa Ana winds in the San Fernando Valley are a well known climatic condition. As stated in Section 4.2 of the Draft EIR, dust impacts would not be significant with implementation of

recommended mitigation measures. Please see Section 4.2.3 of this document for additional discussion of this issue.

Chernock 8 – Comment

In the area of ecology, we are now starting to see more and more of the wild life that exists in our area start to come down into our neighborhood because of projects like Porter Ranch that is encroaching more and more on the natural habitat of the wild life. This must be considered. This proposed project would exacerbate this condition even further.

Chernock 8 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. See also Section 4.2.1 of this document for additional discussion of this issue.

Chernock 9 – Comment

Sir's, these are only a few of the concerns that I have for this proposed project. We here in Twin Lakes are at the mercy of agencies like yours and we have nowhere else to turn except to you. If, in fact, you are neutral and unbiased, we depend upon you to look after our interests.

Thank you for your considerations on this problem.

Chernock 9 – Response

The comment has been received and noted. No additional response is required.

4.5.19 Ramon Condo

January 7, 2002

Condo 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic

Condo 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Condo 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Condo 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.20 Kris Cooper

January 7, 2002

Cooper 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Increased Traffic. Speed bumps have be [sic] placed on my street in an effort to control the current traffic. It's not working and any more traffic will destroy the quality of live [sic] in the neighborhood.

Cooper 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Subsequent to the distribution of the Draft EIR, additional mitigation measures have been included (improvements at the Canoga Avenue/Chatsworth Street intersection) for traffic-related impacts (see Appendix E of this document) as well as an updated traffic study to analyze the revised project (see Appendix K of this document). Also see Section 4.2.6 (Traffic 1 & 2 – Responses) of this document.

Cooper 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Cooper 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.21 Susan Cordell

January 7, 2002

Cordell 1 – Comment

I live in the Twin Lakes area and I am very concerned about the environmental impacts the Deer Lake Ranch project will cause to the area. This project is bringing almost 500 homes to the area without adequate measures to compensate for the amount of people and the disruption that will take place with this large change in the area. This area has a very delicate eco-system that has basically never been disturbed.

Cordell 1 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. See also Section 4.2.1 of this document for additional discussion of this issue.

Cordell 2 – Comment

The wildlife will be affected by the construction noise as well as movement within the area.

Cordell 2 – Response

Please see Cordell 1 – Response of this document.

Cordell 3 – Comment

The runoff from the storm drains into the water supply will ultimately affect the animals. With that many homes it doesn't take that much to destroy the water supply and/or habitat of these animals, no matter how many signs are posted or people are educated about the hazards of household products and yard wastes.

The EIR deals with the Storm Water Mitigation Issue in a totally inadequate manner. If we are to preserve the small amount of untouched areas that we have left amidst our increasing degree of urban development, we must be more creative in our solutions to the problems.

Cordell 3 – Response

As stated in Section 4.6 of the Draft EIR, hydrology and water quality impacts would not be significant with implementation of recommended mitigation measures. Please see Section 4.2.2 (Urban Runoff 1- Response) and Appendices H and I of this document for additional discussion of this issue.

Cordell 4 – Comment

I moved to this area due to the landscape of the area and the many foot trails as well as horse trails that I can enjoy right outside my backyard. I fail to see how removing natural vegetation and having polluting chemicals run through the creek basin would be good for the ecosystem. Having a manmade park developed in the area by the developer does not compensate for the devastation of natural habitat. With this development going in, the natural beauty and the rural setting of the area will be damaged and destroyed for monetary gain!

I would hope that the City would look into assisting the taxpayers needs already in the city of Chatsworth and not just look at the taxes that 484 new homes would bring to the community.

Cordell 4 – Response

Please refer to section 2.4.7 (open space characteristics) for a discussion of the recreational opportunities that will be provided by the proposed project. The County's land use decisions are not based upon potential tax revenue benefits, but the policies and goals of the County's General Plan.

Cordell 5 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

I live in the Twin Lakes area and I am particularly concerned with the impact 484 new homes will have on the already heavily trafficked streets of Chatsworth. There is daily gridlock and much congestion on the Desoto and Topanga Canyon on and off ramps to the 118. I sit at the traffic lights before 8am in the morning now for over 15 minutes just to get onto the 118 East. With almost 500 more homes coming into the area, the plans that the developer has to widen the road will not solve the problem that already exists. The problem will only get worse if the city does not force the developer to come up with solutions to this ongoing problem. More accidents will occur as all rush to get through the lights and onto the freeway from Mayan and the condominiums on the other side of Mayan. Both Topanga and Desoto streets are heavily trafficked throughout the day due to the many industrial areas and businesses on these streets.

The traffic problem in the area has never been addressed by the city and has only been getting worse as more and more people pour into the community. If this problem is not being addressed at this time by the City, how can I be confident that the County will do a better job?

Cordell 5 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Cordell 6 – Comment

The Deerlake Ranch development is adding almost 500 new homes to the Chatsworth area with no improvement of roads, signals or intersections planned. How can this be? The study that the developer utilizes is flawed and does not show the true impact of the traffic as it stands now. It was taken when schools were not in session and on holidays so the total number of cars passing through these intersections each hour is not a true and honest calculation of the traffic in the area. I understand a new survey has been done and feel that additional time should be allotted to review this new study and check it for accuracy.

Cordell 6 – Response

Please see Cordell 5 – Response of this document. Please see Section 1.1 of this document regarding review time of the Draft EIR. The traffic study prepared for the proposed project has been reviewed and deemed appropriate by the Los Angeles County Department of Public Works and the City of Los Angeles Department of Transportation.

Cordell 7 – Comment

In light of the significant adverse impacts this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Cordell 7 – Response

Please see Section 4.5.5 (Belkin, 1.3 – Response) of this document.

4.5.22 Doug Crawford

March 8, 2002

Crawford 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic on Canoga Ave. The two schools and children crossing Canoga Ave. in the AM and PM is a major concern, during the weekdays and weekends.

Crawford 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Crawford 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Crawford 2 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.23 Andrea Cree

March 8, 2002

Cree 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

1. *Increase in traffic, noise, pollution [sic], danger to children (2 schools in area) and horses on Canoga*
2. *Chatsworth St between DeSoto and Canoga is too narrow and traffic is already at a maximum during 'peak' hours 7-9am and 3-6pm especially on school days.*

Cree 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operate at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

Cree 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Cree 2 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.24 James and Vera Cunningham

April 1, 2002

Cunningham 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)). For which you have continued the public hearing to April 10.

My wife and I are longtime residents of Chatsworth and we feel that the proposed Deerlake Ranch development will severely degrade our neighborhood environment and cause excessive traffic

congestion on Canoga Avenue and Chatsworth Street. We have lived at our current residence for the past twelve years and moved here expressly for the quite [sic] environment. Our home is on the corner of Celtic and Willowbrae and our backyard runs adjacent to Canoga Avenue. Our master bedroom overlooks Canoga Avenue and this development would no doubt cause excessive noise during our hours of rest. An additional consideration of this development is reduced property value due to excessive traffic on Canoga Avenue. It is our feeling that the proposed development is an overall detriment to the Chatsworth area and serves no benefit except to increase the tax revenue of the county.

Cunningham 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

As stated in Sections 4.2 and 4.7 of the Draft EIR, dust and/or noise impacts would not be significant with implementation of recommended mitigation measures. See Section 4.2.3 of this document for additional discussion of this issue.

Cunningham 2 –Comment

If you as the individuals involved in the decision making process persist in this development, you need to seriously consider routing all traffic to Topanga Canyon Boulevard or Desoto Street and leave Canoga Avenue as is.

Cunningham 2 –Response

Pease see Cunningham 1 – Response of this document. The comment has been received and noted.

4.5.25 Thomas De Long

January 7, 2002/March 8, 2002

De Long 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located only a few blocks from my home, and I am particularly concerned about the negative impact it will have on me and my neighbors due to the increase in traffic, noise, and crime.

De Long 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

As stated in Section 4.9 of the Draft EIR, impacts to police protection services would be less than significant with implementation of recommended mitigation measures. Please see Sections 3.3.3 and 4.2.5 of this document for additional discussion of this issue.

De Long 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

De Long 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

De Long 3 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5) for which you have continued the public hearing to April 10, 2002.

I live within a few blocks of the proposed development and I am convinced, as is Councilman Hal Bernson per his letter to the Regional Planning Board dated January 22, 2002, that it will be virtually impossible to mitigate the traffic impacts this project will have on the surrounding community. The ingress/egress plan consisting of only two streets, Topanga Canyon and Canoga Avenue, is completely inadequate. These two streets cannot handle the traffic in rush hour and in other times of emergency that a project like this will create. The traffic from a project of this size will also spill over to the residential side streets in the neighborhood south of the 118 freeway along Canoga (such as Celtic, Renaldi, and Variel) as the commuters take alternate routes to reach the main streets of Desoto, Devonshire and Topanga. This will destroy the life style and standard of living that the current residents sought and acquired when they purchased their homes. These streets are in residential areas and are not suitable for the heavy traffic load this project would place on them.

De Long 3 – Response

As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

De Long 4 – Comment

The traffic issues as well as the demands the project will place on the infrastructure of the City of Los Angeles, such as area schools, library and emergency facilities, requires that the proposed project be denied or, at a bare minimum, that it be significantly reduced in size and scope. In addition, if any development is approved for that area the traffic mitigation measures should include the requirement that it be connected to Desoto on the east, north of the 118 freeway and that this be a main point of entry and exit.

De Long 4 – Response

Impacts on schools, libraries and emergency facilities have all been addressed in the Draft EIR. Please see Sections 3.3.4 and 4.3.7 of this document regarding additional discussion of school and library services. Please see Sections 3.3.3, 4.2.4, and 4.2.5 of this document regarding additional discussion of emergency services. See also De Long 3 - Response of this document regarding traffic.

4.5.26 Carl & Janet Deierling

March 31, 2002

Deierling 1 –Comment

We moved to this Chatsworth community in 1980 because of the rural atmosphere. All the homes in the area are 1/3 acre and we anticipated that any new development in the area would continue to conform to this density. We were dismayed to learn that Deerlake has proposed a much higher density development north of us. We acknowledge the rights of others to use their property, but believe it should conform to the existing neighborhood.

For this reason we beseech you to reduce the proposed density so as to be similar to ours.

Deierling 1 –Response

See Section 4.2.7 (Development Issues 10 – Response) and Appendix L of this document.

Deierling 2 –Comment

We have also learned that the intended egress for Deerlake development is Canoga Ave. Canoga and Varial are the only streets going South from our tract. Neither of these streets is a through street, hence one must divert either east to Desoto or west to Topanga Canyon to continue south. Chatsworth, the most northerly street with access to Desoto is completely congested during rush hour, resulting in long traffic delays. I work in Woodland Hills and it takes me nearly as long to get to my office during rush hour as it does to get to Pasadena. I presently exit the tract via Canoga, but additional traffic on Canoga would severely limit access to that route.

For this reason, we beseech you to limit the egress to Deerlake to one of the through Avenues, either Desoto or Topanga Canyon.

Thank you for your consideration in this matter.

Deierling 2 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Subsequent to the distribution of the Draft EIR, additional mitigation measures have been included (improvements at the Canoga Avenue/Chatsworth Street intersection) for traffic-related impacts (see Appendix E of this document) as well as an updated traffic study to analyze the revised project (see Appendix K of this document). Also see Section 4.2.6 (Traffic 1 & 2 – Responses) of this document.

See also Appendix N of this document regarding access to DeSoto Avenue.

4.5.27 Robert Dittmann

January 7, 2002

Dittmann 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic on Chatsworth St and Independence. De Soto is too heavy now.

Dittman 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Subsequent to the distribution of the Draft EIR, additional mitigation measures have been included (improvements at the Canoga Avenue/Chatsworth Street intersection) for traffic-related impacts (see Appendix E of this document)

as well as an updated traffic study to analyze the revised project (see Appendix K of this document). Also see Section 4.2.6 (Traffic 1 & 2 - Responses) of this document.

Dittman 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Dittman 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.28 Diana Dixon-Davis

January 11, 2002

Dixon-Davis 1 - Comment

This letter is to dispute the finding of no effect on public schools and the public library as presented in these two sections of the above mentioned Draft EIR 4.10 Public Services Schools and 4.11 Public Services Libraries. Though the EIR does acknowledge a commutative negative effect on schools, it claims they are not serious enough to warrant mitigation measures.

The Deer Lake Ranch Project will have negative effects on the Chatsworth Library and all four of the public schools studied in the EIR. Please see the attached analysis as to why a negative declaration is incorrect in these two areas.

Though the developer claims that any negative effects will be mitigated by the payment of impact fees, the fees will not mitigate the negative effects on these services:

First, the library fee of $626 is being paid to the Los Angeles County, but the Chatsworth Library is a City of Los Angeles facility.

Second, though the four Chatsworth Public schools are part of LAUSD, I have been informed that these fees will not be used to mitigate negative effects on Chatsworth schools (personal communication from LAUSD School Board Member Marlene Canter's aide).

Dixon-Davis 1 - Response

As stated in Section 4.11 of the Draft EIR, there would be no significant impact to libraries. See Section 4.1.2 (City Council 6 – Response) of this document for additional discussion of library impacts and mitigation.

The information provided in the Draft EIR regarding school capacity was provided by LAUSD through various written and telephone communication. Government Code Section 65996 provides for school impact mitigation. Please see Sections 3.3.4, 4.3.7 and 4.5.28 and Appendix J of this document for additional discussion of this issue.

Dixon-Davis 2 - Comment

Possible Solutions:

Pay library fee to the City of Los Angeles Library System not the County Library System

Provide land (several acres) for a small elementary school. Land, at this site, could be set aside for a bookmobile or a "mini-library" service module. The playground could also serve Fire, Rescue, and Police as a helicopter pad to mitigate the limited access for these other public service.

Dixon-Davis 2 - Response

As stated in Section 4.11 of the Draft EIR, Los Angeles County requires that new residential subdivisions pay a library fee to ensure that new projects mitigate impacts to library services. As the project is located within unincorporated areas of the County, there is no legal mechanism to pay library fees to the City of Los Angeles, as the requirement is required by County ordinance.. This would require an agreement between the County of Los Angeles and the City of Los Angeles and is not within the scope of this EIR. Further, improvements to or construction of library facilities is under the direction of the County of Los Angeles Public Library and City of Los Angeles and not within the scope of this EIR. However, commenter's suggestions will be forwarded on to the decision makers. See also Section 4.1.2 (City Council 6 – Response) of this document. The applicant has voluntarily agreed to contribute approximately $125,000 directly to the Chatsworth Library.

The requirement to pay developer fees and the amount of fees are derived from state law. Government Code Section 65996 expressly states that payment of mitigation fees is the exclusive method of considering and mitigating project impacts on school facilities. State law states that payment of such fees is deemed to provide full and complete mitigation of school facility impacts, not withstanding any other provisions of local or state laws. The funding provided through these fees would be used by LAUSD to fund new school facilities according to its own planning program. See Sections 3.3.4 and 4.3.8, and Appendix J of this document.

Dixon-Davis 3 - Comment

PUBLIC SERVICES SCHOOLS

As a demographic and education consultant I found the techniques for estimating capacity in the four local schools highly suspect. Basically, It ignored the existing situation in these schools and in the Los Angeles Unified School District (LAUSD).*

*The grudging acknowledgement of an eventual negative commutative effect of this and other development on the local public schools ignores the projected high levels of student population growth predicted for LAUSD in the next 5 years (Graph 1). [*Please see attached resume.]*

This technique is much like assuming that the 118 Freeway was empty and only had to be studied to see if this freeway could accommodate the current freeway users who live in Chatsworth and those added by Deer Lake Ranch; ignoring the thousands of cars contributed by the rest of Los Angeles; Simi Valley, Santa Clarita, and beyond who also have every right to use the freeway.

Dixon-Davis 3 - Response

Please see Dixon-Davis 1 – Response of this document.

Dixon-Davis 4 - Comment

SPACE PROJECTIONS BASED ON FLAWED ASSUMPTIONS: Though, technically, the 4 mentioned schools could currently accommodate the projected student population from Deer Lake Ranch. They can only do so by throwing out dozens of currently enrolled students. These four schools are part of LAUSD. According to LAUSD guidelines currently enrolled students have the right to stay in their school until graduation-not only at the elementary level: but through to the middle and high school level. Local residents can only enroll if enough of the current students (non-resident) leave. Since these two elementary schools have excellent academic reputations there is no anticipated departure of many of these non-resident students.

Dixon-Davis 4 - Response

Please see Dixon-Davis 1 – Response of this document. The local schools will not need to "throw out dozens" of currently enrolled students to accommodate the anticipated additional students from the Deerlake Ranch project.

Dixon-Davis 5 - Comment

In addition, all four schools have been increasing enrollment almost every of the last 5 years. This implies that the resident population is growing and is putting more of its children into their local public schools. There has been a noticeable increase in elementary enrollment since the introduction of the new 20 students/1 teacher class size program for K-3. If the EIR school population projection is corrected for 2000 enrollment patterns as well as the policy of continuing non-resident student enrollment, Deer Lake Ranch will immediately produce a negative impact/shortage of 27 elementary seats.

If local enrollments continue to increase as they have the last 5 years (See graph 1 Table 2) there will be a shortage of 233 elementary seats (26 for local elementary students and all 208 seats projected needed for Deer Lake Ranch elementary students). At the secondary level, though Chatsworth High School can continue to accommodate local and Deer Lake Ranch projected enrollment, Lawrence M.S. will have a shortage of 330 seats for current students and all121 of the projected Deer Lake Ranch students. (See Tables/Graphs) The EIR must be corrected in light of this current attendance policy, attendance patterns, and projected student enrollment growth.

Furthermore, LAUSD is very over-crowded. There is currently a shortage of school seats at all education levels. When students are told to go some other place-there is no place for them to go. Though LAUSD claims it will build itself out of this housing crisis, several major factors stand in their way.

1) *Lack of funds- Proposition BB funds have been almost all used up with a projected plan deficit of $600 million. The –state requires a 50% percent local match to qualify for state school building funding. The likelihood of voter approval of another major LAUSD bond measure is very low.*
2) *Lack of land There is little undeveloped land anywhere in LAUSD. That which is available is often highly contaminated, industrial property. Other school sites often require condemnation of residential property which is difficult politically.*
3) *Demographic Pressures—LAUSD enrollments will continue to grow at a high rate. LAUSD (2000) has 4.4 million people, with a very young age structure. The 2000 Census counted the population as 50% Hispanic, 11% African American, 27% White, and 12 % Asia/ Others. With the higher birth rates, and the high rate of family formation of our heavily immigrant population, we can anticipate far into the future continued and sustained high birth rates that will fill our schools with ever larger number of students.*

OPERATING CAPACITY VALUES ANTICIPATED TO DROP. Chatsworth Park Elementary and German Street Elementary Schools are almost fully enrolled (as of 2002). Lawrence Middle School and Chatsworth High School are just below their current capacity.

Operating capacities for LAUSD schools is recalculated every year. Operating capacity is a sum of the products of the number of classrooms per school, the composition of each classroom, and the maximum number of students allowed in each which changes year by year as new programs are started and stopped.

The 2000 (current capacities) are lower than the EIR's 1999 operating capacities because of several California Sated class size reduction programs (K-3 and 9th and 10th grade English and Math) where average class size is dropped from 35-45 down to 20 per classroom. There is the likelihood that these programs will be expanded. The number of special education classrooms is growing every year with class sizes of as few as 3-4 up to 10 students per classroom. The EIR must be corrected for these class size policy changes.

Many portable bungalows have been added at all four schools. The addition of more classrooms has reached logistical space limits at all four schools. Furthermore, the Rodriguez Consent Decree limits both the absolute enrollment size and dictates the minimum size of playground space that must be

maintained. Though Rodriguez allowed more portables to be added to LAUSD schools to implement the initial StateK-3 Class Size Reduction Programs, it is not clear how many more bungalows will be allowed for growth purposes only. The EIR must account for this consent decree.

Once these corrections are made it will be obvious that the two mentioned elementary schools will quickly be over enrolled and forced to go multi-track year around (MTYR) in order to add additional student capacity. Year around schools are disliked by parents and will result in a decrease in local property values. MTYR schools are also associated with lower academic scores further negatively impacting the Chatsworth community.

Dixon-Davis 5 - Response

Please see Dixon-Davis 1 – Response of this document.

Dixon-Davis 6 - Comment

CHATSWORTH PARK ELEMENTARY SCHOOL'S SPECIAL PROBLEMS. Chatsworth Park Elementary School is especially impacted by this project because it can barely accommodate its current level of enrollment.

Chatsworth Park's main buildings are almost 70 years old. Its small playground cannot absorb more bungalows. Its auditorium is suitable for about 200-300(?) students. Bathroom and cafeteria facilities were designed for 200-300 students. Office and staff support facilities are sub-standard and also designed for a very small school, in a very different technological environment.

Dixon-Davis 6 - Response

As stated in Dixon Davis 2 – Response above regarding developer fees being used by LAUSD to fund school facilities, it is out of the scope of this EIR to determine improvements by LAUSD. However, the comment will be forwarded to the decision makers.

Dixon-Davis 7 - Comment

Since resident students do not receive transportation from LAUSD, and it is highly unlikely that elementary students will be able to walk from Deer Lake Ranch to Chatsworth Park Elementary, all students will have to be driven by their parents. Currently the traffic situation at Chatsworth Park Elementary is so dangerous and bad at the "F" level intersection of Topanga Canyon Blvd. and Devonshire Street that the school qualifies for an unprecedented three crossing guards. Deer Lake ranch will only add to these negative conditions.

Dixon-Davis 7 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Dixon-Davis 8 - Comment

A POSSIBLE SOLUTION: Though the developer will pay about $13,000 per residence to LAUSD in school fees, I have learned that LAUSD will NOT USE THESE FUNDS TO MITIGATE IMPACTS ON THE LOCAL SCHOOLS. LAUSD will use these funds in other parts of the district-not in Chatsworth (personal communication from LAUSD School Board Member Marlene Canter's aide, Andrew W.)

If the Deer Lake Ranch project were to provide land for a small elementary school/primary center) some of these transportation problems would be mitigated. This land could also be use for a bookmobile site, a helicopter pad for L.A. County Fire and Rescue, and L.A. County Police, etc. The county could also require school buses when the commute is deemed hazardous and/ or when private automobiles are impossible for a school to accommodate.

Dixon-Davis 8 - Response

Please see Dixon-Davis 2 and 3 – Responses of this document.

Dixon-Davis 9 - Comment

PUBLIC SERVICES-LIBRARIES

The Chatsworth Branch (CBLAPL) mentioned in the EIR is part of the L.A. City Library System. Yet the fees will be paid to the county and will not be available to mitigate the impacts on this library since it is not part of the L.A. County Library System. It is highly unlikely that the residents of this development will use a county library since the nearest county library is in Santa Clarita almost 18 miles away while the Chatsworth Branch of the LAPL which is only 2.5 miles south (on Canoga Avenue) from the southern boundary of Deer Lake Ranch.

Dixon-Davis 9 - Response

Please see Dixon-Davis 2 – Response of this document.

Dixon-Davis 10 - Comment

Furthermore, the current CBLAPL is extremely over crowded especially after school on public school days. There are usually no empty seats available between 3 p.m. and 6 p.m. because of the number of middle and high school students who use the library after school to study, do research, or a safe place to wait until parents can come and pick them up after work. Please speak to Mr. Bruce Seidman, CBLAPL Head Librarian, to confirm these details (818) 341-4276.

Dixon-Davis 10 - Response

This comment is out of the scope of the EIR. However, this comment will be forwarded to the decision makers.

Dixon-Davis 11 - Comment

Since transportation will not be provided for the future students living in Deer Lake Ranch most will either have a very long, steep and relatively dangerous walk to and from school, along busy highways/streets (Desoto Avenue, Canoga Avenue or Topanga Canyon Blvd., (State Highway Rte 27)) as well as needing to cross over or under the 118 freeway. Most will get to school by private automobile. Some teenagers can drive themselves, but the rest will need to wait for rides from their parents/friends. Many will wait at the Library.

The current Chatsworth Library will be torn down this year (2002) and will not reopen for 2-3 years. Even with an expanded facility, it is unlikely that it will be able to accommodate even the current demand level. The extra demands placed on this library by the Deer Lake Ranch development will only exasperate and already over-crowded and difficult situation.

Dixon-Davis 11 - Response

Please see Dixon-Davis 2 – Response of this document.

Dixon-Davis 12 - Comment

If true mitigation is to occur, the fees paid for library services should go to the Los Angeles Public Library System, and better yet, a bookmobile and site and/or an annex library should be provided for Deer Lake Ranch as a developer provided "turnkey" school and library site plus helicopter pad.

Dixon-Davis 12 - Response

Please see Dixon-Davis 2 – Response of this document.

4.5.29 Harvey Dlugatch

January 17, 2002

Dlugatch 1 - Comment

This letter is being sent in response to my being notified of the construction of some 484 homes of the Deerlake Ranch Development in Chatsworth (Project No. 99-239(5)). I am writing in opposition to this development for the following reasons:

1. TRAFFIC: There is no major ingress or egress from the project other than proceeding through present residential areas. Since 484 homes at two vehicles/home equals 1,000 vehicles, this is a lot of traffic for which there is no conceivable way of the present or any anticipated plan to handle. There will be major traffic jams in this neighborhood.

Dlugatch 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Subsequent to the distribution of the Draft EIR, additional mitigation measures have been included (improvements at the Canoga Avenue/Chatsworth Street intersection) for traffic-related impacts (see Appendix E of this document) as well as an updated traffic study to analyze the revised project (see Appendix K of this document). Also see Section 4.2.6 (Traffic 1 & 2 – Responses) of this document.

Dlugatch 2 - Comment

The location of the project is in a high fire danger area. Any fire in this brush area is difficult to control and has a tendency to move rapidly. Should there be a fire in the hills surrounding the project there is no way for the project's residents to escape in a safe manner.

Dlugatch 2 - Response

As stated in Section 4.8 of the Draft EIR, impacts to fire protection services would not be significant. See Section 4.2.4 of this document for additional discussion of this issue.

Dlugatch 3 - Comment

Please also consider the dust, fumes and dangers associated with an increased traffic flow of that number.

Dlugatch 3 - Response

As stated in Section 4.2 of the Draft EIR, air quality impacts (including dust and CO hot spots), would not be significant with implementation of recommended mitigation measures. Please see Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document for additional discussion of this issue.

Dlugatch 4 - Comment

2. ECOLOGICAL CONCERNS: I have lived on Independence Ave for the last 27 years. During that time it was extremely rare to notice raccoons, skunks or rattlesnakes in my neighborhood. Subsequent, to the development of the Porter Ranch area which is close by I have trapped numerous Raccoons, Skunks, snakes and Possums which as you know pose a threat of physical danger and disease. Now with 484 homes planned and further destruction of these animal's habitat I can anticipate even a further increase in numbers of the above animals causing problems with my domestic animals, my health and physical danger. Raccoons and skunks kill or injure without concern for animals or humans. I don't have to mention problems associated with rattlesnakes who are content to remain in the project area unless disturbed. Simply put, if you destroy the natural homes of skunks, rattlesnakes, skunks or possums they will migrate out of the area to neighboring homes (mine) or cause damage to the prospective project homeowners. What does the project developer have in mind as to a solution. I'll answer that one- Nothing.

Dlugatch 4 - Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue. Increased potential concern for public safety as a result of an incremental extension of the urban-wildland interface is not considered to be a significant impact.

Dlugatch 5 - Comment

3. POLICE FORCE AND EMERGENCY SERVICES: 484 homes translate into approximately 2,000 new residents in the area. There will be increased crime and emergency medical issues for which at the present time there are not enough facilities or equipment for the proper handling of emergencies or enforcement.

I am deeply concerned for the above reasons and more that this proposed development constitutes more of a danger to the present ecological system and safety of the area than benefits the new homeowners or developers. The danger of fire in this brush area is extremely high and constitutes a distinct danger to the new purchasers of homes in the project.

Should you require any further comments from feel free to contact me at the above number.

Dlugatch 5 - Response

As stated in Section 4.9 of the Draft EIR, annual crime statistics indicate that the areas, including that of the project, served by the Lost Hills/Malibu Station have a crime rate below the countywide average. Implementation of the project would serve to increase the existing funding mechanisms for any additional officers required to serve the project area. Impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.3 and 4.2.5 of this document for additional discussion of this issue.

Please see Dlugatch 2 – Response of this document regarding impacts to fire protection services.

4.5.30 Margarett Dolan

Dolan 1 – Comment

I am writing to express my concerns on the Proposed Deerlake Ranch development in Chatsworth (Project # 99-239). I live in the area with my family. We are greatful [sic] to live in our working class neighborhood but fear that all of this could end is very upsetting. We strive for a good area and we seem to achieve it. To add 484 new homes not only affect our traffic, environment, our well being (building time 5 years of noise) it would affect our schools.

There needs to be accurate studys [sic] done. a [sic] huge reduction in size. We need to keep our area safe and clean.

Dolan 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Please see Section 1.1 of this document regarding the adequacy of the EIR.

Subsequent to distribution of the Draft EIR, the project has been reduced to include 388 units. Please see Sections 2.0 and Appendix Q of this document regarding reduction of the project. See also Section 4.2.7 (Development Issues 10 – Response) and Appendix L of this document regarding project density.

4.5.31 Vincent Dyer, Architect

March 27, 2002

Dyer 1 –Comment

I am a licensed architect in the state of California (C12762) and have been a practicing architect for over twenty years. I have a prolific business and continue to produce new commercial and industrial projects throughout Los Angeles and Ventura Counties. I also happen to own and live in a home that backs up to Canoga Avenue just north of Chatsworth Street. I'm concerned.

I have reviewed the Draft EIR prepared by HDR/Urban Vision and have several observations and comments. As with most EIR's the preparation is at the request of the applicant, in this case, Presidio Chatsworth Partners. I have worked with several of the firms cited in the consultant organization list and all are reputable and professional firms. They are however charged with one goal in the preparation of their materials and analysis and that is to paint this proposed project in the most favorable light. EIR's are notable for the inclusion of mass quantities of disparate statistics with the end result and conclusions to be derived from a synthesis of this comparative information. We all know how easy it is to manipulate statistics and to paraphrase Harry Truman there is no higher form of deception than statistics.

As required by CEQA Guidelines the EIR addresses an environmentally superior alternative and in this case alternate 1 "no project" and alternate 3 a project of 171 units were analyzed. The inclusion of alternate 2, "525 merged residential units" is more of a threat, than a realistic alternative. The applicant assumes that if we do not accept the project as proposed he will revert back to a higher density. Or perhaps we will view the proposed development as the superior alternative. We are not that naïve.

The inclusion and analysis of alternate 3 is interesting in that it has been determined to be infeasible due to economic factors, land acquisition cost and market. 171 home sites are too few to provide a reasonable return on investment, but 484 units are just right. I am sure that a number substantially less than 484 will still bring a reasonable return and the commissioners should be entitled to know what that number is and how it was derived. Since the EIR brings up economics I think a full disclosure of projected costs and profits should be provided to the Commission for inclusion in their review.

Dyer 1 –Response

The comment has been received and noted. The current project proposes 388 units, a lower number than proposed in the Drat EIR, and is further discussed in Section 2.0 and Appendix Q of this document.

Dyer 2 –Comment

Traffic analysis is always a part of environmental review and it is a sensitive and emotional issue for impacted areas and residents. The traffic report prepared by Lindscott, Law and Greenspan is thorough and comprehensive, but as is typical of this type of documentation and EIR's in general, it is the information that is not included that tells the real story. Daily trip projections and future impact on existing intersections and roadways can often be misleading in that real world conditions are not factored in, only car counts. The existing condition of Canoga Avenue and Chatsworth Streets has not been adequately addressed in the EIR traffic report or the mitigation measures. I suspect the reason for that is that these streets lie within the City of Los Angeles and outside the influence of the County and the developer. It is essential that the Commission on their site visit note the present width of Canoga both immediately north and south of Chatsworth Street and the entire length of Chatsworth between DeSoto and Topanga Canyon. The full design width of Canoga occurs along a portion between Tulsa and Rinaldi, a result of the small single-family development to the west of Canoga. The owners of the several residences that front onto Canoga adjacent to Chatsworth Street have chosen not to expand or remodel their homes to the extent that full design width street improvements would be required by the city as part of the construction permit approval. That is their choice, not the county's and not the developer of the proposed project. How does the developer expect these necessary improvements to occur without assistance and cooperation from the City of Los Angeles in exercising the right to the street widening easements? Has the developer approached the city for assistance? Without a full design width for Canoga, including necessary turn pockets, this intersection will experience major gridlock during peak hours. It should be noted that the northern

portion of Canoga, from Celtic to the project could remain as a two-lane road as traffic there would be at a minimum and thus a small vestige of local street environment could be preserved. Please also note that East / West traffic will increase dramatically in Chatsworth also just a two-lane road for much of its length between DeSoto and Topanga. Rinaldi is also of concern, as it will soon connect from the east to DeSoto. Great pressure has occurred in past to connect the western section of Rinaldi to Desoto. That battle has been completed and no connection is going to be allowed. Thus forcing all traffic to the intersection of Chatsworth and Canoga. The essential realignment and reconstruction of the 118 / Topanga on and off ramps is within Caltrans jurisdiction, not the county. The developer should demonstrate a realistic committed timetable for these improvements with the written blessing and approval of Caltrans.

Dyer 2 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue.

Subsequent to the distribution of the Draft EIR, additional mitigation measures have been included (improvements at the Canoga Avenue/Chatsworth Street intersection) for traffic-related impacts (see Appendix E of this document) as well as an updated traffic study to analyze the revised project (see Appendix K of this document). Also see Section 4.2.6 (Traffic 1 & 2 – Responses) of this document. The traffic study has been coordinated by the County with the City of Los Angeles.

Dyer 3 –Comment

An ancillary issue affecting Canoga is the rebuilding of the entire wastewater sewer line from the project boundary to some point south of Chatsworth Street. Again in the City of Los Angeles. If this work to occur during the initial stages it could conflict with the proposed grading, as Canoga is proposed to be the access point for most construction vehicles. One can easily imagine the parade of dirt haulers and D-8s making their way to and from the site traversing this narrow street with 10' wide trench down the middle. In spite of the developers insistence that grading equipment will be kept on the site during earth moving operations there is no definition of that time frame. Reference is made to Phasing of project, does that mean grading also? Will equipment remain on site for several years? The developer also states that earth balance if 1:1 will be achieved on site. I suggest that the Commission request a preliminary grading plan with proposed finish elevations for the entire project.

Dyer 3 –Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, the proposed project will be graded in one phase and unit construction will be phased over multiple years to meet market demand. . Any offsite construction will be completed in conformance with County and City of Los Angeles requirements. Please see Sections 4.2.3 4.2.7 (Development Issues 8 Response) of this document for additional discussion of these issues.

Preliminary grading and the approximate finished elevations of lots and streets is included in the VTTM (see Appendix C.1 of this document), and has been reviewed by the County Department of Public Works.

Dyer 4 –Comment

The site line studies indicate a finished surface elevation if 1300 to 1330 for the new residence pads immediately adjacent to the existing Twin Lakes community. I could find no elevation information relating to the main project. Those proposed finish elevations are critical to determine site line visibilityto the northern border pads and whether the existing ridgelines will be truly unaffected.

Dyer 4 –Response

See Appendix C.1 of this document regarding the preliminary grading and the approximate finished elevations of lots and streets included in the VTTM. Section 4.1 of the DEIR discusses potential impacts to visual resources. No significant impact will result from the proposed project following implementation of mitigation measures.

Dyer 5 –Comment

I am also concerned that the archaeological analysis has not more specifically addressed the possibility of Native American artifacts and burial grounds. Chumash and Fernandeno tribes were known to have populated many areas of the north valley. The two investigations revealed some evidence, but all was dismissed as insignificant.

Dyer 5 –Response

Please see Section 4.4 and Appendix I of the Draft EIR for discussion of impacts to cultural resources.

Dyer 6 –Comment

Mitigation measures suggested for concerns raised have addressed the easy issues but have ignored the difficult (read costly or controversial) ones.

I fully expect this project to be approved in some form. It is after all an America of property rights and entrepreneurial spirit. Fervent NIMBYism should be tempered with reasoned analysis and acceptance of certain controlled levels of reasonable development. That is not what the Commission is reviewing here. This project is simply too large for the area considered and the access to it. I suggest the following:

1. *The developer should design an access road to the east from Desoto to the proposed development and not use Canoga as an access roadway or enter into a written agreement with the city of Los Angeles outlining the extent and time frame for necessary street widening and intersection improvements to Canoga/Chatsworth and Chatsworth/Desoto.*
2. *That proposed bridges be constructed at the outset of grading in order to provide necessary access for construction vehicles from Topanga Canyon.*
3. *A Native American Monitor in addition to the archaeologist should be on site during grading and excavation work.*
4. *All grading work for the entire project shall be completed in Phase I to minimize the impact of extended construction (perhaps over a 4 year period).*
5. *The project shall be limited to 250 units with a minimum lot size of 10,000 sf and in order to provide a greater sense of open space a minimum of 20' side yards and 40' front yard setbacks.*
6. *The developer shall endeavor to assist financially in the renovation and redevelopment of the deteriorating multi-family housing along Canoga between Devonshire and Chatsworth Street.*
7. *The developer shall redesign the project to include equestrian and hiking trails that flow through the project, not just on the perimeter.*

I consider these items but a few that should be considered by the Commission. I, as a single voice do not have the resources or the time to examine and analyze each segment of this project. It is perhaps not ill conceived in its entirety but truly is far greater in scope that [sic] what this area and infrastructure can support. I stand adamantly opposed to the project as presented and would hope the Commission will take note of these significant issues and require the developer to take responsibility for the impact of this project on the existing community.

Dyer 6 –Response

Comments noted. However as stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5

and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As stated in Section 4.4 of the Draft EIR, impacts to cultural resources would not be significant. However, a mitigation measure requiring an archaeological monitor was included to ensure impacts would remain below a level of significance.

As stated in Section 4.5 of the Draft EIR, impacts associated with grading activities would not be significant with implementation of recommended mitigation measures. Further, grading of the entire site at one time would create more impacts, as graded areas would be subject to wind exposure and water erosion. Please see Sections 4.2.3 (Noise/Dust 1 -- Response) and 4.2.7 (Development Issues 8 – Response) of this document for further discussion of construction impacts and mitigation measures.

Most of the suggestions of the commenter have been considered in the revised project design. The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

It is out of the scope of this project to assist in the renovation and redevelopment of existing multi-family units outside of the project boundaries.

The commenter's opposition to the project is noted and will be forwarded to the decision makers.

4.5.32 Alan and Lori Edwards

April 3, 2002

Edwards 1 –Comment

I had just received.[sic] the information about the "Deerlake Project." Its [sic] a shame that the future of our invironment [sic], especially close to home, focuses on progress, (which I am also in favor, to a point) and having no thought of the homes, people, schools, streets, and most important, the love of the surroundings. Horses, mountains, the lack of traffic, which made all of us move to this area, and our Environmant [sic]... if this project takes affect [sic] I hope all involved will take in account, all of these questions, and come to a solution that keeps chatsworth [sic] what it always was, a tranquil place to live full and healthy lives..

Thank you for you're [sic] time.

Edwards 1 –Response

The commenter's opposition to the project is noted and will be forwarded to the decision makers. No specific comment to the adequacy of the DEIR is provided.

4.5.33 Diane Embree

January 7, 2002

Embree 1 – Comment

As a resident of the Twin Lakes area of Chatsworth, I am extremely concerned about the impact the proposed Deer Lake Ranch development will have on my community.

Whoever conducted the traffic study obviously didn't monitor the area during normal business days. I leave my house anywhere from 7:30am-8:30am am Monday through Friday. Other than during school holidays, the intersection at Topanga Canyon and the 118 freeway is a complete mess. Cars exiting the westbound freeway completely block the intersection; oftentimes Twin Lakes residents have to wait for several traffic light changes before getting through. The intersection can't handle the traffic that currently exists. How will it handle more? Even if Canoga is opened, people will use Topanga for freeway access.

Embree 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Section 4.2.6 (Traffic 2 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Embree 2 – Comment

While traffic is a major concern, I am also very upset about the impact Deer Lake Ranch will have on the environment and health of nearby residents. One of the last areas of unspoiled, open land will disappear. Many wild animals will be killed or displaced. And last, but certainly not least, our health will be put in jeopardy. This area has very strong winds for at least several months of the year. The amount of dust that will be generated will certainly cause respiratory problems for residents of all of Chatsworth- not only Twin Lakes.

Embree 2 - Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see Section 4.2.1 and Appendix F of this document for additional discussion of biological resources.

As discussed in Section 4.2 of the Draft EIR, no significant dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Embree 3 – Comment

I understand that developers want to make money and that the county and city also benefit financially. But at some point someone has to draw the line and say, "enough is enough." Please save this on last area and protect the people who already live nearby!

Embree 3 - Response

The comment has been received and noted. No additional response is required.

4.5.34 Jerry England

January 7, 2002/January 10, 2002 (e-mail)/January 17, 2002 (e-mail)/April 2, 2002 (to type) (e-mail)/April 4, 2002 (to type) (e-mail)/April 11, 2002 (to type) (e-mail)/April 24, 2002 (e-mail)/May 25, 2002 (e-mail)/June 2, 2002 (e-mail)

England 1 – Comment

I would like you to consider the following concerns I have about the proposed Chatsworth Ridge Estates development:

I would like to begin by telling you that the EIR appears to be flawed incomplete, and inaccurate. It is clear that the consultants were hired by and work for the developer. I would like to see the county investigate areas that are flawed and unrealistic.

England 1 – Response

Please see Section 1.1 of this document regarding the adequacy of the Draft EIR.

England 2 – Comment

Cultural Conflict

Chatsworth has an [sic] large equestrian culture that has been under attack from corrupt politicians and greedy developers whose only interest is a quick buck. What they leave in their path is a conflict between two cultures. Those two cultures are a Rural Equine Culture and a Suburban Culture.

The new comers are always the Suburban Culture and they have little or no knowledge of the existing Rural Equine Culture. The result of this clash of cultures is a constant harassment, whether intended of not, of the Rural Equine Culture from the Suburban Culture.

We think some of the harassment begins because of a lack of knowledge or understanding, but it escalates once the Suburban Culture comes to discover the unpleasant aspects of living in a rural community filled with livestock, e.g., flies, dust, noise, manure, etc.

The culture that suffers most is the Rural Equine Culture. Horses are flight animals that respond to a frightening situation by running from it. Equestrians are constantly on the defense from speeding vehicles, leaf blowers, chain saws, car alarms, automatic sprinklers, barking dogs, bouncing balls, tractors, noisy machinery, and a few dozen other tings we've forgotten mention. We have several good friends that have been injured because of thoughtless members of the Suburban Culture. Sometimes they will cause noise and commotion just to see if they can get a reaction out of horses. Last year a truck driver jammed on his jake breaks to see if a horse would react. When the lady rider was dumped and the horse fled into busy traffic on Topanga Canyon Boulevard the trucker made a hasty retreat.

Today we are forced to ride several blocks through a mixture of homes owned by both cultures and never really feel safe until we reach the safety of Santa Susana Mountains. This proposed development will extend our route through several additional blocks of non horsekeeping homes. That means we can expect to be harassed from now on by folks who are annoyed because we are forced to ride through their neighborhood. Keep in mind that for over two hundred years, horsemen have roamed over the trails this project will eliminate.

A good compromise would be to require the developer to make at least fifty percent of the project horsekeeping homes.

At the very least we would ask that the county require the developer to install signs warning truck drivers not to use jake brakes adjacent to equestrian trails. Also, every horse crossing on any street needs to have a traffic light or stop sign depending on the volume of traffic.

The developer has promised to build and improve equestrian trails in and around the subdivision. We request that the county require the developer to post bonds for such trails so that our community may complete them if the developer fails to do so.

England 2 – Response

The commenter's concerns regarding conflicts between the "equestrian and suburban culture" are noted. However, the project includes a trail system to be dedicated to the County of Los Angeles (see Section 2.0 of this document). Further, additional mitigation measures have been included for traffic-related impacts (see Appendix E of this document). Please see Section 4.2.8 (Non-traffic 3 – Response) and Appendix D of this document regarding compliance with mitigation measures.

England 3 – Comment

Traffic Issues on Canoga Avenue

The developer says less than one third of the 1200 to 1500+ automobiles the project will generate will use Canoga Avenue. The rest, they say, will use Topanga Canyon Boulevard. That is an absolutely ridiculous statement. If I lived there and had a choice between Topanga Canyon Boulevard with four traffic signals between my home and Devonshire Street or Canoga Avenue with one signal between my home and Devonshire Street it would be no contest. I would use Canoga. The area south of this project, in the City of Los Angeles, already has a serious traffic congestion problem. There are two private schools just north of Chatsworth Street between Canoga and De Soto that generate 1000+ daily trips by people who do not live in our neighborhood. This project will double or triple the congestion.

The developer admitted to doing his traffic study during a school holiday which greatly alters the results.

Speeding traffic on Canoga is another concern. Canoga Avenue has no houses fronting it between Rinaldi and the 118 freeway, so drivers feel comfortable racing downhill at breakneck speeds. The area of Canoga Avenue also has a bridle path that acts as a collector path to channel equine traffic into the nearby mountains.

At the very least you must require the developer to post signs demanding that trucks not to use truck air brakes (jake brakes) on Canoga, you must also require them to post the speed limit at 25mph on Canoga, you must require the developer to install an equestrian friendly four-way traffic signal at the intersection of Canoga and Rinaldi, and stop signs at each street between Rinaldi and the 118 freeway. Just south of the freeway overpass there needs to be an equestrian-activated light so riders can safely cross he street to enter the park. Also, the bridle path, which the builder proposes to extend under the freeway needs to have an opening so a rider can get out to cross the street there. There also needs to be adequate horse crossing sins at all road crossings throughout the project.

England 3 – Response

Please see Sections 4.2.6 and 4.4 (ETI 12 – Response) of this document concerning traffic issues.

England 4 – Comment

Wildlife Issues

I have enjoyed watching a huge variety of birds, reptiles and mammals that pass through or live on and around the proposed development site. I have seen mountain lions, bobcats, deer, coyotes, rabbits, squirrels, raccoons, quail, dozens of species of song birds, hawks, owls, and golden eagles on the project. The developer's consultant has only identified a few of these animals and does not make realistic recommendations to protect them and their environment.

England 4 – Response

A faunal compendium, including species observed or expected to occur on or in the immediate vicinity of the site is included in the Draft EIR (Appendix G). That list includes reported observations of sharp-shinned, Cooper's, red-shouldered, and red-tailed hawks, and of great horned owl. Golden eagle was inadvertently omitted form that list, however. Mountain lion and bobcat are also included as expected species, and mule deer is included as an observed species. Mitigation is included to ensure impacts would not be significant. Please see Section 4.2.1 and Appendices D and F for further discussion of biological impacts and mitigation.

England 5 – Comment

We are appalled at the developers plan to collect all storm water into the streets of the proposed project then to direct that dirty water into the pristine Devil's Canyon. I want to see a chemical analysis of storm water in other subdivisions. I am sure you will find petroleum, asbestos, pesticides, detergent, and many other harmful ingredients that cannot be filtered out without extraordinary means. The developer must provide scientific data that proves he can protect our wildlife. Pleas don't let this developer kill these beautiful animals just so they can make a few extra bucks. All storm water needs to be collected in pipes and carried out of the wildlife corridor.

England 5 – Response

Please see Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for discussion of potential water quality impacts.

England 6 – Comment

Environment

The developer promises to dedicate some land to the Santa Monica Mountain Conservancy. What assurance is there that this dedication will occur? What guarantee is there that the conservancy won't trade that land off for something better in the future?

England 6 – Response

The applicant has agreed to dedicate the 160-acre conservation area to the Santa Monica Mountains Conservancy, and this requirement will be made a condition of project approval.

England 7 – Comment

The developer is going to tear out areas of coastal sage and mature oaks. The tiny (15-gallon) proposed replacement saplings are inadequate compensation for this destruction. The developer should plant replacement trees that are substantially larger and more mature.

England 7 – Response

Replacement of oak trees would be per the requirements of the County of Los Angeles. As stated in Appendix H of the Draft EIR, replacement tree shall be properly maintained for a minimum period of two years and replaced by the project developer if fatality occurs during that period. See Section 4.2.1 and Appendices F.1 and F.3 of this document for further discussion of oak tree mitigation.

England 8 – Comment

The extensive paving inside the project will result in ambient heat gain, further aggravated by the removal of mature plants. How does the developer propose to mitigate this effect?

England 8 – Response

Please see Section 4.2.7 (Development Issues 3 – Response) to this document.

England 9 – Comment

Construction Period

Construction will generate dust, fumes, noise, and runoff in our neighborhood for up to five years. There is no enforcement mechanism to ensure either containment of these effects or the developer's compliance with related ordinances and their own proposed measures. There needs to be more stringent limits on construction activity, a hot line for complaints, penalties for noncompliance, and public accountability.

England 9 – Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please see Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document for additional discussion of impacts and mitigation.

See also Sections 4.2.2 and 4.4.2 (CLPA 4 – Response), and Appendices H and I of this document regarding urban runoff.

See Appendices D and E of this document regarding compliance with mitigation and conditions for the project.

England 10 – Comment

For 3 to 5 years many pieces of noisy construction machinery will be operating at the development site. The developer has not committed to limits on numbers of simultaneous machine operations, on the use of state-of-the-art noise shielding and muffling devices, or on measured noise limits. We want a way to insure that we won't be assaulted in our homes by all this noise.

England 10 – Response

Please see England 9 – Response of this document.

England 11 – Comment

Construction activity will require thousands upon thousands of truckloads of building and road materials to pass though our streets, including right past an elementary school, middle school and a major equestrian collector trail. There is inadequate control over delivery times, routes and frequency. These huge vehicles present not just an inconvenience but a hazard to local school children, residents, and equestrians. The developer should prepare a comprehensive plan to alleviate the effects of so much heavy truck traffic on our neighborhood and give us a chance to provide input to that plan before it is finalized. The developer must be required to post signs advising construction workers that the use of truck air brakes (jake brakes) around bridle paths is unacceptable and can be dangerous to equestrians and their horses.

The developer asserts that construction vehicles will avoid "peak travel periods" and parking on "heavily traveled roadways." These terms are vague and undefined, giving us no protection, recourse or opportunity to evaluate the conditions of the construction that will overwhelm our neighborhood. There is no assurance that our residential side streets will have construction vehicles parked on them.

There is no protection against noisy or reckless driving by construction employees and subcontractors commuting to the project site on our local streets. You should require a specific plan approved by the neighbors and have enforcement mechanisms and penalties for noncompliance.

England 11 – Response

Please see Section 4.2.7 (Development Issues 8 – Response) of this document.

England 12 – Comment

Police and Fire Issues

The nearest LA County Sheriff's station is 40 minutes away in Lost Hills. There is already a serious criminal element in the remote areas around this project. I refer to evidence of teenage drinking, drug use, trash dumping, dumping and burning stolen cars, dumping human bodies, illegal campers with campfires and nudity, paint ball shooters, illegal off-road vehicles, and petty theft. Looking at a projected 5-year period of construction activity which brings in dozens of unknown folks into our neighborhood and no police, I can promise a significant increase in crime in my community. You need to make sure a Sheriff's substation is in place before construction is allowed to commence on this project.

England 12 – Response

As stated in Section 4.9 of the Draft EIR, annual crime statistics indicate that the areas, including the project, served by the Lost Hills/Malibu Station have a crime rate below the countywide average. Implementation of the project would serve to increase the existing funding mechanisms for any additional officers required to serve the project area. Please see Sections 3.3.3 and 4.2.5 for additional discussion of this issue.

England 13 – Comment

In addition, you need to convince me and my neighbors that the proposed project will have adequate fire protection from the present County Fire Station which 20 minutes away in Lake Manor. If the proposed project burns, our homes will be next.

England 13 – Response

As stated in Section 4.8 of the Draft EIR, the County Fire Department has indicated that the level of staff under these circumstances is adequate to meet fire suppression and emergency medical needs to the project and that no additional staff or service would be required. Please see Section 4.2.4 of this document for additional discussion of this issue.

England 14 – Comment

The county is very aware of illegal campers all around the project that cannot be removed because of a present hands-off policy from the LAPD. You must require this developer to provide a safe non-combustible camping area complete with toilets and showers to help protect our neighborhood as well as he proposed new homes in this mountain fire district.

England 14 – Response

There is no requirement to provide camping areas as part of the project. However, this comment will be forwarded to the decision makers.

England 15 – Comment

Schools

All of the public and private schools in Chatsworth are at maximum capacity. You must require a new school to be built for this project. The statistics provided by the developer include local resident students and do not take into account students who are bused in (PWT students) and are therefore permanent (even though non-resident) students. The enrollment statistics in the EIR does not match the actual enrollment at the local schools.

England 15 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

England 16 – Comment

Mitigation:

I would like to make two recommendations to mitigate some of the previously mentioned concerns.

To help the equestrian issues and to help Chatsworth maintain its rural equine heritage you must require this developer to build at least 50 percent of the new homes so that they are zoned for horses.

England 16 – Response

Please see England 2 – Response of this document. The project has been redesigned to accommodate greater equestrian uses.

England 17 – Comment

The best way to mitigate traffic and school concerns and the general impact on our rural neighborhood is to cut the density in half and allow just 242 homes, not a ridiculous 484. After all, these are not the affordable houses this state is crying for, but rather expensive homes target at the top on percent of our population.

England 17 – Response

As stated in the Draft EIR, implementation of the recommended mitigation measures would reduce traffic and school impacts associated with the project to less than significant. Thus, the measures outlined by the commenter are not required.

England 18 – Comment

Please be advised that this developer and his engineer have promised our equestrian community (including ETI Corral 54 and Chatsworth ECHO, Inc.) that they will keep all equestrian trails and bridle paths open and safe during the entire construction period. They estimate that to be 5 years in a favorable economy.

Because this developer was honest enough to alert us to the fact that they intend to sell the project once the Tentative Map is approved we would like to see this an a Map Condition.

Our community is aware that there are other projects in Los Angeles County that had map conditions to build and keep trails open, but the developer failed to fulfill his obligation. Now the only recourse for that equine community is to sue the developer. It's a shame the county didn't help them.

England 18 – Response

Comment noted. Please see Appendices D and E of this document regarding mitigation and Draft Conditions of Approval for the project.

England 19 – Comment

We just became aware of a document titled Biological Resources Assessment of the Proposed Santa Susana Mountains/Simi Hills Significant Ecological Area which includes existing SEA 13, 14, 20, 21, 63, 64.

The document recommends limiting development densities to one residential unit per ten acre parcel and goes on to discuss limiting grading, fencing, and other habitat disturbances.

You may download and view this document at
http://planning.co.la.ca.us/gpd_SantaSusanaMountains.pdf

What we would like to know is – why is the County considering a 484 home residential project (Chatsworth Ridge Estates) in this area? This huge proposed development would allow grading to completely strip habitat off dwelling pads, and redirect contaminated storm water into Devils Canyon which is protected by the SEA.

Could you please address this document at the Planning Commission hearing on January 26, 2002? The project is identified as Project # 99-239(5).

England 19 – Response

Please see Section 4.4.1 (C ECHO 2 – Response) of this document.

England 20 – Comment

Because the above mentioned project is clearly within the 'sphere of influence' of the City of Los Angeles we would also request that you become aware of the Cities [sic] *General Plan. Specifically, we that you look at the conservation element at http://www.ci.la.ca.us/pln/General_Plan.htm*

You will see the City of Los Angeles proposes to protect and keep its last remaining animal keeping areas:

Objective: retain, to the extent feasible, the last remaining agricultural features of the city as part of the city's heritage and economy.

Policy: continue to encourage the retention of parcels in agricultural and low density land use and zoning categories that will encourage their retention in agricultural and related uses.

England 20 – Response

Please see Section 4.4.1 (C ECHO 1 – Response) of this document. There are no current agricultural land uses on the project site.

England 21 – Comment

We would like you to consider supporting this conservation effort to help us extend horsekeeping into the County rather than to allow us to be sealed-off by suburban development. Suburban and Rural Cultures are always in conflict with one another.

England 21 – Response

Please see England 2 – Response of this document. Equestrian uses will be allowed within the project site.

4.5.35 Wayne and Jan Evanson

January 9, 2002

Evanson 1 – Comment

We would respectfully urge you to personally evaluate the EIR study for the Deerlake Development with respect to:

Devils Canyon:

The impact on Devils Canyon with regards to water runoff and drainage. We are very concerned that this beautiful canyon will be destroyed. We believe this EIR in inadequate! Please look further for the truth!

Evanson 1 – Response

As stated in Section 4.6 of the Draft EIR, impacts to hydrology and water quality would not be significant with implementation of recommended mitigation measures. Please see Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document.

Please see Section 4.4 (CLPA 2 – Response) of this document regarding the accuracy of the EIR.

Evanson 2 – Comment

Traffic:

The Development will contribute to the gridlock of traffic, which already exists in Chatsworth. The city has already graded at least four intersections an "F" already! We can't even pull out of our driveways in the morning as it is.

Evanson 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Evanson 3 – Comment

This EIR has many faults, Please review it further, we are not Land Planning specialists but we can see the negative impact this will have on OUR community.

Evanson 3 – Response

Please see Section 4.4 (CLPA 2 – Response) of this document regarding the accuracy of the EIR. The commenter's opposition to the project is noted.

4.5.36 Casiomin Fileh and Anne Joelek

March 8, 2002

Fileh and Joelek 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

1. *Traffic on Canoga – Chatsworth St. which is already crowded with Siena Canyon and Chatsworth Hills academy traffic.*
2. *Number of homes proposed*
3. *Use of our city services – sewers schools – streets – maintenance.*

Fileh and Joelek 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Subsequent to distribution of the Draft EIR, the project has been revised to reduce the total number of residential units from 484 to 388. Please see Section 2.0 of this document for further discussion of this issue.

As stated in Section 4.8 through 4.17 of the Draft EIR, impacts to public services and utilities would not be significant.

Fileh and Joelek 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *an opportunity for public study of and comment on the applicant's revised proposals.*

Fileh and Joelek 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.37 Susan Gerke

January 9, 2002

Gerke 1 - Comment

I live in Chatsworth and have valid concerns about the above-referenced proposed project. The EIR covers many aspects of the environment that will be altered or mitigated by this development, but it falls short in explaining the justification of permanently altering a naturally perfect area that not only provides habitat for rapidly disappearing wildlife but is home to people whose quality of life is in jeopardy if this project goes forward. The current number of homes in the area--and the people and cars associated with them--is in a certain balance with the environment at present. There is no excess pollution, noise, traffic, water runoff or fire danger. The proposed addition of 484 homes will alter the environment in ways that have not been adequately addressed in the EIR.

Gerke 1 - Response

There is no requirement for an EIR to "justify" any particular environmental impacts, which can be mitigated to a less than significant level, only to disclose the nature and magnitude of those impacts. CEQA Section 15093 specifies that impacts that are found to be significant would require "justification," by the issuance of a Statement of Overriding Consideration that the economic, legal, social, technological or other benefits of a project outweigh the unavoidable adverse environmental effects, and the adverse environmental effects may be considered "acceptable." However, as project-related impacts would be less than significant with recommended mitigation measures, no such justification is required.

Subsequent to distribution of the Draft EIR, the project has been revised to reduce the total number of residential units from 484 to 388. Please see Section 2.0 of this document for further discussion of this issue.

Gerke 2 - Comment

Not only does the EIR fail to address the inevitable damage to the environment that will be caused because of the high density of this project, but the mitigation measures offered are not adequate to

compensate for the damage, i.e., the destruction of 65 mature oak trees cannot be balanced with 15-gallon specimens which may or may not survive.

Gerke 2 - Response

As stated above, project-related impacts would not be significant with implementation of recommended mitigation measures.

Oak trees proposed for removal would be replaced per County ordinance. Please see Section 4.2.1 and Appendices F.1 and F.3 for additional discussion of this issue.

Gerke 3 - Comment

The EIR does not satisfactorily address the inevitable damage from contaminants to the ecosystems both north and south of the proposed development.

Gerke 3 - Response

Although the comment does not identify "contaminants," it is assumed that the reference is to storm water runoff. Please see Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document.

Gerke 4 - Comment

The EIR does not satisfactorily address the exacerbated flooding conditions that will occur during the rainy season when natural land is replaced with concrete. I suggest underground storm drains leading to a treatment center to prevent flooding problems such as that experienced in other developments (Porter Ranch-Limekiln Canyon) where water is channeled down city street surfaces and into natural canyons, contaminating the ecosystem.

Gerke 4 - Response

Please see Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document.

Gerke 5 - Comment

The EIR does not address impacts on wildlife in the precise area where the development is planned to be constructed. A more timely study needs to be done to take into consideration the new wildlife that now exists in the area as a result of being chased out of the Porter Ranch region.

Gerke 5 - Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Gerke 6 - Comment

Regarding the high density and scope of this project, the project is out of place in the environment and the equestrian community of Chatsworth. The addition 485 [sic] *homes in this unincorporated area of LA county are simply too many for the amount of schools, roads and fire and police availability.*

I strongly request your consideration of (1) no project or, alternatively, (2) a less dense project.

Gerke 6 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.38 Charles and Sharon Goldstein

January 7, 2002

Goldstein 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

My community is not what it was - I live at Chatsworth and DeSoto and I can't even begin to explain how terrible the traffic is. I cannot get out of my own driveway due to the gridlock in front of my home. I would be happy to go into more detail at a later date - but I feel you must know that my daily activities have to be timed around the traffic in front on my home. HOW CAN IT GET WORSE!

P.S. It truly sickens us to see what greedy developers have done to this once rural part of the valley. We can know for sure that as long as Mr. Antonovich is in public office he will not ever receive our votes.

Goldstein 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

The commenter's opposition to the project is noted, no response is required.

Goldstein 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Goldstein 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.39 Sherry Gordon

January 7, 2002

Gordon 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following: Increase in traffic in my neighborhood. With Siena Canyon and Chatsworth Hills Academy in my neighborhood each year we have an increase in traffic, plus they drive to [sic] fast and I am concerned about the safety of my children and the children in our neighborhood.

Gordon 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Gordon 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*

- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Gordon 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.40 Barry and Tammy Grant

January 7, 2002

Grant 1 – Comment

I am a resident in the Twin Lake area, and I am writing to you about the construction from the Deer Lake Ranch development project.

My wife/husband and I have lived in the area for 15 years, with three children. We are concerned about he impact that 484 homes will have on our homes, and all our streets - not just the streets that have 118 freeway access points. It is disturbing to me that the developer conducted a traffic study with not all schools in session and purportedly used incorrect tables to estimate the amount of trips by vehicles per day, given the nature of the houses to be built, and times of day at which these trips would be made. I drive during peek [sic] hours of the day, during the morning on Mayan and Topanga I cannot get on the 118 freeway going west to take my kids to school now, can you imagine when 484 homes go in, what a mess this is going to be. Prior to putting in the homes we will have to deal with all the construction going up and down our streets, especially since we do not have traffic signs and a lot of blind corners, with small children this is a big concern. Not just the traffic it will cause, the noise and the dust of the mass construction that will be going on.

Grant 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. See Section 4.2.6 (Traffic 1 & 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. See Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document for additional discussion of these issues.

Grant 2 – Comment

If the contractor was going to build homes that a middle class family or senior citizen could afford, I would say maybe a 100 homes, but for the contractor to build homes that are out of most common family's range. They're only there for profit and not for any other reason. So all rules will not apply and they will not abide by all ordinance that our [sic] set.

I feel that the draft EIR is incomplete in addressing these areas and needs more study.

Grant 2 – Response

Section 5.4.3 of the Draft EIR included a discussion of a reduced project alternative, per the requirements of CEQA. Although Alternative 3 would include a reduction in the density of the residential community, it would not meet project objectives. Further, as stated in the Draft EIR, implementation of the recommended mitigation measures would not result in significant project-related impacts.

The project has been revised to reduce the total number of residential units from 484 to 388. Please see Section 2.0 of this document for further discussion of this issue.

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document regarding adequacy of the EIR.

4.5.41 Jonathan Green

March 8, 2002

Green 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Increased noise, dust, pollution, and traffic on Canoga Ave., while decreasing the rural ambience that our neighborhood has been able to sustain. Also, its effect on the horses and trails.

Green 1 –Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. See Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document for additional discussion of these issues.

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. See Section 4.2.6 (Traffic 1 & 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Green 2 –Comment

Chatsworth/DeSoto intersection already overburdened. Chatsworth St. cannot handle anymore traffic, whatsoever! Why widen Canoga when Topanga and DeSoto are already major streets that can fulfill the need, and it would completely change the atmosphere and safety of our community.

Green 2 –Response

Please see Grant 1 – Response of this document.

Green 3 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Green 3 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.42 Ken and Nancy Gross

January 14, 2002/January 16, 2002

Gross N & K 1 - Comment

Project No. 99-329(5) as proposed will further impact our over-crowded schools. This area of the San Fernando Valley will suffer even worse if such a large project is allowed to proceed without being cut back – we mean way back to a fraction of that requested by the developers.

We are well informed about the crowding in the schools as we have two granddaughters attending Chatsworth High School and we live less than two miles from the school. I taught mathematics for

the Los Angeles City Schools and have had some personal contacts with the schools in this immediate area so have first hand professional knowledge.

Gross N & K 1 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Gross N & K 2 - Comment

Another part of my background is as a real estate broker specializing in land sales and development. Invariably developers request more dwelling units than they expect to obtain and make a show of scaling down. But this project should not be just scaled down – it should be cut to one-fourth the size!

Gross N & K 2 – Response

The Draft EIR included analysis of a reduced density alternative (a reduction of approximately 65 percent as compared to the project). However, as stated in Section 5.4 of the Draft EIR, implementation of Alternative 3 would not meet the project objectives. When cost of development is factored with already incurred land acquisition costs and market sales prices, Alternative 3 becomes economically infeasible. See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Gross N & K 3 - Comment

I've lived almost 50 years in the west San Fernando Valley including Chatsworth. Even at present, Chatsworth maintains a rural character and serves as a transition from a densely populated suburban area to open space. The density of the proposed Deerlake Ranch development is 50% higher than where I grew up in Northridge in the middle of a tract subdivision. The proposed development leapfrogs a high-density development across a lower density, semi-rural area.

Alternative 3 in the EIR comes closest to matching the existing density of the adjacent developed areas. Yet, this alternative is summarily dismissed with a few brief assertions and no supportive documentation. Considering the ruggedness of the terrain, even Alternative 3 represents a density in excess of what should be allowed.

Gross N & K 3 – Response

Please see Gross N & K 2 – Response of this document.

Gross N & K 4 - Comment

Furthermore, from what I have attempted to confirm, the EIR is riddled with errors, factual misrepresentations, and fabricated statistics.

Gross N & K 4 – Response

Please see Section 4.4.2 (CLPA 2 – Response) of this document regarding the adequacy of the EIR.

Gross N & K 5 - Comment

According to a neighbor, the traffic study did not utilize representative or appropriate monitoring stations, has fabricated figures, and was conducted while school was not in session.

Gross N & K 5 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures. See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Gross N & K 6 - Comment

The conclusion of no significant impact on local public schools is utterly absurd. The principal at Chatsworth Park Elementary School down the road from us disputes the enrollment figures for her school. A footnote in Tables 4.10.1 and 4.10.3 of the EIR acknowledges that these are not the actual enrollment figures. Yet, in Table 4.10.5 and throughout the text of section 4.10 of the EIR, these deflated figures are used as the actual figures, leading to the false conclusion of no significant impact on any of the local schools.

The principal of Lawrence Middle School told me on the phone today that his enrollment is about 2200, over 50% higher than the figure of 1416 in the EIR. Assuming we can trust the projected figures for Deerlake Ranch (121) and Porter Ranch (465) in section 4.10.5 on cumulative impacts and using the corrected enrollment of 2200, we have a projected cumulative enrollment of 2786. This exceeds the operating capacity of 2330 by 456, in direct contradiction of the no significant impact conclusion in the EIR.

They employed the same deception with their figures for Chatsworth High School. According to the Administration at the high school, the operating capacity is 3311, almost 200 less than 3502 given in the EIR. The actual current enrollment is 3175, almost 50% greater than the 2211 "Resident Area Enrollment" figure from Tables 4.10.1 and 4.10.3. Furthermore, in Table 4.10.5 and in document text, they cleverly substitute 2211 in their enrollment calculations as if it were the actual enrollment. This again leads to false conclusion of no significant impact.

Not only did they err in their conclusions based on faulty numbers, it's clear that they did this deliberately as noted earlier by changing the third column heading in Table 4.10.5 and dropping footnote b. Please don't ignore this intentional deception. Along with the previously noted problems with the traffic study, it adds up to a clear intent on the part of the applicant to provide false information to deceive decision makers and the public and to shove costs that should legally be born by the developers onto the taxpayers.

Gross N & K 6 – Response

Please see Gross N & K 1 – Response of this document. Please also see (Dixon-Davis 1 – Response), Section 4.5.28 of this document.

Gross N & K 7 - Comment

Due to the applicant's callous disregard for producing an honest, factual EIR and a demonstrated contempt for the EIR process, I urge you to throw out the entire EIR and deny any pending applications until the applicant produces legitimate EIR which is factual, honest, and which has been carefully scrutinized by the staff of the Regional Planning Department of LA County.

Gross N & K 7 – Response

Please see Section 4.4.2 (CLPA 2 – Response) of this document regarding the adequacy of the EIR.

Gross N & K 8 - Comment

Furthermore, this new EIR should consider more realistic and reasonable alternatives such as a project density of approximately 2/3 of Alternative 3. It's common knowledge that developers ask for more than they expect to get. Let's start the EIR process with a realistic number of projected residential dwellings.

Gross N & K 8 – Response

Please see Gross N & K 1 – Response of this document.

4.5.43 Pete Gross

January 15, 2002

Gross P 1 - Comment

The traffic portion of the EIR makes absolutely no mention of the impact on bicycle safety. The traffic study focuses on congestion at intersections, but most of the impact for cyclists is between intersections.

Gross P 1 - Response

LADOT is responsible for requesting improvements to Chatsworth Street, due to implementation of the project. No bike lane has been proposed. Please see Section 4.3.6 of this document regarding the improvements to Chatsworth Street.

Gross P 2 - Comment

The Old Santa Susana Pass Road between the San Fernando and Simi Valleys is arguably the premier and most popular road ride for cyclists in Chatsworth, Canoga Park, Granada Hills and Northridge. Besides the Pass Road itself, critical approach segments with no alternative routes will be adversely impacted by the Deerlake Ranch development. Mitigation measures to ensure continued safe access and passage for cyclists should be added to the Conditions of Approval.

Gross P 2 - Response

As stated in Section 4.12 of the Draft EIR, impacts to traffic would not be significant with implementation of recommended mitigation measures. Specifically, Table 4.12.5 of the Draft EIR shows that implementation of the project would not result in a significant impact to the intersection of Santa Susana Pass Road and Topanga Canyon Boulevard. No additional mitigation is required. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Gross P 3 - Comment

Specifically, Topanga Canyon Blvd between Chatsworth St. and the T-intersection with the Old Santa Susana Pass Road should have a dedicated bike lane in both directions and a pedestrian/equestrian traffic light at the T-intersection similar to the one at DeSoto and Rinaldi.

Between Canoga Ave. and Topanga Canyon Blvd., the south side of Chatsworth St. and portions of the north side are not wide enough o safely accommodate bicycles and motor vehicles simultaneously. Currently, even at peak hours, this is a relatively safe bike route due to light traffic. Particularly since Canoga Ave. will be the primary, if not exclusive, access to the project site during the construction phase and will remain one of two access routes after completion, traffic along this segment will increase substantially. So, Chatsworth St. will need a dedicated bike lane in both directions along this segment. This will also help guarantee safe bicycle access to Chatsworth Park for residents on the east side of Topanga.

Gross P 3 - Response

Please see Gross P 1 – Response of this document.

Gross P 4 - Comment

P.S. Please scale down the project to about 2/3 the size of alternative 3.

Gross P 4 - Response

Please see Section 4.5.42 (Gross N & K 1 – Response) of this document.

4.5.44 Ubenberk and Jo Ann Grover

January 7, 2002

Grover 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

We live [sic] in Chatsworth for thirty years and concerned about the negative impact that the large number of homes directly north of us and 118 freeway will have on our place to live.

Grover 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Grover 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Grover 2 - Response

Please see Section 4.5.5 (Belkin, L 3 -- Response) of this document.

4.5.45 Nicholas Habib

January 7, 2002

Habib 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Dust

Habib 1 – Response

As stated in Section 4.2 of the Draft EIR, air quality impacts associated with construction activities would be less than significant with implementation of recommended mitigation measures. Please see Section 4.2.3 and Appendix E of this document for additional discussion regarding this issue.

Habib 2 – Comment

Noise

Habib 2 – Response

As stated in Section 4.7 of the Draft EIR, noise impacts would be less than significant with implementation of recommended mitigation measures. Please see Section 4.2.3 and Appendix E of this Final EIR for additional discussion of this issue.

Habib 3 – Comment

Danger to wildlife

Habib 3 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Habib 4 – Comment

Traffic!!

Habib 4 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Habib 5 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Habib 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.46 Raid Haddad

January 7, 2002

Haddad 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Increase of traffic on Canoga Ave. and other streets, and the construction from the Deer Lake Ranch development project.

Haddad 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please see Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document for additional discussion of construction impacts.

Haddad 2 - Comment

And also the adequate Sheriff's protection.

Haddad 2 - Response

As stated in Section 4.9 of the Draft EIR, annual crime statistics indicate that the areas, including the project, served by the Lost Hills/Malibu Station have a crime rate below the countywide average. Implementation of the project would serve to increase the existing funding mechanisms for any additional officers required to serve the project area. Impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.3 and 4.2.5, and Appendix E of this document for additional discussion of this issue.

Haddad 3 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Haddad 3 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.47 Barbara C. Hahn

March 8, 2002

Hahn 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Greatly increased traffic – cars, trucks, residents – beyond what this residential area can safely and humanely [sic] handle. Development is much too large. Please scale down considerably.

Hahn 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Hahn 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Hahn 2 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

Hahn 3 –Comment

Also, this density of homes/people/vehicles is not in keeping with existing density of surrounding area and homeowners: present tax-payers (cannot read remaining comments)

Hahn 3 –Response

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Hahn 4 –Comment

Would you want this added to your existing neighborhood and streets?

Hahn 4 –Response

The comment has been received and noted. No additional response is necessary.

4.5.48 Gloria Hawbler

January 7, 2002

Hawbler 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic along Chatsworth St. --our stable teaches disabled riders. For access to riding trails crossing Chatsworth St. is going to become more and more dangerous with increased traffic.

Hawbler 1 - Response

As stated in Section 4.12 of the Draft EIR, impacts to traffic along Chatsworth Street would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Hawbler 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Hawbler 2 - Response

Please see Section 4.5.5 (Belkin, L 3 -- Response) of this document.

4.5.49 Roger and Adrienne Heath

January 7, 2002

Heath 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Destruction of environment including movement of land, destroying oak trees, destroying wildlife, upsetting the natural balance-resulting in pollution and flooding. I thought there was a law in effect to preserve oak trees.

Heath 1 – Response

This project's impacts on land alteration (grading), oak trees, wildlife, urban runoff and flooding have been discussed in various sections of the Draft EIR. With implementation of mitigation measures impacts would not be significant. Please see Appendix G of this document for additional discussion of grading. See Section 4.2.1 and Appendices F.1 and F.3 of this document for additional discussion of biological resources, including oak trees. See Section 4.2.2 and Appendices H and I of this document for additional discussion of urban runoff.

Heath 2 – Comment

All of this area was Chumash land. What is being done to ensure that sacred burial grounds are not being disturbed by this project and what efforts will be made to preserve Indian artifacts that could be in the area?

Heath 2 – Response

Both a Phase I and Phase II archaeology survey were conducted on the site (see Appendix I of the Draft EIR). As stated in Section 4.4 of the Draft EIR, based on the fieldwork completed on the archaeological sites within the project site, implementation of the project would not result in significant impacts to cultural resources.

Heath 3 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project:*
- *a more meaningful proposal for mitigation by the applicant: and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Heath 3 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.50 Bruce Herman

Herman B 1 – Comment

I am writing to express my objections to the proposed Deerlake Ranch development in Chatsworth. {Project No. 99-239{5}] for which you have scheduled a January 23 hearing.

I have lived in Twinlakes for thirteen years and am very much concerned about the impact that this project will have on this area.

I feel that the proposed project will have an adverse impact on my neighborhood and it is clear that adequate measures have not been taken to preserve the integrity of this area. We live in a very high wind area and cutting down of the surrounding hills will increase this problem considerably. The increase of the traffic volume will result in a major problem of entering and exiting Twinlakes.

Herman B 1 – Response

As stated in the Draft EIR, impacts associated with the project would not be significant with implementation of mitigation measures. Implementation of the project would not result in an increase of wind in the area. Please see Section 4.2.3 of this document regarding additional discussion of dust related impacts.

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Herman B 2 – Comment

The volume of heavy equipment using our privately owned and maintained streets will decimate our existing roads.

Herman B 2 – Response

See Section 4.2.3 (Noise/Dust 3 – Response) of this document.

Herman B 3 – Comment

The impact on the surrounding eco-system will be a disaster.

Herman B 3 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. See also Section 4.2.1 of this document for additional discussion of this issue.

Herman, B. 4 – Comment

The developers have not taken any of our areas [sic] lifestyle into consideration in proposing this project. The runoff of water through Devil's Canyon will drastically effect [sic] the entire natural habitat in this area.

Herman B 4 – Response

Please see Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document.

Herman B 5 – Comment

This project, as proposed, must be radically altered to accommodate the unique problems in this location.

Please use the powers of your office to do something!

Herman B 5 – Response

The commenter's opposition to the project is noted and will be forwarded to the decision makers. No additional response is required.

4.5.51 Roger Herman

January 4, 2002

Herman R 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239[5]) for which you have scheduled a January 23 hearing.

I have been living in Twinlakes for many years I am very much concerned about the Deer Lake Ranch project will have on this area.

The proposed project will have an adverse impact on this neighborhood and adequate measures have not been taken to preserve the integrity of this area.

Herman R 1 – Response

As stated in the Draft EIR, impacts from the project would not be significant with implementation of recommended mitigation measures. Please see Appendices D and E of this document for additional discussion of mitigation measures.

Herman R 2 – Comment

Some of my concerns are. Fire

Herman R 2 – Response

As discussed in Section 4.8 of the Draft EIR, fire protection services would not be significant with implementation of recommended mitigation measures. See Section 4.2.4 of this document for additional discussion of this issue.

Herman R 3 – Comment

Schools

Herman R 3 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Herman R 4 – Comment

wind

Herman R 4 – Response

It is unclear what concern the commenter has regarding wind. No additional response is required.

Herman R 5 – Comment

traffic

Herman R 5 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Herman R 6 – Comment

dust from construction

Herman R 6 – Response

As discussed in Section 4.2 of the Draft EIR, no significant dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Herman R 7 – Comment

water pollution from run off

Herman R 7 – Response

As discussed in Section 4.6 of the Draft EIR, no significant water quality impact would occur from the project with implementation of recommended mitigation measures. See Section 4.2.2 (Urban Runoff – Response) and Appendix I of this document for additional discussion of this issue.

Herman R 8 – Comment

sewage

Herman R 8 – Response

Although the commenter does not specify his concern, the project would be served by a public sanitary sewer system that would discharge into the City of Los Angeles existing sewer system (see Section 4.14 of the Draft EIR). No significant impacts would occur.

Herman R 9 – Comment

crime

Herman R 9 – Response

As stated in Section 4.9 of the Draft EIR, annual crime statistics indicate that the areas, including the project, served by the Lost Hills/Malibu Station have a crime rate below the countywide average. Implementation of the project would serve to increase the existing funding mechanisms for any

additional officers required to serve the project area. Impacts would not be significant with implementation of recommended mitigation measures. See Sections 3.3.3 and 4.2.5 of this document for additional discussion of this issue.

Herman R 10 – Comment

damage to our privately owned streets

Herman R 10 – Response

See Section 4.2.3 (Noise/Dust 3 – Response) of this document.

Herman R 11 – Comment

damage to our eco-system, just to name a few.

Herman R 11 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Herman R 12– Comment

Adequate studies haven't been taken for the additional traffic that will travel on Canoga Ave. Short cuts to De Soto Ave. and Topanga Canyon on ramps to the 118 fry [sic] will naturally be taken. We are currently experiencing this problem now and this project will only increase the problem.

Twinlakes have privately owned and maintained streets and absolutely cannot handle additional traffic.

The gridlock situation that this project will incur will become a nightmare for everyone living in this area.

We need someone with your influence to take the initiative to correcting this problem that this project will create.

Herman R 12 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

4.5.52 Carley Hermann

March 8, 2002

Hermann 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

The increase of traffic on Chatsworth and Canoga. My home backs up to Canoga and it is the only way out of our neighborhood. Chatsworth and/or Canoga are residential streets and not made for huge trucks and equipment and heavy traffic.

Hermann 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Hermann 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact. I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Hermann 2 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.53 Eugene Hernandez

January 7, 2002

Hernandez 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

The harm and damage to the fauna and flora native to the region plus to [sic] increased traffic congestion and urban sprawl.

Hernandez 1 - Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Hernandez 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Hernandez 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.54 D. Higgiwin

January 7, 2002

Higgiwin 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following: The impact on the two elementary schools where local children attend: Chatsworth Elementary and Germaine Street School.

Higgiwin 1 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Higgiwin 2 – Comment

The wildlife and coyote habitat -- as it already stands, we have a major coyote problem, without further impacting it.

Higgiwin 2 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Higgiwin 3 – Comment

The run-off of the water system into Devil's Canyon = The EIR report on this is very poorly thought out and should be redone.

Higgiwin 3 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Higgiwin 4 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Higgiwin 4 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.55 Dan Huffman

January 7, 2002

Huffman 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

The residential run off into Devil's Canyon.

Huffman 1 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff I – Response) and Appendix I of this document for additional discussion of this issue.

Huffman 2 – Comment

Present schools cannot accommodate estimated amts. of children - impact report on schools was fabricated!

Huffman 2 – Response

Information regarding school capacity and student generation was made available by LAUSD. As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Huffman 3 – Comment

Traffic impact - area is already jammed - this will not help the area.

Huffman 3 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Huffman 4 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Huffman 4 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.56 Jennifer Hughes

January 7, 2002

Hughes 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

The traffic on Chatsworth Street as well as the possible dedication of my land to widen Chatsworth St.

Hughes 2 – Response

As stated in Section 4.12 of the Draft EIR, impacts to traffic would not be significant with implementation of recommended mitigation measures. Any potential improvements to Chatsworth Street would occur within the existing public right-of-way. No acquisition of private property would be required to implement the recommended traffic mitigation measures. See also Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Hughes 3 – Comment

Also the environmental impact as well as the impact caused by the increased population in the Chatsworth area.

Hughes 3 – Response

Increased population due to implementation of the project was addressed, where applicable in the Draft EIR. As stated in the Draft EIR, impacts from the project would not be significant with implementation of recommended mitigation measures.

Hughes 4 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Hughes 4 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.57 Deborah Jackson

January 10, 2002

Jackson D 1 – Comment

As a resident homeowner of Chatsworth, I request you consider the following concerns I have about the proposed Chatsworth Ridge Estates development:

I would like to begin by telling you that the EIR appears to be flawed, incomplete, and inaccurate. It is clear that the consultants were hired by and work for the developer. I would like to see the county investigate areas of the EIR that are flawed and unrealistic, and seriously consider the impact that the magnitude of the development proposed will have on the prevailing community infrastructure- an infrastructure that will be overwhelmed by the these new homeowners.

Jackson D 1 – Response

Please see Section 4.4.2 (CLPA 2 – Response) of this document regarding the adequacy of the EIR.

Jackson D 2 – Comment

Chatsworth has an large equestrian community that has been forced over time to accommodate encroaching suburban development that, more often than not, does not take into consideration the unique concerns and requirements of the horse-keeping population. Horse-keeping property owners suffer most in the continued residential development of the land that serves the resident horse-owning community. Horses are flight animals that respond to a frightening situation by running from it. Equestrians are constantly on the defense from speeding vehicles, leaf blowers, chain saws, car alarms, automatic sprinklers, barking dogs, bouncing balls, tractors, and noisy machinery, to name a few dangers. Today we are forced to ride several blocks through a mixture of homes owned by both horse-owners and non-horse owners, and never really feel safe until we reach the Santa Susana mountains. This proposed development will extend our route through several additional blocks of non-horsekeeping homes. Keep in mind that for over two hundred years, horsemen have roamed over the trails this project will eliminate.

Jackson D 2 – Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Sections 2.0 and 4.4.1 of this document for further discussion of this issue.

Jackson D 3 – Comment

A good compromise would be to require the developer to make at least fifty percent of the project horsekeeping homes.

Jackson D 3 – Response

Please see Jackson D 2 – Response of this document.

Jackson D 4 – Comment

At the very least, the county must require the developer to install signs warning truck drivers not to use jake brakes adjacent to equestrian trails. Also, every horse crossing on any street must have a traffic light or stop sign depending on the volume of traffic. The developer has promised to build and improve equestrian trails in and around the subdivision. We request that the county require the developer to post bonds for such trails so that our community may complete them if the developer fails to do so.

Jackson D 4 – Response

Please see Section 4.5.34 (England 2 – Response) of this document.

Jackson D 5 – Comment

Environmental risks are not adequately addressed in the EIR. I am appalled at the developer's plan to collect all storm water into the streets of the proposed project then to direct that dirty water into pristine Devil's Canyon. I want to see a chemical analysis of storm water in other subdivisions. I am sure you will find petroleum, asbestos, pesticides, detergent, and many other harmful ingredients that cannot be filtered our without extraordinary means. The developer must provide scientific data that proves he can protect our wildlife. Please don't let this developer kill the wildlife in the hill area just so they can make a few extra bucks. All storm water needs to be collected in pipes and carried out of the wildlife corridor.

Jackson D 5 – Response

The impact on the environment and effect on animals is discussed in Section 4.3 of the Draft EIR. The impacts of water quality on wildlife are considered in the water quality standards set in the Basin Plan of the Regional Water Quality Control Board, as discussed further in Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document. Since this project would meet the Basin Plan standards, there would be no adverse water quality impact on wildlife.

Jackson D 6 – Comment

The developer promises to dedicate some land to the Santa Monica Mountain Conservancy. What assurance is there that this dedication will occur? What guarantee is there the conservancy won't trade that land off for something better in the future? Additionally, the developer is going to tear out areas of coastal sage and mature oaks. The tiny (15-gallon) proposed replacement saplings are inadequate compensation for this destruction. The developer should plant replacement trees that are substantially larger and more mature. The extensive paving inside the project will result in ambient heat gain, further aggravated by the removal of mature plants. How does the developer propose to mitigate this effect?

Jackson D 6 – Response

Please see Section 4.2.1 of this document regarding land dedication to SMMC.

Replacement of oak trees would be implemented per the County ordinance, which specifies that each tree replacement shall be at least 15 gallons. As stated in Section 4.3 of the Draft EIR, 65 existing oak trees would require removal in order to construct the project. However, the revised project (388 units) would preserve an additional four oak trees (for a total of 61). Appendix F.3 of the Draft EIR outlined the protection measures for other oak trees on the project site. None of these oak trees are of heritage status. Impacts would be reduced to less than significant with implementation of mitigation measures, which would be implemented under the review and approval of the County (see Appendices F.3 and E of this document).

Please see Section 4.2.7 (Development Issues 3 - Response) of this document regarding heat gain.

Jackson D 7 – Comment

The developer says less than one third of the 1200 to 1500+ automobiles the project generate will use Canoga Avenue. The rest, they say, will use Topanga Canyon Boulevard. That is an absolutely ridiculous statement. If I lived there and had a choice between Topanga Canyon Boulevard with four traffic signals between my home and Devonshire Street of Canoga Avenue with one signal between my home and Devonshire Street it would be no contest. I would use Canoga. The area south of this project, in the City of Los Angeles, already has a serious traffic congestion problem. There are two private schools just north of Chatsworth Street between Canoga and De Soto that generate 1000+ daily trips by people who do not live in our neighborhood. This project will double or triple the congestion.

Jackson D 7 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 4.2.6 and 4.4 (ETI 12 – Response) of this document for additional discussion of this issue.

Jackson D 8 – Comment

All of the public and private schools in Chatsworth are at maximum capacity-I know-my daughter attends a private school in Chatsworth. The County must require a new school to be built for this project. The statistics provided by the developer include local resident students and do not take into account students who are bused in (PWT students) and are therefore permanent (even though non-resident) students. The enrollment statistics in the EIR does not match the actual enrollment at the local schools. The hardship placed on public schools in Chatsworth to accommodate the influx of students from a 484-housing development will significantly impact the resources of the community.

Jackson D 8 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Jackson D 9 – Comment

The developer admitted to doing his traffic study during a school holiday which greatly alters the results and paints an inaccurate picture of the actual current and customary use of the streets in Chatsworth.

Jackson D 9 – Response

Please see Section 4.2.6 (Traffic 2 – Response) of this document.

Jackson D 10 – Comment

Speeding traffic on Canoga is another concern. Canoga Avenue has no houses fronting it between Rinaldi and the 118 freeway, so drivers feel comfortable racing downhill at breakneck speeds. The area of Canoga Avenue also has a bridle path that acts as a collector path to channel equine traffic into the nearby mountains. At the very least you must require the developer to post signs demanding

that trucks not to use truck air brakes (jake brakes) on Canoga, you must also require them to post the speed limit at 25 mph on Canoga, you must require the developer to install an equestrian friendly four-way traffic signal at the intersection of Canoga and Rinaldi, and stop signs at each street between Rinaldi and the 118 freeway. Just south of the freeway overpass there needs to be an equestrian-activated light so riders can safely cross the street to enter the park. Also, the bridle path, which the builder proposes to extend under the freeway needs to have an opening so a rider can get out to cross the street there. There also needs to be adequate horse crossing signs at all road crossings throughout the project.

Jackson D 10 – Response

As stated in Section 4.12 of the Draft EIR, impacts to traffic would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5, 4.2.6 and Appendix K of this document regarding revised traffic information. Please see Section 4.4.3 (ETI 12 – Response) of this document regarding traffic on Canoga Avenue.

Please see Section 4.5.34 (England 2 – Response) of this document regarding equestrian conflicts.

Jackson D 11 – Comment

Construction will generate dust, fumes, noise and runoff in our neighborhood for up to five years. There is no enforcement mechanism to ensure either containment of these effects or the developer's compliance with related ordinances and their own proposed measures. There needs to be more stringent limits on construction activity, a hot line for complaints, penalties for noncompliance, and public accountability. For 3 to 5 years many pieces of noisy construction machinery will be operating at the development site. The developer has not committed to limits on numbers of simultaneous machine operations, on the use of state-of-the-art noise shielding and muffling devices, or on measured noise limits. We want a way to insure that we won't be assaulted in our homes by all this noise.

Jackson D 11 – Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

See Appendices D and E regarding implementation of mitigation measures and conditions of the project.

Jackson D 12 – Comment

Construction activity will require thousands upon thousands of truckloads of building and road materials to pass through our streets, including right past an elementary school, middle school and major equestrian collector trail. There is inadequate control over delivery times, routes and frequency. These huge vehicles present not just an inconvenience but a hazard to local school children, residents, and equestrians. The developer should prepare a comprehensive plan to alleviate the effects of so much heavy truck traffic on our neighborhood and give us a chance to provide input to that plan before it is finalized. The developer must be required to post signs advising construction workers that the use of truck air brakes (jake brakes) around bridle paths is unacceptable and can be dangerous to equestrians and their horses.

Jackson D 12 – Response

See Sections 4.2.3 and 4.2.6 of this document.

Jackson D 13 – Comment

The developer asserts that construction vehicles will avoid "peak travel periods" and parking on heavily traveled roadways. These terms are vague and undefined, giving us no protection, recourse or opportunity to evaluate the conditions of the construction that will overwhelm our neighborhood. There is no assurance that our residential side streets will not have construction vehicles parked on them.

Jackson D 13 – Response

Please see Appendices D and E of this document.

Jackson D 14 – Comment

I bought my home on Canoga Avenue roughly 2-1/2 years ago with the specific intent of riding my horses, with my daughter, in the nearby hills and open areas. I am seriously concerned about the increase in noise this outrageous 484-home development will bring my street, and the raft of safety issues involved with increased urbanization of a quiet residential area. I bought here to provide a safe and congenial home for my daughter and our chosen lifestyle – a lifestyle that is consistent with the history and traditional land use of Chatsworth.

Jackson D 14 – Response

The comment has been received and noted. Please see section 4.7 (Noise) of the DEIR. No additional response is required.

Jackson D 15 – Comment

To help the equestrian issues and to help Chatsworth maintain its rural equine heritage you must require this developer to build at least 50 percent of the new homes so that they are zoned for horses. This requirement is in alignment with the Master Plan in place for the Chatsworth-Porter Ranch Area.

Jackson D 15 – Response

Please see Section 4.5.34 (England 2 – Response) of this document.

Jackson D 16 – Comment

The best way to mitigate traffic and school concerns and the general impact on our rural neighborhood is to cut the density in half and allow just 242 homes, not a ridiculous 484. After all, these are not the affordable houses this state is crying for, but rather expensive targeted at the top one percent of our population.

Jackson D 16 – Response

As stated in Section 5.1 of the Draft EIR, the CEQA Guidelines require an EIR to describe a range of reasonable alternatives to the project, which would feasibly attain the basis objectives of the project, but would avoid or substantially lessen significant impacts of the project. As stated in the Draft EIR, implementation of the project would not result in any significant project-related impacts that would not be mitigated to less than significant. Further, the range of alternatives required within an EIR by CEQA is governed by the "rule of reason" which requires an EIR to include only those alternatives necessary to permit a reasoned choice. The discussion of alternatives need not be exhaustive. As stated above, implementation of Alternative 3 (a 65 percent reduction in development) would not be economically feasible. Therefore, the analysis of a 242-unit project is not required.

4.5.58 Kathy Jackson

January 7, 2002

Jackson K 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5).

The project is located close to my home. My concerns are the following:

Traffic and congestion due to size and density

Jackson K 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Jackson K 2 – Comment

Control of water runoffs [sic] and pollution to canyon

Jackson K 2 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Jackson K 3 – Comment

Impact of the construction process to existing residence, dust, construction vehicles.

Jackson K 3 – Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Jackson K 4 – Comment

Additional fire and police services.

Jackson K 4 – Response

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Jackson K 5 – Comment

Please do not approve this project.

Jackson K 5 – Response

The comment has been received and noted. No additional response is required.

4.5.59 Phil Jackson

January 7, 2002/January 8, 2002

Jackson P 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic and congestion due to size and density of project

Jackson P 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Jackson P 2– Comment

Impact of construction process to existing residents- noise, wind blown dust and dirt, construction vehicles

Jackson P 2 – Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Jackson P 3 – Comment

Control of water run off and pollution to canyon.

Jackson P 3 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Jackson P 4 – Comment

Additional demand on county services (Police & fire) due to density

Jackson P 4 – Response

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Jackson P 5 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Jackson P 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

Jackson P 6 – Comment

I request that you not approve this project until these objections have been considered. And the Developer has addressed them.

Jackson P 6 – Response

The comment has been received and noted. No additional response is required.

4.5.60 Charles and Linda Jelloian

March 22, 2002

Jelloian 1 –Comment

We are writing to express our objection to the proposed Deerlake Ranch development in Chatsworth (Project # 99-239(5)) for which you have continued the public hearing to April 10.

Two and a half years ago my wife and I moved to Chatsworth from Porter Ranch, to enjoy less traffic, the equestrian trails, quieter streets and the beautiful hills. The impact of this development will destroy the quality of life in our community.

Jelloian 1 –Response

The commenter's objection to the project is noted and will forwarded on to the decision makers.

Jelloian 2 –Comment

As parents of three small children, we are deeply concerned about safety. Canoga Avenue will become a busy, high traffic street. This is an area where our kids ride their bikes and take walks. People will cut through Celtic Street to try to "short-cut" their way to the East. With 4,000 to 6,000 additional car trips every day (along a few blocks) this is as significant to our community as the Ahmanson Ranch development is to the Southwest Valley neighborhoods.

Jelloian 2 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Jelloian 3 –Comment

As a Commissioner on the Los Angeles Department of Transportation for the past eight years, I can assure you I have become very knowledgeable about traffic and safety issues throughout Los Angeles. This development will absolutely adversely impact all of our efforts we have been involved with to try to maintain a nice environment in our neighborhood.

Jelloian 3 –Response

See Jelloian. 2 – Response of this document.

Jelloian 4 –Comment

The developers [sic] mitigation measures aren't enough. As Councilman Bernson pointed out in his January 22 letter to your honorable board, "It is virtually impossible to fully mitigate the traffic impacts of this project. Topanga Canyon Blvd. and Canoga Avenue are woefully insufficient to handle the traffic in rush hours and emergencies. Four hundred and fifty homes will create additional burdens on the LAUSD's local schools. This project will add burdens on the City of Los Angeles' infrastructure such as libraries, parks, and the fire department." The good Councilman strongly recommends your disapproval, and respectfully, so do we.

Thank you for your valuable time and your consideration of this important matter.

Jelloian 4 –Response

See Jelloian. 2 – Response of this document.

As stated in Section 4.10 of the Draft EIR, school impacts would be less than significant with implementation of recommended mitigation measures. See also Sections 3.3.4 and 4.3.8 and Appendix J of this document for additional discussion regarding impacts to schools.

See Section 4.1.2 (City Council 6 – Response) of this document regarding mitigation of impacts on libraries.

Please see Section 2.0 of this document regarding an updated project description concerning private onsite parks and Appendix E of this document concerning contributions to existing public parks.

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

4.5.61 Kjeisten Jeppson

January 7, 2002

Jeppson 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

I am particularly concerned about the following:

Loss of Plummer's Mariposa Lily

Jeppson 1 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 and Appendix F.8 of this document for additional discussion of Plummer's mariposa lily.

Jeppson 2 - Comment

and endangerment of valuable oak trees

Loss of natural species is an endangerment to the entire planet. In addition, suburban sprawl is not only using up land, water, and species, it is contributing to the deterioration of the environment.

Jeppson 2 – Response

As stated in Section 4.3 of the Draft EIR, 65 existing oak trees would require removal in order to construct the project. However, the revised project (388 units) would preserve an additional four oak trees (for a total of 61). Appendix F.3 of the Draft EIR outlined the protection measures for other oak trees on the project site. None of these oak trees are of heritage status. Impacts would be reduced to less than significant with implementation of mitigation measures, which would be implemented under the review and approval of the County. See Appendices F.3 and E of this document for additional discussion of this issue.

Jeppson 3 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Jeppson 4 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.62 Toni Jesso

January 7, 2002

Jesso 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Over crowding of schools

Jesso 1 - Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Jesso 2 - Comment

Traffic

Jesso 2 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Jesso 3 - Comment

Distruction [sic] of Natural Beauty in our Mtns.

Jesso 3 - Response

As stated in Section 4.1 of the Draft EIR, impacts to aesthetic resources would not be significant.

Jesso 4 - Comment

Wildlife!

Jesso 4 - Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Jesso 5 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact. I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Jesso 5 - Response

Please see Section 4.5.5 (Belkin, L 3 - Response) of this document.

4.5.63 Gertrude Jolicoeur

January 7, 2002

Jolicoeur 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic- I can't get out my driveway now on Topanga and the 118. What will it be like after.

Jolicoeur 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Jolicoeur 2 - Comment

It is going to destroy vegetation which has taken yrs to grow.

Jolicoeur 2 - Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Jolicoeur 3 - Comment

We don't need more people. Let's stop the building. Enough is enough. Let the animals have the hills that remain.

Jolicoeur 3 - Response

The comment has been received and noted. No additional response is required.

Jolicoeur 4 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Jolicoeur 4 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.64 Phil Kent

December 22, 2001

Kent 1 - Comment

I am opposed to the housing development in Chatsworth (Dearlake Ranch, EIR Project 99-239(5)) primarily due to the increased traffic flow and congestion. I don't like the idea of adding additional traffic to Canoga Avenue.

Kent 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Kent 2 - Comment

I would like to see a "sound wall" built on the 118 freeway between Topanga and Desoto to shield the homes below the freeway from traffic noise. Do you know how to get this done?

Kent 2 - Response

As stated in Section 4.7 of the Draft EIR, noise impacts would not be significant with implementation of recommended mitigation measures. A sound wall would not be required. However, this comment will be forwarded on to the decision makers.

4.5.65 Dorian Keyser

January 11, 2002/June 19, 2002

Keyser 1 - Comment

Under Mr. Garlinghouse's able leadership, the Presidio Group has generated a very impressive DEIR. We await the final EIR, which, hopefully, will reflect the written and oral comments of the public. We strongly recommend that full public comments be allowed on all of the EIR, not only those parts that have been changed from the DIER!!

Keyser 1 – Response

All comments received on the Draft EIR, Additional Environmental Information document and Revised Project Design Summary document are included in this document with responses.

Keyser 2 - Comment

I am concerned that the Presidio Groups [sic] is planning to sell the property to one or more developers who will impliment [sic] the approved plans. These latters [sic] will be responsible for all grading, streets, sidewalks, plus water, natural gas, electricity, telephone service to the entry of each home. Mr. Garlinghouse has stated to the public that that [sic] the project is being set up so that its implimentation [sic] will follow the requirements of the approved documentation, regardless of who is responsible for it.

1. *Can Mr. Garlinghouse supply us with detailed information of one or more major projects in southern California where he was primarily responsible for all of the planning, etc. which was then sold for another entity that successfully carried it out with little or no changes to the approved plans?*
2. *Will Mr. Garlinghouse agree to remain as an advisor until the infra-structure [sic] has been successfully completed? Will one of the conditions of the sale of the property be that Mr. Garlinghouse shall be rimbursed [sic] for his expenses in this capacity?*

Keyser 2 – Response

This comment is not CEQA related. No additional response is required.

Keyser 3 - Comment

I recommend that the size of each park be increased to be at least as big as the legal requirements for them.

Keyser 3 – Response

There is no legal requirement regarding the minimum or maximum size of private parks.

Keyser 4 - Comment

The July 26, 2000 comments from the Santa Monica Mountains Conservancy should be fully incorporated in Volume 1 of the DEIR. This should include an up-to-date version of the Conservancy's map with changes:

1. *North of Stoney Point and Stoney Point are now owned by the L.A. City Department of Recreation and Parks. An exact map of this 70 acre park should be incorporated.*
2. *The S.P. railroad tracks and the railroad tunnel should be shown.*
3. *The map should show the privately owned 14 acre Horner Property and the 28 acre Smith Property. Horner is on the east side of Road B where it starts immediately north of the 118 Freeway and Smith abuts the east side of Horner and the 118 Freeway. Horner is being purchased using Quimby Funds from the Deerlake Ranch, about $230,000 additional funds from the Presidio Group, and about $200,000 from the Santa Monica Mountains Conservancy.*
4. *The map should show the 22 acre DeYoung property directly across Topanga Canyon Blvd. from "North of Stoney Point", [sic] 14 acre Mineo Property abuting [sic] the west side of DeYoung, and the 22 acre Garden of The Gods owned by the Conservancy. The trail easement that leads from the Garden of the Gods to Chatsworth Park South (81 acres plus plus [sic] the ? acre railroad property), the 24 acre Chatsworth Park North, the 4.5 acre Becker/Culbreth "sliver", to the 204 acre Corriganville Rancho Simi Recreation and Parks District Park which is part of the main wildlife corridor between the Santa Monica Mountains and the much larger Los Padres and Angeles National Forests via the Santa Mountains [sic] and the Simi Hills.*

Keyser 4 – Response

Please see Section 4.3.3 (SMMC responses) of this document for the County's response to the Santa Monica Mountains Conservancy's January 22, 2002 comment letter.

Keyser 5 – Comment

Wildlife Corridors/Habitat Linkages

The DEIR questions the significance of the wildlife corridors in the Deerlake Ranch and its environs. However, Road B is a very important corridor that is used by numerous species of animals. Mountain lions, bob cats, coyotes, raccoons, deer, eagles, hawks, etc. are not easily observed but they are there--especially at night!! Historically, this corridor has been especially critical during massive wildfires which prevent wildlife from escaping via other corridors. Wildlife presently reaches the Canoga Avenue underpass via Road B and Devil Canyon. The importance of this corridor has been increased since the gating of the privatized roads into Indian Falls and Indian Springs via Iverson Road and Poema Place.

Keyser 5 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 (Topical Response) of this document for additional discussion of this issue.

Keyser 6 - Comment

I am concerned about the response time of the personnel from the distant L.A. County Sheriff's Lost Hills Sub-station. The plan to have an 800 sqft "kiosk" on-site with back-up from the nearby L.A. City Police Department's Devonshire Division sub-station is significantly inferior to delegating the responsibility to the local Devonshire substation.

Keyser 6 – Response

See Section 4.2.5 (Police Services 3 - Response) of this document.

Keyser 7 - Comment

The L.A. City Fire Department should supply emergency services but the L.A. County Fire Department should be responsible for wildfires.

Keyser 7 – Response

See Section 4.4.5 (SSMPA 7 – Response) of this document. Also see Section 4.2.4, Fire Services 1-Response.

Keyser 8 - Comment

The homeowners should pay taxes to cover the costs of cleaning the catch basins, even though the L.A. County Flood Control District is responsible for flood control.

Keyser 8 – Response

See Section 4.4.5 (SSMPA 8 – Response) of this document.

Keyser 9 - Comment

The "N.A.P" on the maps need to be updated since many of these items have been acquired by the Presidio Group. The N.A.P. table of sheet 1 of the 10-19-01 DEIR is especially important.

Keyser 9 – Response

The revised VTTM in Appendix C-1 of this document reflects the updated status of the "NAP" lots.

Keyser 10 - Comment

I believe that the 10 foot wide N.A.P. which surrounds the entire property will be deeded to the Conservancy as per agreement with them. I suggest that it be given a N.A.P. number and that its ownership be fully defined. The equestrian trails need to be more clearly defined. I believe that L.A. County will maintain the equestrian trails which will be built to L.A. County standards. Who will maintain the Conservancy's 10 foot easement?

Keyser 10 – Response

See Section 4.4.5 (SSMPA 11 – Response) of this document.

Keyser 11 - Comment

Who will make sure that the 353 oak trees are properly cared for after the development has been completed? The DEIRis [sic] inconsistent in that it states in several places that the 130 replacement oak trees will be cared for two years and in other places for five years. All places should say "a minimum of five years". An oak tree in a fifteen gallon container is small and many will die. Who will replace the dead ones? What provisions will there be to prevent homeowners from damaging oak trees on or near their property? There needs to be some supervision by L.A. County in addition to the homeowners association.

Keyser 11 – Response

See Section 4.4.5 (SSMPA 12 – Response) of this document.

Keyser 12 - Comment

Volume II. Table 6.3 should be corrected to state that the total jurisdiction area for Devil Canyon is 353,443 sqft. not 6,575 sqft.

Keyser 12 – Response

The comment has been received and noted.

Keyser 13 - Comment

All of the Arundo Donax should be completely removed from Devil Canyon and kept removed. It is a very invasive, non-native plant.

Keyser 13 – Response

See Section 4.4.5 (SSMPA 14 – Response) of this document.

Keyser 14 – Comment

The trails will be used by equestrians, hikers, and, unfortunately, bikers. Trails need to be wide enough to allow safe passage in the same direction and in opposite directions. They should also have numerous signs. They should be built to L.A. County standards.

Keyser 14 – Response

See Section 4.4.5 (SSMPA 15 – Response) of this document.

Keyser 15 - Comment

I am surprised by the comment by James Hartle in the August 28, 2000 DEIR that Browns Canyon Road is major highway in the L.A. Highway Plan and that Road B (Saugus) will be widened. According to this document, will be widened to 100 feet plus any necessary slope easement and Saugus will also be widened. Widening of these roads would open up the entire region west of Porter Ranch to development, I strongly oppose this. Moreover, Santa Monica Mountains Conservancy owned and L.A. City owned parklands along Saugus make it doubtful that any widening of Saugus will occur.

Keyser 15 – Response

See Section 4.4.5 (SSMPA 16 – Response) of this document

Keyser 16 - Comment

Despite presentations by various people, the public believes that there will be serious traffic congestion at Topanga Canyon Blvd., Canoga Ave., and DeSoto which would cause significant delays during morning and evening rush hours. They also believe that three these streets and other major ones in the area will [sic] be heavily impacted. I suggest that a committee be formed consisting of interested people and public experts to fully explore the situation. The experts should include L.A. County and L.A City people.

Keyser 16 – Response

Please see Section 4.4.3 (ETI 12 – Response) of this document. for a discussion of traffic impacts.

Keyser 17 – Comment

Schools

The principle of the Chatsworth Park Elementary School testified that her school is already operating a [sic] capacity and that table 4.10.1 of Volume 1 of the DEIR which states that there are 125 available spaces at her school is not correct. She also stated that it is hazardous for children to be let out of cars at her school due to hazardous traffic. The Germain Elementary School is also at capacity. I do not recommend that an elementary school be located on the Deerlake Ranch. One of the problems is that the L.A. Unified School District, which will receive about $6,200,000 (i.e., $13,000 per house) from the Deerlake Ranch will use this money elsewhere in their district where schools are on all year round use. Another is that state law makes it mandatory that no kindergarden [sic], first, second, or third grade classes may have more than 20 pupils without losing it [sic] state funding. Another problem is that the L.A. Unified School District has not exercised its rights to land for an elementary school and an intermediate school on the Porter Ranch Development and is in danger of losing these rights. Please note that an element. [sic] school on the Porter Ranch would relieve the problem, as would a change in state law which allowed up to 25 public [sic] per class so long as the averave [sic] per class was 20.

Keyser 17 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28 (Dixon Davis 1 - Response), and Appendix J of this document for additional discussion of this issue.

Keyser 18 – Comment

Libraries

The DEIR requires a library facilityies [sic] mitigation fee of $625 per residential unit and states that a bookmobile from the Los Virgenes Public Library will provide library services. However, this would be very inaddquate [sic] for the children and adults. The nearby L.A. City Chatsworth Branch Library, which would be used by those who live on the Deerlake Ranch, should receive this fee to be used th [sic] purchase books.

Keyser 18 – Response

Please see Section 4.3.5 (City Council 6 – Response) of this document.

Keyser 19 – Comment

Water

The existing water supply for Twin Lakes has sufficient capacity and pressure to supply the Deerlake Ranch. However, I recommend that the fire department be consulted to verify this information.

Keyser 19 – Response

Please see Section 4.4.5 (SSMPA 20 – Response) of this document.

Keyser 20 – Comment

In deference to those whose view will be degraded by the grading and construction and dust, I recommend that the developer be helped by prompt granting of permits, completions of inspections, and other support by public officials by the prompt granting of permits, completions of inspections, and other support consistent with requirements.

Keyser 20 – Response

No Specific environmental comment is made. The comment is noted and will be forwarded to the decision makers.

Keyser 21 – Comment

The L.A. County Department of Regional Planning is currently considering an application to build a 154 condominium project slightly to the west of the Deerlake Ranch project. I urge you to carefully consider the impact of both projects upon traffic, schools, libraries, and many other items on a regional basis, rather than evaluating each as a separate entity.

Keyser 21 – Response

The Draft EIR considered cumulative impacts, including the proposed 159-condominium project located west of the project site. The referenced project is now proposed for 65 condominium units. The comment is noted and will be forwarded on to the decision makers.

Keyser 22 – Comment

Although Dorian Keyser is the Vice-president and Lands Committee Chair of the Santa Susana Mountain Park Association, this submittal is own and not necessarily the official comments of the SSMPA.

1. *The Deerlake Highlands, now called Deerlake Ranch, was subdivided into over 2000 25 by 60 foot lots in the mid-1920. Therefore, its development cannot legally be denied. In my opinion, the Presidio Group, under the leadership of Rich Garlinghouse, have worked hard and responsibly with the planning of the development and in communicating with the members of the Chatsworth Community. He has conscientiously modified his plans in response to community*

comments and agreed to providing funds to mitigate the development. He has downsized the development by reducing the number of houses. Whether he can further downsize it and still make a reasonable profit is probably not realistic.

Keyser 22 – Response

The comment has been received and noted.

Keyser 23 – Comment

2. *The Presidio Group has obtained loans from a source to help finance his operation. If the Deerlake Ranch development is denied unless further significant downsizing is required, I doubt that it can be financilly [sic] succeed. Thus, since it already has been subdivided, a development cannot be stopped. Note that 50 by 60ft. lost [sic] would yield more than 1000 lots. This would increase traffic, school crowding, and other degredation [sic]. Would the equestrian trails, the financial help to Twin Lakes and other mitigations still occur?*

Keyser 23 – Response

If the revised project is not approved, the recommended mitigation would not be implemented.

Keyser 24 – Comment

3. *The existing, but vacant and in need of refurbishing, Devonshire Elementary School, can be made useable with about $2,000,000 of the $6,000,000 that LAUSD will obtain from the Deerlake Ranch Development. However, the LAUSD has indicated that this money is needed more elsewhere. The Chatsworth and Northridge communities need to mount an aggressive program to refurbish this school. It is much needed in the area.*

Keyser 24 – Response

This is out of the scope of the EIR. However, the comment has been received and noted.

Keyser 25 – Comment

Jan Hinkston's Dream

Susana Mountain Park Association was created by founder Janice Hinkston and others in 1970 to bring about the Santa Susana State Park, a 50,000 acre "dream" shown in the attached map. This dream encompasses the Santa Susana Mountains from 15 on the east to Tapo Canyon in the Simi Valley to the west and from The Santa Clara River (State highway 126) in the north south to the 118 Freeway and extending through a "neck" to the 1094 acre China Flats in a portion of the former Jordan Ranch.

Through the years, a significant percentage of the 50,000 acres have been acquired for the public by the Santa Monica Mountains Conservancy, the U.S. National Parks Service, and local parks agencies and the 50,000 acres have been expanded to reach the Angeles and Los Padres National Forests and more of the Simi Hills and the SSMPA has supported public ownership of much of the Santa Monica mountains, the implimentation [sic] of much of the Marge Feinberg Rim of the Valley Trail.

I am working on a complete definition of publicly and privately owned parklands in the Santa Susanas and Simi Hills, what lands have been developed, which proposed solid waste disposal sites have been implemented [sic] and which have been proposed but have been prevented from being implimented [sic], and what are SSMPA's hopes for the future.

Article I of the latest SSMPA Bylaws defines the SSMPA Mission Statement is as follows:

Section 1.

The primary purposesof [sic] of the Santa Susana Mountain Park Association are protection, preservation, restoration, and enhancement of the Santa Susana Mountains and Simi Hills:

1. *As open space lands and wildlife corridors linking the Los Padres National Forest and the San Gabriel Mountains, including the Angeles National Forest, to the Santa Monica Mountains.*
2. *As locales of unique geological formations.*
3. *As sites of ethnological, archaeological, and historical interests.*
4. *To provide passive recreational opportunities and environmental educational opportunities.*
5. *To support the acquisition of new public parks, open spaces, and conservation easements, participate in the planning of park infrastructure and programs and support said programs.*

Please note that many SSMPA members have interests that are not a part of the SSMPA mission statement. Thus, SSMPA members are free to advocate these interests so long as they do not represent them as being the position of SSMPA without being authorized to do so by the SSMPA Board of Directors. Of particular note is the present Deerlake Ranch situation which is very complex. Whereas my written and oral testimony has reflected SSMPA's Mission Statement and has tried toestablish [sic] the facts about schools, traffic, libraries, parks, equestrian trails, Levedia, etc. and I believe that the Presodio Group has the democratic right to present its case to the public and public officials, I have NEVER represented my position as that of SSMPA on these matters. Moreover, I believe in the freedom of speech for other SSMPA members and hope that each who testifies do not represent their testimony to be that of SSMPA if it violates SSMPA's Mission Statement.

Keyser 25 – Response

This is out of the scope of the EIR. However, the comment has been received and noted.

4.5.66 William J. Korek

January 28, 2002

Korek 1 –Comment

Some of the owners of land located north of the Deerlake project located at the 118 Freeway and Topanga Canyon feel they had an access from their property to Topanga Canyon via a dirt road until 1972 when the fire department closed the road. Do they still have this easement?

Korek 1 –Response

See Section 4.5.3 (Augello 1 & 2 - Responses) of this document.

4.5.67 Fred and Linda Krauser

March 8, 2002

Krauser 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Canoga Ave. being conjested [sic]. This will make our area dangerous to walk, ride our bikes, ride our horses, will cause serious health hazards. Also our air will be extremely polluted with extreme heavy traffic. This project is a political mess. This project should be aborted.

Krauser 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

The commenter's opposition to the project is noted and will be forwarded to the decision makers.

Krauser 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact. I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Krauser 2 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.68 Wen-Tar Kuo and Lih-Er Chang

April 4, 2002

Kuo and Chang 1 – Comment

We are writing to express our objection to the proposed Deerlake Ranch development in Chatsworth.

This project is located close to our home and we are particularly concerned about the followings [sic]:

1. The total number of the housing in this project:

We strongly believe the lot size of this project is way too small. It should be consistent with the existing equestrian neighborhood, which requires half an acre lot.

2. The access roads to this project:

With Canoga Ave as the only access road for the phase I of this project, we feel it is grossly inadequate. We suggest to have at least three access roads established before any construction of this project can allow to begin.

Kuo and Chang 1 – Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

4.5.69 Amarillys Ladette

January 7, 2002

Ladette 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

How will the developer be monitored as to controlling dust levels

Ladette 1 – Response

As discussed in Section 4.2 of the Draft EIR, no significant dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Ladette 2 - Comment

Traffic what is going to be done

Ladette 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Ladette 3 - Comment

New measures need to be taken to ensure additional Sheriff's protection what is going to be implemented

Ladette 3 – Response

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Ladette 4 - Comment

What is being done by the developer to preserve natural habitat

Ladette 4 – Response

See Section 2.4.7 of this document.

Ladette 5 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Ladette 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.70 Kendall Leigh

January 7, 2002

Leigh 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Over crowding of the schools in the neighbor.[sic]

Leigh 1 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Leigh 2 – Comment

The animals that live in those hills.

Leigh 2 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Leigh 3 – Comment

The beautiful landscape and hiking trails.

Leigh 3 – Response

Please see Section 2.4.7 of this document.

Leigh 4 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Leigh 4 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.71 Andrea and Joel Levine

March 8, 2002

Levine 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

The overload on the community infrastructure: roads, schools, hospitals, etc. There is little enough pristine land - why can't we preserve rather than destroy!!

This area simply does not have the capability of accommodating this vast number of people.

Levine 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Levine 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*

- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Levine 2 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.72 Gary and Maureen Levitt

January 9, 2002

Levitt 1 – Comment

We are writing to express our objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to our home, and we are particularly concerned about the following:

We believe that the EIR appears to be flawed, incomplete, and inaccurate. It is clear that the consultants were hired by and work for the developer. We would [sic] like to see the county investigate areas that are flawed and unrealistic.

Section4.5-1 thru 4.5-3- Landslides

"A landslide mapped along the south side of Devil Canyon within the southwest portion of the project site is a large block failure (Yerkes, 1995). This landslide is indicative of the type of landsliding that occurs within the Chatsworth Formation and suggests that similar east-facing bluffs underlain by adversely oriented bedding may also be susceptible to landsliding (see Figure 4.5.2)."

There are many such landslides throughout Devil's Canyon including some on the Westerly facing slopes just a bit northwest of the old bridge/dam. In fact, one of the slides was large enough to remove 20 feet of flat level trail that was used to traverse by horseback. It is a matter of time before another large slide occurs in Devil's Canyon. Landslides happen quite frequently during the rainy season along this canyon, not just in the two spots that were identified in the report back in 1995 that is sited in the EIR. Perhaps a newer, more in-depth study would reflect the actual erosion that takes place in the area.

Levitt 1 – Response

Please see Section 4.4.2 (CLPA 2 – Response) of this document regarding the adequacy of the EIR.

As stated in Section 4.5 of the Draft EIR, two landslides and several areas of surficial instability have been mapped near the project site. Specific areas for such mitigation would be identified as part of the final project grading plans and no significant impacts would occur. See section 4.4.2 (CLPA 3 – Response) of this document for a discussion of Devil Canyon.

Levitt 2 – Comment

Section 4.6- Hydrology

The EIR does not take into account the effect of stormwater runoff from residential streets will have on Devil's Canyon. Many mammals including bobcats get their water during the summer months from this Canyon. Bobcats, and other wildlife, that have been displaced from the Porter Ranch development are now using our creek beds as a summer habitat. Additionally, many horses drink from the creek bed during trail rides. Birds, such as the Cooper's Hawk, and also the homeless humans that camp in Devil's Canyon may also be harmed by drinking tainted water from this creek bed. There is absolutely no provision in the EIR on the environmental impact of oils, chemicals, soaps, antifreeze, animal feces, fertilizers, and other pollutants that might be present in water that is collected from the streets and drained into Devil's Canyon. The EIR only states that problems of this nature will only arise "infrequently during episodes of storm water runoff from the project site and

are not likely to result in significant impacts to biological resources." This EIR assumes that pools will not be drained, that runoff will not occur from washing cars or landscaping or other occurrences that will wash high concentrations of chemicals into Devil's Canyon for animals and the homeless humans in the area to consume. Additionally, other eco systems that exist father North of this development will be affected by the contaminants in the water, and this is not addressed

Levitt 2 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue. See also Section4.4.2 (CLPA 4 – Response).

Levitt 3 – Comment

Additionally, the EIR does not adequately address the issue of flooding in the creek bed during the rainy season caused by channeling storm water directly into the natural canyon instead of directing it through storm drains to the flood control system. As it stands today, the creek overflows and changes dramatically every year that we have a heavy rainy season. At times, the bridge/dam and the creek bed cannot hold any more water and water nearly flows over the top of the bridge. As was demonstrated in the recent Porter Ranch stormwater catastrophe, channeling the water down city streets and into wildlife habitats and natural canyons is poor planning and results in environmental devastation. Add this together with the soil characteristics in the creekbed (and the fact that the landslide factor has not been adequately addressed) and major environmental impact can be foreseen. This EIR must address this issue in a more detailed fashion.

Levitt 3 – Response

See Section 4.4.2 (CLPA 5 – Response) – Response of this document.

Levitt 4 – Comment

In conclusion, we ask that the County review the Limekiln Canyon catastrophe caused by the Porter Ranch development. Because the Environmental Impact Report did not sufficiently address the potential devastation of Limekiln Canyon due to the storm water run off from the streets, a city park and equestrian trail had to be closed forever due to the devastating effects of such poor planning. Limekiln Canyon has been destroyed due to a flaw in the EIR. We demand that the County request the developer to conduct further environmental review with regard to storm water run off. Untreated storm water must be channeled to a treatment center, such as the Donald C. Tillman Plant, via the County Flood Control System instead of draining it into Devil's Canyon.

Levitt 4 – Response

See Section 4.2.2 (Urban Runoff 1 Response) and 4.4.2 (CLPA 6 Response) – Response of this document.

Levitt 5 – Comment

Section4.3.4 Mitigation Measures

Although it is commendable that the developer is turning over 60 acres of Devil's Canyon over the Santa Monica Mountains Conservancy, the developer is also planning on using the Canyon as a flood control channel and dump site for the disposal of construction dirt and debris. These actions circumvent the intention of "mitigation" and should not be allowed, as they will lead to the devastation of Devil's Canyon over time. Further environmental review must be conducted on the developer's intentions for use of the Canyon before this can be approved as a mitigation measure. The current EIR does not sufficiently address the community's concerns.

Levitt 5 – Response

See Section 4.4.2 (CLPA 10 Response) – Response of this document.

Levitt 6 – Comment

Animal Regulation

This Environmental Impact Report is insufficient in the it does not take into account the impact on Animal Control and Regulation offices in the City and County. What are the response times for animal control? Who will handle feral animals in the area? There are many concerns due to the nature of the impacts on wildlife in the area – including bobcats and coyotes. There will be incidents and confrontations with these animals and more review should be made as to which agency will respond to calls in the area and how those calls will be handled. There will be an impact and we need to know and understand the process before the County's approval process begins.

Levitt 6 – Response

Please see Section 4.4.2 (CLPA 11 – Response) of this document.

Levitt 7 – Comment

Schools

The Environmental Impact Report does not state which SPECIFIC schools these children will attend and if these SPECIFIC schools have stated that they have room for 494 students. As we understand it, our elementary schools are overcrowded and so are our middle schools and high school. So, we ask that the EIR be more specific in how it addresses school capacity.

Levitt 7 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Levitt 8 – Comment

Libraries

The EIR is misleading in that it implies that the Chatsworth branch library is a county facility. It is a CITY LIBRARY and it belongs to the citizens of the City of Los Angeles, NOT THE COUNTY. There is NO COUNTY LIBRARY facility for these 500 new families in Chatsworth. The EIR needs to sufficiently address this fact. The library is going to be expanded to meet current demand for City residents. Funds collected from the developer will be applied to COUNTY libraries, while the burden of this development is placed upon the CITY. The City should receive the $626.00 per household, not the County OR a County library should be built to accommodate this development. It is unfair to ask the citizens of LA City to pay for this burden.

Levitt 8 – Response

As stated in Section 4.11 of the Draft EIR, library impacts would be less than significant with implementation of recommended mitigation measures. See Section 4.3.5 (City Council 6 – Response) of this document regarding additional discussion of mitigation of impacts on libraries.

Levitt 9 – Comment

Police and Fire Issues

The nearest LA County Sheriff's station is 40 minutes away in Lost Hills. There is already a serious criminal element in the remote areas around this project. We refer to evidence of teenage drinking, drug use, trash dumping, dumping and burning stolen cars, dumping human bodies, illegal campers with campfires and nudity, paint ball shooters, illegal off-road vehicles, and petty theft. Looking at a projected 5-year period of construction activity which brings in dozens of unknown folks into our neighborhood and no police, there will be a significant increase in crime in our community. You need to make sure a Sheriff's substation is in place before construction is allowed to commence on this project.

Levitt 9 – Response

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Levitt 10 – Comment

In addition you need to insure that the proposed project will have adequate fire protection from the present County Fire Station which is 20 minutes away in Lake Manor. If the proposed project burns, our homes will be next.

Levitt 10 – Response

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Levitt 11 – Comment

Traffic Issues on Canoga Avenue

The developer says less than one third of the 1200 to 1500+ automobiles the project will generate will use Canoga Avenue. The rest, they say, will use Topanga Canyon Boulevard. That is an absolutely ridiculous statement. If we lived there and had a choice between Topanga Canyon Boulevard with four traffic signals between our home and Devonshire Street or Canoga Avenue with one signal between our home and Devonshire Street it would be no contest. We would use Canoga. The area south of this project, in the City of Los Angeles, already has a serious traffic congestion problem. There are two private schools just north of Chatsworth Street between Canoga and DeSoto that generate 1000+daily trips by people who do not live in our neighborhood. This project will double or triple the congestion.

The developer admitted to doing his traffic study during a school holiday which greatly alters the results.

Levitt 11 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. See Section 4.2.6 (Traffic 1 & 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Levitt 12 – Comment

Speeding traffic on Canoga is another concern. Canoga Avenue has no houses fronting it between Rinaldi and the 118 freeway, so drivers feel comfortable racing downhill at breakneck speeds. The area of Canoga Avenue also has a bridle path that acts as a collector path to channel equine traffic into the nearby mountains.

At the very least you must require the developer to post signs demanding that trucks not to use truck air brakes (jake brakes) on Canoga, you must also require them to post the speed limit at 25 mph on Canoga, you must require the developer to install an equestrian friendly four-way traffic signal at the intersection of Canoga and Rinaldi, and stop signs at each street between Rinaldi and the 118 freeway. Just south of the freeway overpass there needs to be an equestrian-activated light so riders can safely cross the street to enter the park. Also, the bridle path, which the builder proposes to extend under the freeway needs to have an opening so a rider can get out to cross the street there. There also needs to be adequate horse crossing signs at all road crossings throughout the project.

Levitt 12 – Response

Please see Section 4.5.34 (England 2 – Response) of this document regarding traffic and equestrian concerns.

Levitt 13 – Comment

The General Plan

Our other concerns regarding this development stem from the project's high density as compared to the rest of the Chatsworth community. Developments such as this have absolutely no place when compared to the rest of our community of large lots and horse keeping. As we understand it, the General Plan for this area of the County has not been reviewed or updated since the 1920's. Although the County Plan has been updated to reflect the affects of progress in other areas, this area of the Plan has remained unchanged since the lots were divided up into "postage stamp" sized lots intended as giveaway prizes in cereal boxes. Last year, the County conducted an environmental study in which it made some recommendations to limit the density of developments approved for Unincorporated areas of the County. This development is one of those that requires more scrutiny. When compared with the developments that surround his project, this project is obviously too dense for the area. Our schools, roads, fire, police, and other services must be sufficiently cultivated to support such a large impact on the community.

Levitt 13 – Response

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density. Also see Section 4.3.5 (City Council 1 and 3 – Responses) of this document.

Levitt 14 – Comment

In the light of the significant adverse impact this project would have on our neighborhood and the lack of meaningful measures to alleviate that impact, we request that you not approve the project as currently presented. We urge the County to postpone its decision until the developer can produce an accurate and complete EIR. This EIR is filled with inaccuracies and relies on data that was not produced for this specific development. The County must require the developer to not only conduct the aforementioned supplemental environmental reviews, but to also require a less dense development in this area. To help the equestrian issues and to help Chatsworth maintain its rural equine heritage you must require this developer to build at least 50 percent of the now homes so that they are zoned for horses.

The best way to mitigate traffic and school concerns and the general impact on our rural neighborhood is to cut the density in half and allow just 242 homes, not a ridiculous 484. After all, these are not the affordable houses this state is crying for, but rather expensive homes targeted at the top one percent of our population.

Levitt 14 – Response

Please see Section 4.4 (CLPA 2 – Response) of this document regarding the adequacy of the EIR.

See Section 4.2.7 (Development Issue 10 – Response), Section 4.3.5 (City Council 1 and 3 – Response) and Appendix L of this document regarding land use density.

4.5.73 Mr. And Mrs. Sam Licursi

January 9, 2002

Licursi 1 – Comment

We live in the area that will be impacted by the Deer Lake Ranch project and are very concerned about the increase in traffic on Canoga Avenue and other adjacent streets.

We believe that the draft EIR has not studied the effects of an additional 484 homes on local streets that are not access points to the 118 freeway. We live in this area and know that most local trips, for example trips to school, the grocery store, the bank, etc., do not involve travel on the 118 freeway. It is disturbing to us that the developer conducted a traffic study when not all schools were in session and used incorrect tables to estimate the amount of trips by vehicles per day, given the nature of the

houses to be built. It is our understanding that a new study had been done that is more accurate, and feel that additional time should be allotted to review this new study and check it for accuracy. Many lives are at stake in this area including school children who attended two elementary schools in this area.

Licursi 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Licursi 2 – Comment

Speed bumps have already been placed on many of the local residential streets as workers in the area attempt to find alternate access to the 118 freeway when major access streets, such as Topanga Canyon and De Soto are overloaded. This project will only worsen the already heavily congested areas in Chatsworth.

We respectfully request your attention to these matters that have not been addressed by the developers of the Deer Lake Ranch project.

Licursi 2 – Response

See Licursi 1 – Response of this document.

Licursi 3 – Comment

The Deer Lake Ranch project, the Porter Valley project, and the new project proposed for upper Topanga Canyon in Chatsworth, with their high density building, completely change the complexion of the Chatsworth/Northridge area. The rural designation used to describe Chatsworth/Northridge area will be ended, flora and fauna of the area will be destroyed, pollution will be overwhelming, and traditional rural views will be destroyed.

Licursi 3 – Response

As stated in the Draft EIR, impacts from the project would not be significant with implementation of recommended mitigation measures. The commenter's opposition to the project will be forwarded on to the decision makers.

Licursi 4 – Comment

In an effort to mitigate some of the circumstances, the Presidio Group has promised to dedicate 70 acres to the Santa Monica Mountain Conservancy. What is the exact location of this area? Does it border the Significant Environmental Area #20 (Santa Susana Mountains) and will its preservation help to maintain the integrity of that area? In a letter from Ellizabeth [sic] A. Cheadle of the Conservancy dated July 26, 2000, concern was expressed that the 70 acres was not enough to meet the 50% dedication requirement of the total acreage that all large-scale developments are normally required to make. She outlined some alternatives to mitigate this circumstance, and I would like to know if all of her recommendations are being implemented.

Licursi 4 – Response

Please Section 4.2.1 (Biology 1 - Response) of this document.

Licursi 5 – Comment

The Conservancy will retain 14 acres that create a band around the project (minimum width 10 feet). This seems little enough land to create a border but there are even exceptions to this buffer band (exceptions noted in the Project Mitigation and Initial Study report on page 3). Why are there gaps in the northern boundary to which the developer will retain ownership? The developer maintains that the buffer owned by the Conservancy will keep further development from occurring in the north. Does the Conservancy affirm that they will not sell this property to another developer in the future?

Would the trails, slopes and parks be enough to off-set the less that [sic] 50% dedication of open space?

Licursi 4 – Response

Please Section 4.2.1 (Biology 2 - Response) of this document.

4.5.74 Lindeson

January 7, 2002

Lindeson 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic- many streets are overloaded now with no improvement in the situation it will only get worse.

Lindeson 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Lindeson 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Lindeson 2 - Response

Please see Section 4.5.5 (Belkin, L 3 - Response) of this document.

4.5.75 Kathleen and Michael Malley

January 7, 2002

Malley 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Negative impact on our environment with additional pollution [sic] from added traffic. Negative impact on commutes from added traffic. Please do not take away our beautiful local hills and mountains.

Malley 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Malley 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Malley 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.76 Eric and Allisun Marshall

January 7, 2002

Marshall 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic (it is already terrible)

Marshall 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Marshall 2 - Comment

fire and police protection

Marshall 2 - Response

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Marshall 3 - Comment

Environmental impact

Marshall 3 - Response

As stated in the Draft EIR, impacts from the project would not be significant with implementation of recommended mitigation measures.

Marshall 4 - Comment

Schools

Marshall 4 - Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Marshall 5 - Comment

Construction

Marshall 5 - Response

See Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document.

Marshall 6 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Marshall 6 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.77 James J. McCarron

January 7, 2002

McCarron 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Congested traffic

McCarron 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

McCarron 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

McCarron 2 - Response

Please see Section 4.5.5 (Belkin, L 3 -- Response) of this document.

4.5.78 Laura McCormick

June 12, 2002

McCormick 1 –Comment

As the next hearing date – June 19 draws near, it is very important to us that we remind you how deeply we opposed the traffic of close to 5000 cars use our quiet street of Canoga Avenue. Please

require the developer to hook the development to DeSoto and reduce the number of proposed homes to 150-200. Presidio has attempted to inform the neighborhood how wonderful the development will be for us all [sic]. We think that is all fine & dandy, but WE DON'T WANT MOST OF THE TRAFFIC ON CANOGA. Please!! Thank you for all your extra attention to this project. We so appreciate it.

McCormick 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

4.5.79 Laura and Steven McCormick

March 27, 2002

McCormick L & S 1 –Comment

We are writing you today to express our strong opposition to the proposed Deerlake Ranch development in Chatsworth. We have been residents on Celtic Street for seventeen and a half years. We moved here because of the rural atmosphere and large lots; an environment conducive to raising children. We are asking you to decline the Deerlake application as proposed.

McCormick L & S 1 –Response

The comment has been received and noted. No additional response is necessary.

McCormick L & S 2 –Comment

I attended the hearing on January 26th, and I was pleased to see that you so graciously listened to those that were in attendance. We are grateful to Commissioner Halsley for digging into the issues surrounding this proposal. We are encouraged by your decision to visit our neighborhood on April 6th. We know you are trying to make a good decision. Thank you for taking the extra time on this matter.

McCormick L & S 2 –Response

The comment of opposition has been received and noted. No additional response is necessary.

McCormick L & S 3 –Comment

We are extremely concerned about the density of this project. The volume of cars that will access Canoga and the loss of rock outcroppings and mountainous terrain will change our rural atmosphere forever.

McCormick L & S 3 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

McCormick L & S 4 –Comment

The wildlife corridor runs through our neighborhood. Horse trails surround our neighborhood. Two dear friends have been involved in horse accidents. At twelve years old, my friend lost her life when her horse was spooked. Another friend suffered a broken neck when a loose horse was spooked and landed on top of her Mercedes (the reinforced sunroof saved her life). We do not own any horses, but horses and cars do not mix. Safety is of utmost concern for the neighbors. We are a young community. We are raising our three young daughters, and there are many new families who have moved in over the past two years with their young children. We enjoy walking and riding our bikes.

McCormick L & S 4 –Response

The comment has been noted. No additional response is required.

McCormick L & S 5 –Comment

When we were new residents, we reviewed the Master Plan for the area. We were so happy to see that large lot sizes and equestrian preservation was to be protected for this area. We had no idea the end of the city was at the freeway. As we review the Chatsworth-Porter Ranch Community plan under Policies, we sincerely desire that you will help us continue our rural atmosphere up the hills when developers want to convert the hillsides (see attached).

Please do not approve the Deerlake project as proposed.

McCormick L & S 5 –Response

The project site is not within the City of Los Angeles, and therefore not within the Chatsworth-Porter Ranch Community Plan. See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

The commenter's opposition to the project is noted and will be forwarded to the decision makers.

McCormick L & S 6 –Comment

Chatsworth-Porter Ranch Community Plan

Of particular interest are the words: "The Plan encourages the preservation of low density-single family residential areas, the conservation of open space lands, and the preservation and strengthening of the Chatsworth Community Business District. Much of the Chatsworth-Porter Ranch Community is hillside and mountainous terrain and as much of the remaining undeveloped lands as feasible is to be preserved for open space and recreational uses. The northwest border of the City of Los Angeles includes a wildlife migration corridor. The wildlife corridor through the Simi Valley and Santa Susana Mountains to the Santa Monica Mountains could be endangered by development and transportation arteries cutting through this vital link. The Plan encourages preservation by both public and private agencies of this critical natural feature…

It is imperative that the development of these lands be compatible with that of Chatsworth-Porter Ranch, as proposed in this Plan, particularly with respect to land uses, circulation and open space, and their impact on drainage and sewerage. To help ensure compatible development of these lands, the County area north of the Simi Freeway to the Oat Mountain ridge should be considered for annexation.

It is desirable that development of these lands within Los Angeles County adjacent to the City of Los Angeles be compatible with the City's adopted General Plan. Therefore, it is recommended that no cluster of high-density urban activity, including commercial, residential, or any combination thereof should be located within the County west of the City's boundary to the Ventura County line."

Taken from page 3 and 4 of the Chatsworth-Porter Ranch Community Plan, a part of the City of Los Angeles General Plan.

The italicized (typed as plain text) words are for this writer's emphasis.

McCormick L & S 6 –Response

See McCormick L & S 5 – Response of this document.

4.5.80 Bryan McQueeney

January 14, 2002

McQueeney 1 – Comment

TRAFFIC IMPACT: I live on Chatsworth Street between Canoga and Variel. Traffic on Chatsworth Street is bad and, because of recent planning decisions, going to get worse. In particular, the down-

grading of Rinaldi as part of the Sierra Canyon School approval so that it will not go through to De Soto means all the traffic from this project, in reality, will come down Canoga and use Chatsworth Street to reach main arteries. As Porter Ranch builds out, Mason, De Soto and Topanga are all backed up at rush hour. This project will compound that.

Specifically, the light at De Soto and Chatsworth, the stop sign at Variel and Chatsworth are all under pressure and need additional specific mitigation efforts.

McQueeney 1 – Response

As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

McQueeney 2 – Comment

TRAIL CROSSING ON CHATSWORTH STREET: This is a fatal accident waiting to happen. Recreational trail riders on horseback use this crossing at Brown's Creek and Chatsworth Street. Additional traffic on Chatsworth Street to slow or stop traffic and to warn vehicles of the equestrians, cyclists and pedestrians are vital to ensure community safety.

McQueeney 2 – Response

The trail crossing on Chatsworth Street is not a part of the project. As shown on Figure 2.11 of the Draft EIR, a proposed trail system would connect existing trails at the terminus of Canoga Avenue and westerly of Topanga Canyon Boulevard with existing trails to the east, north, and west of the site. See Section 2.4.7 of this document for additional discussion of this issue.

McQueeney 3 – Comment

This is a huge project for this site and, frankly, entirely out of scale with what should be done. The environmental impact on hillside, creekbeds, trail use and visual blight cannot be, mitigated to insignificance. I request that you do not approve this project as currently conceived.

The environment and traffic cannot withstand such an inappropriate, intense development on this site. A dramatically scaled-back development is much more sensible and acceptable. The high infrastructure and development costs cannot be used as a justification for a project with so many fundamental, inescapable adverse impacts.

McQueeney 3 – Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue. See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

4.5.81 Florence and Antonio Mellone

January 7, 2002

Mellone 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Too much Traffic in our small community. Also to [sic] much congestion.

Mellone 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Mellone 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Mellone 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.82 Jorg Michaels

January 7, 2002

Michaels 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following: The traffic is horrible as it is, we don't need more. Let's keep Chatsworth the way it's intended, "Horse Property."

Michaels 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

Michaels 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *A substantial reduction in the size and scope of the project;*
- *A more meaningful proposal for mitigation by the applicant; and*
- *Postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Michaels 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.83 Dan and Doreen Miller

January 7, 2002

Miller 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

First of all, the traffic from each household going up and down Canoga Ave. would greatly increase

Miller 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Miller 2 - Comment

and we also would loose [sic] wonderful trails for mountain biking, hiking and for the horses!

Miller 2 - Response

The applicant is proposing a series of equestrian trails to connect the areas south of the project site to the existing trail system north of the project site..

Miller 3 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Miller 3 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.84 Marcia Milo

January 7, 2002

Milo 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic

Milo 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Milo 2 – Comment

Schools

Milo 2 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Milo 3 – Comment

animals that live in the hills.

Milo 3 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Milo 4 – Comment

Canoga Variel Chatsworth St. Topanga Gridlock.

Please help us

Milo 4 – Response

As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

Milo 5 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Milo 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.85 Carol Moran

January 7, 2002

Moran 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

How are you planning to handle all of traffic out of these homes -- Have you seen the increase in traffic along Mason Ave since they connected it to Porter Ranch Multiply that by 448 since there is no access to the 118 fry [sic] off of Canoga- The people have no way out of the area other than Canoga- This area of Canoga Ave is not designed to hold this kind of traffic!!

Moran 1 – Response

Subsequent to the distribution of the Draft EIR, additional mitigation measures have been included (improvements at the Canoga Avenue/Chatsworth Street intersection) for traffic-related impacts (see Appendix E of this document) as well as an updated traffic study to analyze the revised project (see Appendix K of this document). Also see Section 4.2.6 (Traffic 1 & 2 – Responses) of this document.

Moran 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Moran 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.86 Faramarz Nabari

January 7, 2002

Nabari 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

The loss of open space in a rural, horse trail area.

Nabari 1 – Response

Approximately 137.89 acres (59.8%) of the total project site would be open space under the revised project. See Section 2.4.7 of this document for additional discussion of open space areas.

See also Section 4.4.1 (C ECHO 3 – Response) of this document regarding trails.

Nabari 2 – Comment

The grading of an entire hillside.

Nabari 2 – Response

As stated in Section 4.5 of the Draft EIR, impacts due to grading activities would not be significant with implementation of recommended mitigation measures.

Nabari 3 – Comment

The threat the drainage poses to oak trees in the canyon.

Nabari 3 – Response

No oak trees are located directly in the bottom of the drainage channel. No additional response is required.

Nabari 4 – Comment

I will do everything in my ability to publicize and oppose approval of this project.

Nabari 3 – Response

The comment has been received and noted.

Nabari 5 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Nabari 4 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.87 John C. Nelson

January 18, 2002

Nelson 1 - Comment

I have built six houses in Chatsworth Twin Lakes since 1989. I currently own four houses in Twin Lakes and also manage my sister's house in the same neighborhood.

I am not opposed to the proposed development. While the new development would certainly alter the character of the Twin Lakes community, many of the proposed improvements would enhance Twin Lakes.

Nelson 1 - Response

The comment has been received and noted. No additional response is needed.

Nelson 2 - Comment

I would like to draw your attention to the issue of Twin Lakes' roads and legal implications thereof. The developers believe that the new project will have minimal impact on Twin Lakes traffic inside Twin Lakes. While I agree that most residents of the new project will not use Twin Lakes roads on a daily basis, I think that it is inevitable that the project will have a definite impact on our streets. Residents and visitors to the new project will want to "check out" our neighborhood. Perhaps more significantly, children in the new project will see our streets and roads as an "attractive nuisance" and will exploit them in trying out their motorized and non-motorized "wheels". I see potential legal liability for both Twin Lakes residents, as well as for the developers of the new project, if or when these children are injured by the dangerous conditions of sections of our roadways.

Thus, I am asking, for the sake of the developers as well as for the Twin Lakes residents, that as a condition for development, the requirement that the developer pave those portions of existing Twin Lakes roads that are currently unpaved or where the paving is badly deteriorated (they would not need to pave where the adjacent property owners wish to keep their graveled "country lane" look). Paving could meet existing standards: with our underlying bedrock, we have gotten good paving results from placing two inches of asphalt on top of compacted, existing roadway. I have roughly measured the amount of roadway in need of such improvement to total about one mile in length. Since our roadways do not exceed 20 feet in width, and in many places the grade cut is much less than 20 feet, the total square footage of paving should not exceed 100,000 square feet. I would think that a price in the $1/sq.ft. range would be a reasonable projected cost. Thus, the over-all cost to the developers would be very modest compared to the benefits to both Twin Lakes and the new development.

Nelson 2 - Response

Subsequent to the distribution of the Draft EIR, additional mitigation with regard to traffic impacts have been included in the revised project in response to LADOT (see Appendices E and K of this document.). However, paving of streets within the Twin Lakes Community has not been included. However, this suggestion will be forwarded on to the decision makers.

4.5.88 Lizzie Novotny

January 7, 2002

Novotny 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following: increased traffic & congestion;

Novotny 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Novotny 2 - Comment

impact on horse & hiking trails;

Novotny 2 – Response

See Section 4.4.1 (C ECHO 3 – Response) of this document.

Novotny 3 - Comment

impact on wildlife;

Novotny 3 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Novotny 4 - Comment

continuation of tract houses all north of 118.

Novotny 4 – Response

As stated in Section 2.1.2 of the Draft EIR, the project is consistent with the land use and zoning designations. The comment has been received and noted. No additional response is needed.

Novotny 5 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *A substantial reduction in the size and scope of the project;*
- *A more meaningful proposal for mitigation by the applicant; and*
- *Postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Novotny 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

Novotny 6 - Comment

As a (2) horse ower [sic], I feel this is the last hold out of rural propery [sic]– please keep it that way.

Novotny 6 – Response

The comment has been received and noted. No additional response is required.

4.5.89 Rena Ovadia

January 7, 2002

Ovadia 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic issues that will affect [sic] local streets. Congestion on the main routes leading south of the 118 fwy. at rush hours is heavy as is. The proposed corrole [sic] of traffic flow doesn't seem to be sufficient.

Ovadia 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Ovadia 2 – Comment

Eco-Sociological Effects on the area. We like the "country" feel of the area. This project will take that away.

Ovadia 2 – Response

This comment is out of the scope of analysis of the EIR. It is not clear what is meant by "eco-sociological" effects.:However, the commenter's opinion is noted and will be forwarded on to the decision makers.

Ovadia 3 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Ovadia 3 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.90 Mr. and Mrs. Patel

January 7, 2002

Patel 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Too much traffic: too much traffic – leads to pollution and public safety;

Patel 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Patel 2 - Comment

Impact on the natural surroundings

Patel 2 - Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Patel 3 - Comment

congestion in public schools, libraries etc.

Patel 3 - Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

As stated in Section 4.11 of the Draft EIR, library impacts would be less than significant with implementation of recommended mitigation measures. See Section 4.1.2 (City Council 6 – Response) of this document regarding additional discussion of mitigation of impacts on libraries.

Patel 4 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *A substantial reduction in the size and scope of the project;*
- *A more meaningful proposal for mitigation by the applicant: and*
- *Postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Patel 4 - Response

Please see Section 4.5.5 (Belkin, L 3 -- Response) of this document.

4.5.91 Ricardo and Krystal Pauliano

March 8, 2002

Pauliano 1 --Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Will create so much noise, dusts [sic] and fumes into our neighborhood.

Pauliano 1 –Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Pauliano 2 –Comment

Children walking to elementary schools will no longer be safe due to heavy traffic coming from the hillside to Canoga.

Pauliano 2 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Pauliano 3 –Comment

Also not safe for hiking and riding

Pauliano 3 –Response

The revised project would increase the number of trails in the area, and would not result in safety impacts. Please see Section 2.4.7 of this document for additional discussion of trails.

Pauliano 4 –Comment

The neighborhood will no longer be quiet and safe including the possibility of burglary.

Pauliano 4 –Response

As discussed in Section 4.7 of the Draft EIR, no significant noise impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Pauliano 5 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project:*
- *a more meaningful proposal for mitigation by the applicant: and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Pauliano 5 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.92 William and Sherry Payne

January 10, 2002

Payne 1 - Comment

Please be advised that this developer and his engineer have promised our equestrian community that they will keep all equestrian trails and bridle paths open and safe during the entire construction period. They estimate that to be 5 years in a favorable economy.

Payne 1 - Response

Please see Appendices D and E of this document regarding mitigation measures for trails.

Payne 2 - Comment

The developer was honest enough to alert us to the fact that they intend to sell the project once the Tentative Map is approved we would like to see this in a Map Condition.

Our community is aware that there are other projects in Los Angeles County that had map conditions to build and keep trails open, but the developer failed to fulfill his obligation. Now the only recourse for that equine community is to sue the developer. It's a shame the county didn't help them.

Payne 2 - Response

This comment is out of the scope of analysis of the EIR. However, the commenter's opinion is noted and will be forwarded on to the decision makers.

4.5.93 Andrea Pereson

March 8, 2002

Pereson 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Deerlake project – needs to be connected to Topanga and DeSoto Canoga is a quiet Rural Residential area. Deerlake Ranch proposed 480 homes are to be built on small lots. Chatsworth is a rural area of ½ acre & larger lots. There should be no more than 240 homes.

Pereson 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. See Appendix N of this document regarding access to or from DeSoto Avenue. Please also see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Pereson 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *an opportunity for public study of and comment on the applicant's revised proposals.*

Pereson 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.94 Ernie Perlich

January 15, 2002

Perlich 1 – Comment

This letter is in regards to the proposed development in the Deer Lake Highlands area; C.U.P. #99-239-(5) tentative tract map # 53138.

I have half ownership (with Pat Mirabelli) in a 40 acre parcel (AP 2821-019-00) directly north and ajoining [sic] this proposed development.

My main objection and concerns are having a continuing access to this property, as we have had since our property was purchased in 1966, and having that access point at the location of the existing

old fire road. That way the old road could be graded for much faster engine response in a fire situation. Also that road will give access to property owners behind us.

As well as discussing this with you I have discussed it with Captain Lecou and Janna Masi of the Land Development unit in the Los Angeles County Fire Department.

Perlich 1 – Response

See Section 4.5.3 (Augello 1 & 2 - Responses) of this document.

4.5.95 Ted Perlin

January 7, 2002

Perlin 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic congestion, freeway on and offramp [sic] heavy with traffic.

Perlin 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Perlin 2 – Comment

NOISE

Perlin 2 – Response

As stated in Section 4.7 of the Draft EIR, impacts regarding noise would be less than significant with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Perlin 3 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Perlin 3 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.96 Roberta M. Phillips

March 8, 2002

Phillips 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

1. *Vastly increased traffic on my street.*

2. *Noise & air pollution from construction vehicles every day.*
3. *Danger to the horseback riders and horses.*
4. *Overcrowded schools in Chatsworth*
5. *Complete negative change to the peace and serenity of the neighborhood, & consequently, vastly decreased property values.*

Phillips 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

No significant impacts to horseback riders are anticipated with implementation of the project. Please see Appendices D and E of this document for mitigation measures regarding this issue.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Phillips 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *an opportunity for public study of and comment on the applicant's revised proposals.*

Phillips 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.97 Karen Placek

March 13, 2002

Placek 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project # 99-239(5) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the traffic problem this project could or will have if allowed to proceed. The area in which I live in is a particularly lovely area where coming home from work you see people out riding there [sic] horse and all other types of wild animals roaming freely (foxes, raccoons, possums, squirrels, etc.). If this project is allowed to commence the horse back riding will surly [sic] stop. The tractors, all the other heavy equipment and traffic which it will create will not only impact the environment but our daily living. The traffic in the upper part of Canoga Avenue is impacted already, there are two private schools one East of Canoga Ave. and West of Canoga Ave. which contributes to a lot of the traffic already, the cross traffic from Topanga to Desoto on Chatsworth street is dangerous. There was a lady killed not too long ago on the corner of Chatsworth Street and Canoga Ave. Needless to say the traffic created by this project is a manager [sic] concern for all of us living off of Canoga Ave. Also, what about the children who live in this area the streets will become more unsafe to the additional traffic created the side streets off of Canoga are not travel by others expect [sic] for the people that

live on these side streets. But if this project is allowed other people will be using a lot of these streets for short cuts. My other concern is the size lots that they are proposing is not consisted [sic] with the lot sizes in the upper portion of Chatsworth on Canoga Ave. This area was designed for horse property and horse trails the lot size the developer is proposing barely gives these homes a back yard needless to say there would be no place for horses if they so desired.

Placek 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

Placek 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact. I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *A substantial reduction in the number of homes in the project*
- *A more meaningful proposal for mitigation by the applicant.*
- *And opportunity for public study of and comment on the applicant's revised proposals.*

Placek 2 –Response

Please see Section 4.5.5 (Belkin. L 3 – Response) of this document.

4.5.98 Larry Rader

January 10, 2002

Rader 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

I'm a resident of the Twin Lakes community, a former Aerospace Engineer and now a high school math teacher in LAUSD.

From my experience in industry and education, I've learned that when two different parties are negotiating toward a resolution of contract- both parties always ask for more than they expect to get. I believe the Presidio Group has proposed to build more houses then they expect to get approved. The current proposal to build 484 homes is unrealistic and will create an unbearable impact on the surrounding community. I would like to see the Presidio Groups alternate plan to build fewer houses along with a revised EIR.

Rader 1 - Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

Rader 2 - Comment

The Presidio Group has proposed to donate over $6 million to add classroom space resulting from the impact of the development. LAUSD must be held accountable to spend these funds in the impacted community and not where they choose.

Rader 2 - Response

This comment is out of the scope of analysis of the EIR. However, the commenter's opinion is noted and will be forwarded on to the decision makers.

Rader 3 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Rader 3 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.99 Karen Randall

March 25, 2002

Randall 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

- *The proximity to schools*
- *The destruction of the environment in this beautiful rural area of Los Angeles*
- *The adverse impact on horse trails and equestrian facilities*

Randall 1 –Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

As stated in Section 4.1 of the Draft EIR, impacts to aesthetic resources would not be significant. The project includes approximately 137.89 acres of open space (59.8% of the total project site).

The project also includes additional trails to be used by equestrians, see Section 2.4.7 of this document for additional discussion of this issue.

Randall 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration should be conditioned on:

- *A substantial reduction in the number of homes in the project; and*
- *Opportunity for public study of and comment on the applicant's revised proposals.*

Randall 2 –Response

Please see (Section 4.5.5 Belkin, L 3 – Response) of this document.

4.5.100 Liz Ricci

March 13, 2001

Ricci 1 –Comment

We live on Chatsworth Street south of this proposed project. As it has been presented, It [sic] so devastating to us that we may actually have to leave Chatsworth after having been here since 1956, as there will be nothing left in this area that we came here for. The bottom line on this is that the project is in L.A. county (NOT city), but will rely on city (OUR) sewers, schools, streets and emergency services. Do you suppose that Las Virgenes water district will impose the same sewer fee on these new homes that we have to pay?? Can you imagine 60 MILLION cubic feet of dirt being moved and disturbed up wind of us during the next Santa Ana wind? Can you visualize 4,000 to 6,000 more cars on Canoga and Chatsworth St.? How long will the lines at the post office be then?? How crowded will our local schools be, given that our children have trouble getting their classes now?

Ultimately there is no way to "mitigate" 484 homes up there. Please do everything in your power to prevent this disaster to our neighborhood.

Ricci 1 –Response

As stated in Section 4.14 of the Draft EIR, the project would not have a significant impact on sewers.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As stated in Sections 4.8 and 4.9 of the Draft EIR, no significant impacts would occur to emergency services with implementation of the project. See Sections 4.2.4 (Fire 1 and 4 – Responses) and Section 4.2.5 (Police Services 1 and 5 – Responses), and Appendix E of this document for additional discussion regarding this issue.

Ricci 2 –Comment

1. *In order to keep this new area consistent with the horse character of the Chatsworth general plan; the lot sizes should be held at least to the horse keeping legal size of 17,500 sq. ft.;*

Ricci 2 –Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

Ricci 3 –Comment

2. *That the ridge lines need to be preserved so that it doesn't become an eyesore from all over the valley;*

Ricci 3 –Response

As stated in Section 4.1 of the Draft EIR, impacts to visual resources would not be significant. Please see Section 2.4 of this document for further discussion of this issue.

Ricci 4 –Comment

3. *That the open space set backs, stream runoff and ecology, and trail accesses be protected;*

Ricci 4 –Response

See Section 2.4.7 of this document for additional discussion of open space.

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

See Section 4.4.1 (C ECHO 3 & 4 – Responses) of this document for additional discussion of trails.

4.5.101 Liz and Richard Ricci

January 8, 2002

Ricci L & R 1 - Comment

We have owned the property on Chatsworth Street since 1983 and have lived there since 1984.

We live in Chatsworth specifically so that we can maintain and ride our horses at our home. We also have developed long standing and close neighborhood connections.

Ricci L & R 1 - Response

The comment has been received and noted. No additional response is needed.

Ricci L & R 2 - Comment

We are extremely concerned about the negative impact that the development of a large number of homes in the hills directly north of us and of the 118 freeway will have on our place to live. Chatsworth Street is already very busy, to the extent that there are times of the day that we really can't drive out of our driveway to leave. In addition, Topanga is so impacted in the rush hour times. it is obviious [sic] to all of us who live here that nearly all of the traffic from those new homes is going to have to come down Canoga Avenue. Canoga Avenue is my route to ride into the hills, and I have to cross the corner of Rinaldi and Canoga to meet friends and to ride. Unless there is a light there, it will be completely impossible. Even with a light there, it won't be good.

And of course, a portion of the traffic coming down Canoga is going to go east on Chatsworth to get to the freeway, further jamming our own access to our own house.

Ricci L & R 2 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Ricci L & R 3 - Comment

Please re consider [sic] this development, and scale it down to a more manageable size.

Ricci L & R 1 - Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

4.5.102 Tony Rizzatte

January 7, 2002

Rizzatte 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

We are not allowed to put any checks in our mail box since we were robbed just recently. We are going to put our mail box next to our front door so the mail man will have to get our of his truck to deliver.

Rizzatte 1 - Response

This comment is out of the scope of analysis of the EIR. However, the commenter's opinion is noted and will be forwarded on to the decision makers.

Rizzatte 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant: and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Rizzatte 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.103 Allison Roberts

January 7, 2002

Roberts 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Loss of wildlife. Natural environment and quiet neighborhood of 100 homes in the mountain side.

Roberts 1 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

As discussed in Section 4.7 of the Draft EIR, no significant noise impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Roberts 2 – Comment

Traffic

Roberts 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Roberts 3 – Comment

Crime

Roberts 3 – Response

As stated in Section 4.9 of the Draft EIR, annual crime statistics indicate that the areas, including the project, served by the Lost Hills/Malibu Station have a crime rate below the countywide average.

Implementation of the project would serve to increase the existing funding mechanisms for any additional officers required to serve the project area. Impacts would not be significant with implementation of recommended mitigation measures. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Roberts 4 – Comment

pollution.

Roberts 4 – Response

It is unclear as to what pollution the commenter is referring. However as stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Roberts 5 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant: and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Roberts 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.104 Karen Rogers

January 11, 2002

Rogers 1 – Comment

I am a constituent of yours and a resident of the Chatsworth area. I write to advise you I OPPOSE the Deerlake Ranch project (project no.99-239(5)). The proposed development of nearly 500 homes along Canoga Avenue just north of the 118 freeway would cause additional congestion on our already-crowded [sic] local streets (you should see the morning and evening traffic on DeSoto, Topanga Canyon, Chatsworth, Devonshire and Lassen Streets, just to name a few?) The numbers and information provided in an effort to gain approval of the development appear to be misleading. The true impact on our neighborhood requires that this proposal be rejected.

I am very concerned about both the increase in traffic on Canoga Avenue adjacent streets that this development will surely cause, and also the impact of construction from the project, including noise, traffic and the many large construction vehicles which I believe pose a significant risk to my small children. We are very near Canoga and, besides worrying about our children's safety while they are outside the house, we will have to suffer substantial noise pollution as the walls and windows of our house were not constructed to keep out such noises – which are expected to continue for over a year!

Rogers 1 – Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As discussed in Section 4.7 of the Draft EIR, no significant noise impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Rogers 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Rogers 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.105 B.M. Schackel

January 7, 2002

Schackel B 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Impact on the traffic on Canoga Ave. We have two schools and heavy horse traffic on this street- no way should this development run the majority of its traffic down it- This is a major problem! People will be not only unconvinced but killed.

Schackel B 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Schackel B 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Schackel B 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.106 R. L. Schackel

January 7, 2002

Schackel R 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic on Canoga Ave. The traffic study provided by the developers was performed the first week of Jan. when the two schools were not in session and a large % of my community was gone on vacation- Current patterns will cause major problems with horse trail traffic- this needs to be revisited by your dept.-someone missed the problems. Please come see the area.

Schackel R 1 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Schackel R 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Schackel R 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.107 Lynn Schattels

January 7, 2002

Schattels 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Schools that will be impacted

Schattels 1 - Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Schattels 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Schattels 1 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.108 Gary Schwaegerle

February 14, 2002

Schwaegerle 1 –Comment

I need your help please.

There is a current plan being processed for Deer Lake Highlands.

This is north of the city of Chatsworth.

As a property owner in the area what affect [sic] will the plan have upon privately held property in this area.

What is past – current – and what will be future zoning?

Bottom Line: What's the affect [sic] on the remaining property owners?

Schwaegerle 1 –Response

See Section 4.5.3 (Augello 1 & 2 - Responses) and Appendix M of this document.

Schwaegerle 2 –Comment

Do you have an overlay map as to the new proposed subdivision will affect existing lots.

Schwaegerle 2 –Response

Please see Figure 2.7 of this document.

4.5.109 Harry and Terri Seidman

March 28, 2002

Seidman 1 –Comment

As neighbors of the proposed Deerlake Ranch Development, we are writing to express our opposition to the proposed Deerlake Ranch Development. We do not believe that the existing infrastructure can support this project or any projects that will result in a large number of residents being added to this part of Los Angeles County.

You will be receiving a large number of letters in opposition to this project and each of the impacted residents will express a list of the many reasons that this project is inconsistent with the residential areas adjoining the propose [sic] project. Of particular importance to us is the increased traffic that the new residential units will produce. With current traffic loads there are times during the day when it is very difficult to make the transition from Bermuda Street onto Canoga Avenue. Adding more traffic will exacerbate this problem.

Seidman 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Seidman 2 –Comment

Over the last few years, there have been several accidents just in the stretch of Canoga Avenue between Bermuda Street and Chatsworth Ave (a distance of a few hundred feet.) This has included an accident that severed a light pole with the pole landing a few feet from our home, an accident that severed a telephone pole and damaging the rail along the horse trail, another accident that ended up with a car in the horse trail, and most recently an accident that resulted in a fatality and a young girl must now go through life without her mother.

We STRONGLY encourage you to recommend against this project.

Seidman 2 –Response

This comment is out of the scope of the EIR. However, the commenter`s opposition to the project will be forwarded on to the decision makers.

4.5.110 Linda G. Sheehan

March 8, 2002

Sheehan 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Safety, increased traffic, environmental, equestrian, inconvenience of all that construction and dirt, decrease in property values, increased population will impact my local schools.

Sheehan 1 –Response

See Section 4.4.1 (C ECHO 4 – Response) of this document for discussion of equestrian issues.

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As discussed in Section 4.2 of the Draft EIR, no significant dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Sheehan 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Sheehan 2 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.111 Steven C. Shuman

March 11, 2002

Shuman 1 –Comment

I am writing to express the opposition of myself and my wife to the proposed Deerlake Ranch development in Chatsworth. Project No. 99-239(5), the public hearing on which you have continued to April 10, 2002. We live on Celtic Street, three houses west of Variel.

I understand the development will encompass 484 new homes, which much translate to 400 morning rush hour trips, many of which will require access to the 118 freeway heading east. If the only freeway access is Topanga or De Soto, and for many Topanga will be backtracking, the traffic south on Canoga and east on Chatsworth will increase very substantially, probably beyond the ability of

Chatsworth, which is only one lane each way between Variel and De Soto, to handle it. Moreover, people seeking shortcuts around the inevitable back-up at Canoga and Chatsworth may turn down Celtic to Variel, thereby increasing traffic in an otherwise quiet and safe residential street. I do not look forward to a time when I have to battle my way out of my driveway in the morning. The most obvious solutions to this problem are an on-ramp at Canoga, access from the development to De Soto, widening Chatsworth, reducing the density of the development, or the best of all, disallowing the development.

Shuman 1 –Response

As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

Shuman 2 –Comment

The construction process is also a serious concern. The heavy equipment and construction materials rolling through the one-lane (in each direction) streets of our neighborhood, and the de-nuding [sic] of the hillsides, will bring dust, fumes, noise, traffic snarls and probably accidents to the area. Keep in mind, the wind whips up very regularly in our area, and are worse in the hills being developed.

Shuman 2 –Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Shuman 3 –Comment

I am also a mountain bike rider, and I ride into the area of this development every two or three weeks on average, as do many other mountain bikers and horseback riders. I have not yet met anyone who engages in those activities who is not upset about the loss of this recreational land, to say nothing of the habitat for the animals. Before you vote on this development, please ask yourselves, what evidence have you seen that there is a need for it.

Shuman 3 –Response

See Section 4.4.1 (C ECHO 3 & 4 – Responses) of this document regarding trails.

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Shuman 4 –Comment

In light of the adverse impact this project will have on the entire Chatsworth area, particularly the traffic patterns, the project should be rejected. At a minimum, the size of the project should be reduced and the developer should provide more mitigation measures. Thank you for considering these issues.

Shuman 4 –Response

The commenter's opposition to the project is noted and will be forwarded to the decision makers.

4.5.112 Hans Siegenthaler

January 7, 2002

Siegenthaler 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

More non electric cars with their foul emissions, more babies in communities with no "Planned Parenthoods". The ruining of nature's plants but animals especially. We are not even allowed to walk the mountains n (none) of us but cows are; trampling the ground and causing ground shifts only by their weight.

Siegenthaler 1 – Response

This comment has been received and noted. No additional response is required.

Siegenthaler 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Siegenthaler 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.113 Ray Sipots

January 7, 2002

Sipots 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

In the meetings, I haven't heard anything about subsiding the dust problem from construction.

Sipots 1 – Response

As discussed in Sections 4.2 of the Draft EIR, no significant dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Sipots 2 – Comment

I also haven't heard of improved sewer systems availability to some.

Sipots 2 – Response

The developer has agreed to construct a complete main line sewer system for Twin Lakes, including portions of the house laterals. This would include all engineering, right-of-way acquisition, surveying, construction, and inspection. Since a private developer does not have the power of condemnation, it would be the responsibility of the County to acquire necessary sewer easement within existing roads in the event one or more property owners do not provide the easement willingly.

However, the above presupposes that at least 70% of the Twin Lakes residents favor such a project, that the Board of Supervisors will institute the necessary improvement district, including the Community Facilities District for the project, and that the project is approved to the extent that such a sewer project is still financially feasible.

Sipots 3 – Comment

There needs to be a freeway entrance for Canoga (at the rear of Mayan Dr. on 118 fwy.

Sipots 3 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Thus, the measure suggested by the commenter regarding freeway access at Canoga Avenue is not required to mitigate the traffic impacts associated with the project. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Sipots 4 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Sipots 4 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.114 David Sparhawk

January 7, 2002

Sparhawk 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic flow on Canoga Ave. and Chatsworth Street.

Sparhawk 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Sparhawk 2 - Comment

Small lots that are not compatible to the ½ acre lots zoned RA like the balance of property west of DeSoto.

Sparhawk 2 - Response

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

In addition, the project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

Sparhawk 3 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact. I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Sparhawk 3 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.115 Jerome Spilky

January 7, 2002

Spilky 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Environmental issues

Spilky 1 – Response

As stated in the Draft EIR, impacts from the project would not be significant with implementation of recommended mitigation measures.

Spilky 2 – Comment

Traffic issues

Spilky 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Spilky 3 – Comment

Noise ordinance

Spilky 3 – Response

As discussed in Section 4.7 of the Draft EIR, no significant noise impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Spilky 4 – Comment

Conservancy issues

Spilky 4 – Response

It is unclear as to what the commenter is referring to. No response is required.

Spilky 5 – Comment

DUST, FUMES,

Spilky 5 – Response

As discussed in Section 4.2 of the Draft EIR, no significant dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Spilky 6 – Comment

RUNOFF,

Spilky 6 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Spilky 7 – Comment

RECKLESS DRIVING.

Spilky 7 – Response

This comment is out of the scope of analysis of the EIR. No response is required.

Spilky 8 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Spilky 8 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.116 John and Susan Stevenson

January 7, 2002

Stevenson J & S 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic, traffic, traffic

Topanga Cyn. Bl. is blocked at the 118 on and off ramps every morning and evening. We cannot allow anymore building in this area.

Stevenson J & S 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Stevenson J & S 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*

- *a more meaningful proposal for mitigation by the applicant: and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Stevenson J & S 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.117 Warren Stone

January 3, 2002/January 13, 2002

Stone 1 – Comment

Traffic Item relating to the street interface within the Deerlake Ranch Project and the existing community of Twin Lakes.

Topanga Canyon, Mayan Drive and Poema Place intersection

Section 4.12.4 Item 4.12-2

The Deerlake Ranch Project will create a West Mayan Drive and Topanga Blvd. Intersection a road 'A' and a new Mayan drive that will be the main entrance to Twin Lakes community. A lesser-used road, Mojave Trail, will also intersect with a road 'A' between the intersection of Road 'A'/Mayan Drive intersection and the intersection of Road 'A'/Topanga Canyon. This all will be within ¼ mile of the new intersection of Road 'A', Topanga Canyon and Poema Place. This intersection has been a problem to both the Summerset and Twin Lakes communities during the AM/PM rush hours. Traffic will enter the 118 freeway at Topanga Canon Blvd. going both east and west from the north side of the 118 freeway. People from the new Deerlake Ranch project and Summerset and Twin Lakes. It is highly conceivable people will come north on Canoga Avenue, cutting through the new Deerlake Ranch project trying to bypass the already extremely congested northbound traffic on Topanga Canyon Blvd. And De Soto Blvd. This traffic will back up on road 'A' blocking Mayan drive access in the AM rush hours. The same process will happen in the PM rush hour going the other way. A dedicated turn lane from Twin Lakes has been proposed. I believe that this will not work as the experience with the Topanga Canyon, Mayan and Poema Place intersection has shown that when the road backs up smaller less traveled roads will never get access to the heavier traveled road.

Stone 1 – Response

As stated in Section 4.12 of the Draft EIR, impacts to traffic would not be significant with implementation of recommended mitigation measures. The project proposes to align Mojave Trail to intersect "A" Street east of Topanga Canyon Boulevard. The realigned Mojave Trail would provide vehicular access to four existing homes within the Twin Lakes community. Based on the relatively low volume of traffic generated by the homes on Mojave Trail, as well as the forecasted amount of traffic on "A" Street, residents along Mojave Trail are anticipated little or no delay in accessing "A" Street.

Based on the circuitous and discontinuous nature of the proposed "A" Street within the project, it is highly unlikely that this roadway will be used to facilitate regional traffic not associated with the project. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Stone 2 – Comment

A three way stop sign at the intersection of road 'A' and new Mayan Drive will assure our access to road 'A.' While not affecting the road 'A'/Topanga Canyon intersection, this will also help with the much less used road of Mojave Trail, approximately 30 feet to the south of the new Mayan Drive/road 'A' intersection, as all cars will stop at the sign at Mayan Drive. Also, this will help control speed of traffic on road 'A'.

Stone 2 – Response

Please see Stone 1 -- Response of this document.

Stone 3 – Comment

The Canoga Avenue /East Mayan Drive Intersection will be changed by the Deerlake Ranch Project. Deerlake Ranch project will create a new road 'B' that will be the Twin Lakes access to the Canoga Ave. through the intersection of Canoga Ave. and the Mayan Drive. Traffic will not be as heavy as the intersection with Topanga Blvd., but I believe that a three way stop sign will help Twin Lakes residents gain access to then new section of road 'B.' Also, I contend this will help with the speed of traffic on road 'B'.

Stone 3 – Response

Please see Stone 1 -- Response of this document. Project mitigation includes the installation of three-way stop signs at the intersection of "B" Street and Mayan Drive, if approved by the County's Traffic and Lighting Division.

Stone 4 – Comment

Deerlake Ranch project plans to take all the rain and project run-off water from the streets and put it through a set of sand and rock filters, then dump it directly in to Devil canyon. I believe that this run off will pollute the canyon, killing whatever natural habitat and wild life is there.

I believe that the run-off should be directed through a channel or pipe to the entrance of the Browns Canyon wash, bypassing the natural creek bed.

Stone 4 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Stone 5 – Comment

Deerlake Ranch project claims that peak storm runoff from all areas tributary to Devil Canyon will be decreased by the four new debris basins and the removal of 4590 cubic yards of debris.

With the construction of 51.16 acres (22.19% of the project) in streets, building footprint (driveways, patios, etc.), Heli-spot and parks. Peak Storm runoff will increase not be reduced as clamed [sic] by this section of the EIR. The amount of runoff will uproot vegetation in the creek bed and will at times block the water flow port in the dam on Devil Canyon. This has happened several times in the past causing the water to poor over the top of the dam, which is a safety hazard.

The resolution of this problem is to channel or pipe the runoff directly to the entrance of the Browns canyon wash, bypassing the natural creek bed.

Stone 5 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Stone 6 – Comment

Captain James N. Glazer, in his letter, states the problem of distance and traffic with getting police emergency protection to The Deerlake Ranch Project, as well as, Twin Lakes and surrounding communities. His mitigation suggestions were to increase staffing and a crime prevention plan.

I believe that a Sheriff storefront station in the area would five this county area the protection that is needed. A 12' by 15' room in a building would provide a place for personal [sic] to have a desk, computer, phone, and bathroom. This would provide us with 24-hour protection with only a few minutes' response times when needed.

It has been suggested placing for the storefront station would be on the parkland near Canoga Ave and 118 freeway under pass. This could be shared with a Park Ranger and Fire Department (for an office, not a station with fire fighting equipment). The region would generating [sic] millions in tax dollars and we need the protection that other communities are getting.

Stone 6 – Response

See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Stone 7 – Comment

The monies collected for County Schools under Section 65995 of the California Code, for school improvement and the County Library fee ordinance will not be used for the City Schools and the City Library that all the residents of this area use. It would seem to me at least the Public Schools and Public Library get some this money t [sic] help with the addition of 1428 residents and 494 students to be added. Schools are a major problem in this area and with some of this money given to City Schools and City Libraries mitigation's measure could be taken. There is no plan to add county schools or a county public library to this area of the county. I do not even know where the nearest county school is and the county public library is 17 miles away in Lost Hills.

Stone 7 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

4.5.118 Teena A. Takata

April 3, 2002 (e-mail)/April 9, 2002

Takata 1 – Comment

The citation I was searching for is in Volume 1 of the Deerlake Draft EIR, on page 4.11-2, in the first paragraph under 4.11.3 "CUMULATIVE IMPACTS". (Referring to Section 3.0, the Summary and Map of Related Projects).."Of the 11 related projects, three proposed projects (nos. 8, 10 and 11) are located within the project area. Combined with the proposed project total population of 1,428 residents, a cumulative generation of 2,086 residents would be added to the area."

I had started searching for something like this, because the growth projections in traffic seemed way too low given Porter Ranch is just to the east of this project. Please also note that per a tiny footnote on the Related Projects table at 3.0, Porter Ranch is shown at a 50% buildout only, but it still generates 56,476 daily trips. At complete build-out, there will be 3400 homes here that have been totally excluded in the future projections on the traffic, which approximate 10,000 residents. Neighbors estimate Porter Ranch in 1/3 built now, but that building has occurred on the east side, now the west side is starting to be built. Figure 3.1 is also very misleading, because it shows Porter Ranch at Tampa Avenue. Porter Ranch runs from DeSoto to beyond Tampa. The area near DeSoto is just starting to be developed now. Maybe you could look at Porter Ranch a bit on the Saturday field tour? I will snail-mail you a package with these documents in one place to make it easier to understand. But, please, do not ignore Porter Ranch!

Takata 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Takata 2 – Comment

I regret I cannot attend the April 10, 2002 meeting.

Many, many issues have been raised. At a meeting with the County Supervisor's personnel, developer and some community members on April 1, 2002, we did find out the following items that continued to concern us greatly.

1. *The developer apparently attempted to resolve the urban runoff issue by diverting the entire flow of the watershed of the Devil Canyon area (including flows from a huge area north, west and northeast of the project site into Brown's Canyon. Reportedly, this request was turned down. What would be left of the riparian beauty of Devil Canyon without the water flow to this blue-line stream? How many trees, and other plants and animals in the special watershed represented by Devil Canyon would die due to the change in their waterflow?*

Takata 2 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Takata 3 – Comment

2. *The developer attempted to explain away certain problems with trail access at La Vina in Altadena by explaining that completion bonds ensure the development process is completed for publicly dedicated areas such as streets and equestrian trails. Upon focused questioning from audience members, they acknowledged that the completion bond would not cover off-site issues, such as public dedications for trails from adjacent landowners. Although La Vina reportedly had this problem, the identical issue exists for the equestrian trail at Deerlake. They did mention that strict and specific conditions could help that problem.*

Takata 3 – Response

The comment is not CEQA related. No response is required.

Takata 4 – Comment

1. *Policing issues are unresolved. A resident stated at the April 1 meeting that City Police would not respond to a person shooting a gun for target practice until the Sheriff from the County was on site. Another resident confirmed a similar response to a different call.*

Takata 4 – Response

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Takata 5 – Comment

1. *Major issues with traffic remain unresolved.*

Takata 5 – Response

See Takata 1 – Response of this document.

Takata 6 – Comment

1. *No revisions to the previously-proposed conditions have been circulated since the last meeting.*

Takata 6 – Response

Please see Appendix E of this document.

Takata 7 – Comment

I request that a revised draft EIR be issued and circulated, when the ACTUAL project is better understood.

Alternatively, if the project is to be approved IN ANY FORM, please, provide the community an opportunity to read, review and comment on possible omissions in that approval before it becomes finalized and the project starts creeping up the appeal ladder.

For example, Porter Ranch, immediately to the east will generate 120,000 vehicle trips a day when completely built per this draft EIR, but is not included in related projects and future traffic growth projections. Or, that urban storm runoff is going into a pristine canyon, or that all traffic studies occur within two weeks of Christmas. The trail access needed on nearby parcels is not resolved, or addressed in a way that requires complete resolution before grading. The policing issue is a huge problem with [sic] when many additional residents come into the area.

Patti Friedman of Supervisor Antanovich's office has been very helpful, and has advised us the County will not approve this project without providing the public time (such as 30 to 45 days, such as CEQA document review periods) to review project changes. She advised the Supervisor's office would be confirming this public review period at the hearing.

We want the opportunity to see the County's, and the developer's, responses to the many, many comments that were made on the draft EIR, and we look forward to seeing meaningful responses that address the specific issues that were raised.

We asked the developer several times to post the draft EIR on the internet in accordance with the current CEQA recommendations. We note the City of Glendale has posted EIR's for controversial projects of similar size http://www.ci.glendale.ca.us/oakmont/index.html, as has Ventura County posted the majority of the supplemental EIR for Ahmanson Ranch http://www.ventura.org/vcrma/planning/Ahmanson_eir/ ahmanson_eir.htm. Please consider doing this for the many concerned residents in the area, and especially post changes in the existing project, and the comment letters and the responses to those comments for our consideration and possible further comment if misleading or incomplete items recur.

Takata 7 – Response

Please see Section 1.1 of this document regarding the comment period for the Draft EIR.

The environmental documents for the project have been posted on the project website, www.deerlakeranch.com.

4.5.119 Donna and Manuel Talamantez

March 28, 2002

Talamantez 1 –Comment

We are writing to express our objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10th.

We are extremely concerned about the use of Canoga Ave. as the entrance to the proposed project. Canoga Ave. is a [sic] very much a neighborhood street which is already over congested due to the two private schools feed [sic] by the Canoga and Rinaldi intersection and we also have a speeding situation from the 118 Freeway to Rinaldi with a steep hill that compounds the problem. There are also major traffic congestions on Chatsworth Street between Desoto and Topanga. This area cannot handle additional traffic to accommodate new homes or construction crews.

Talamantez 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Talamantez 2 –Comment

We also agree with all the issues that have been raised by the Chatsworth Equine Cultural Heritage Organization (ECHO). This project does not mesh with the existing rural nature of Chatsworth. We are concerned about the safety of the horse crossing at Canoga & Rinaldi, endangering a sensitive ecological area, the safety issue of our already overburdened LA City infrastructure supporting an LA County area. While we are opposed on many levels to this project, we agree with ECHO's suggestion that the properties be kept to ½ acre minimum horse keeping properties.

Talamantez 2 –Response

Please see Section 4.4.1 of this document.

Talamantez 3 –Comment

This project would negate all the reasons we enjoy living in Chatsworth. We love the ½ acre properties that afford us the peaceful rural atmosphere. We enjoy the beauty of the hillsides and sounds of wildlife. And while we do not own horses we are very supportive of ECHO's cause to keep an area of Chatsworth free of further suburban encroachment and retain an area with rural, agricultural features in order to preserve the city's heritage.

Talamantez 3 –Response

The comment is noted and forwarded to the decision makers.

Talamantez 4 –Comment

To reiterate our gravest concern, it would be a great detriment to our community to use Canoga Ave as the access to this area with its [sic] narrow width, existing traffic concerns, steep grade, and the horse trail that runs the length of the Avenue. De Soto and Topanga are established commuter two lane boulevards designed to handle higher volumes of traffic with far fewer homeowners affected [sic]. While we would prefer to keep the Deerlake property open land in order to preserve on the few areas left that allow horseback riding and hiking in a natural setting, any development plans must be greatly altered and reduced from the existing proposal.

Talamantez 4 –Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

4.5.120 Lori Terpenny

January 1, 2002

Terpenny 1 - Comment

"No rendition of Metallica drowns out the constant clamoring of steel against rock. The rumble of the earth cries out every day. The continuous pounding of heavy equipment upon their pathways drives them to madness as they achingly succumb to the ever-present clamor. No silence is deep enough to drown out the outcry of this people forced to endure the insanity.

The dust-laden air proves too thick to be outdoors. By nightfall, the remains of the agitated air begin to settle upon every living and non-living being unfortunate enough to make its home in a once breathable atmosphere. Inch upon inch of dirt, dust, and debris cumulatively gather upon their outdoor surroundings. Being outside only proves perilous as the very thing that sustains life slowly poisons their lungs with toxins, spores, and airborne viruses.

Trying to escape is a fruitless endeavor as what they once called their kingdom has now befallen an unthinkable evil. It is where they lived and thrived in harmony with the earth and all God's creatures great and small. It is the kingdom they call home. It is the place where they chose to embrace life

and to teach their children of all its mysteries and wonders. It is a place they love despite the horror. With their means of travel blocked in all directions, they are imprisoned within the tortuous downfall of their precious land."

Terpenny 1 – Response

This comment is out of the scope of analysis of the EIR. No response is required.

Terpenny 2 - Comment

This is not a storybook city or a legend of old. This is Twin Lakes as it will be when Presidio begins to break ground for its proposed project that will have, "no significant impact," on anything or anyone in its path. This company needs to rethink its impact, not only for Twin Lakes, but the entire community of Chatsworth.

Terpenny 2 – Response

As stated in the Draft EIR, impacts from the project would not be significant with implementation of recommended mitigation measures.

Terpenny 3 - Comment

We will all be forced to deal with dirt and dust as they bulldoze and dynamite the solid rock mountains,

Terpenny 3 – Response

As discussed in Section 4.2 of the Draft EIR, no significant dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Traditional grading techniques would be used during construction of the project. However, other methods may be required. All construction activities would be conducted according to the requirements of the County of Los Angeles.

Terpenny 4 - Comment

the traffic along our tiny roads as well as the surrounding community,

Terpenny 4 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Terpenny 5 - Comment

the safety and security of our homes and those of our neighbors below during construction,

Terpenny 5 – Response

Impacts associated with construction activities would not be significant with implementation of recommended mitigation measures.

Terpenny 6 - Comment

and most of all the raping and pillaging of the land and creek bed they propose to dump "clean" sewage into from 485 new homes. Isn't this an oxymoron? Is there anything such as "clean" sewage?

Terpenny 6 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Terpenny 7 - Comment

I shudder to think that an entire ecosystem that has existed here for hundreds of years will be destroyed due to this enormous project. The wind patterns will change. The creek will suffer. The people here will experience their own piece of hell as they watch the mountains become leveled, they deal with the noise, traffic, air quality, and the safety of their families throughout this long, and laborious ordeal. Please look into studying the impact of this project responsibly. The lives of so many hang in the balance. It is a well-known fact that our city is growing and that people have a right to have a place to live, and that change is the one thing in life that we can be sure of; however, the magnitude and density of this project needs to be considered as too large for this area. Thank you for your careful consideration in this matter.

Terpenny 7 – Response

As stated in the Draft EIR, impacts from the project would not be significant with implementation of recommended mitigation measures.

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue. See also Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Terpenny 8 - Comment

In the EIR draft submitted to the public, the figures in Table 4.10.1 do not take into consideration the number of physical, hot bodies currently enrolled in the local schools based on norm day for the 2001-2002 school year. The report states that existing spaces are available for the proposed student enrollment created by this project when the true facts are that the elementary school population at this time is already at full capacity. The EIR based its findings on resident enrollment, negligently dismissing the fact that the figures did not include bussed in children, children with parent work-related permits, special education populations on the rise, and further assumed that resident children would take priority in the local schools. This would not be the case. Historically, children currently enrolled in these schools are never asked to leave as a practice to make room for new resident area children. These children who are bussed in, are at the Chatsworth area schools because their local schools are already overcrowded. Denying them return enrollment to our schools is illegal as every child is entitled to a free and public education. Once they are in, they are not asked to leave. This would deny them an education because the schools in their neighborhoods cannot accommodate them.

Terpenny 8 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Terpenny 9 - Comment

Along with the other projects to be built in the Northwest corner of Chatsworth, it does not take an engineer to figure out that the schools will be greatly impacted by the number of new residents. And we do need to consider all the projects that will be built in this area because every builder will assume their own project of apartments and homes will have little impact on local schools. The Presidio Project is entirely too dense a project for the area. It needs to be reduced to at least half its [sic] proposed size. The quality of education for our future generation is at stake here. We cannot be so irresponsible to our children and allow overcrowding of classrooms at this magnitude.

Terpenny 9 – Response

See Terpenny 8 – Response of this document regarding school impacts.

See also Section 4.2.2 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Terpenny 10 - Comment

This EIR has submitted to the public false figures on the number of students currently enrolled in local schools. These figures can be obtained by simply calling the local schools. Presidio was not accurate or honest about these numbers. This troubles me because I now need to question their entire EIR. Are any issues studied and taken into consideration accurate? Do they deserve to be dismissed with the simplistic phrase of: "the proposed project would not result in a significant impact", to any and all of the issues studied? This EIR needs to be redone by people who have the facts correct and are not afraid to speak the truth. Are there any of those people left today? God, I hope so, for all our sakes.

Terpenny 10 – Response

See Terpenny 8 – Response of this document regarding school impacts.

Please see Section 4.4.2 (CLPA 2 – Response) of this document regarding the adequacy of the EIR.

4.5.121 Marla Terrell

January 7, 2002

Terrell 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

If you would monitor the existing traffic on Chatsworth Street between Variel Ave and DeSoto, during peak drive-time... 7:45am to 8:30 am and 2:30 pm to 5 pm, Monday thru Friday, you would see that the 2 private schools cause havic [sic] in this area already. It can [sic] 15 to 20 minutes to go 2 blocks during those times. Increased traffic will completely stop any current resident of this neighborhood from being able to live and enjoy our area. If the city hadn't closed off Rinaldi St. access from De Soto, the private schools traffic could have used that street, since it is a direct route to both schools and thus opened up Chatsworth St. for the existing residents to use without the terrible traffic jams.

Terrell 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Terrell 2 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Terrell 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.122 Andrew Thomas

March 27, 2002

Thomas 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10, 2002.

The proposed project is located close to my home, near the corner of Celtic and Canoga. I am particularly concerned about the following:

1. Safety: Cars traveling down Canoga will turn left at Celtic to bypass any traffic control at the intersection of Canoga and Rinaldi. At present, Celtic is a quiet street where children play with little fear of cars. Introducing harried commuters is a recipe for disaster. The nearby opening of Mason to the Porter Ranch Development has resulted in Mason becoming a freeway of speeding commuters who have no attachment to the neighborhood. Unlike Mason, which is a wide four-lane street with no houses fronting it, Celtic is a small two-way street with houses facing it; there is not even a line on Celtic dividing the lanes of travel.

Thomas 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Thomas 2 –Comment

2. Infrastructure Costs: The proposed development is situated in L.A. County, just outside the boundary of the City of Los Angeles – where my home is located. The 480 houses will undoubtedly use City of LA sewers that City residents pay for. The 480 houses will use City of LA services, such as local schools, libraries and parks, which are already congested. It seems unfair (and possibly actionable) that the County can foist massive costs on City taxpayers by approving a development located outside the City.

Thomas 2 –Response

See Section 4.3.5 (City Council 3 – Response) of this document.

Thomas 3 –Comment

3. Horse Trails/Neighborhood Character: Chatsworth is home to numerous horse trails, and the character of the community has a rural feel that is inextricably linked to horses. How many towns in LA County still have a livery store? The proposed houses will destroy open hill country where people ride. The impact of potentially thousands of cars on Canoga -- which has horse trails on both sides -- creates a real risk of eliminating or reducing one of the main land uses that for decades has defined Chatsworth.

Thomas 3 –Response

See Section 4.4.1 (C ECHO 3 & 4 – Responses) of this document.

Thomas 4 –Comment

4. Aesthetics/Ridgeline/Density: Is the ridgeline on the hills going to be graded into flat house pads? Development has turned the once scenic hills of Porter Ranch into an eyesore. The proposed density – 480 houses – is inconsistent with the neighborhood between Canoga and Variel north of Chatsworth. Most of the houses sit on large lots, with stables, tennis courts and lots of land.

Thomas 4 –Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Thomas 5 –Comment

5. Zero Point Pollution: Any development, even one with environmental mitigation measures, adds to zero point pollution.

Thomas 5 –Response

The comment is noted. No additional response is required.

Thomas 6 –Comment

6. Fire: Let us not forget that the developer acquired the vacant land from the Santa Monica Mountain Conservancy, which got it from the County, which acquired it after a massive fire in the early 1900's destroyed the houses in the are. Anyone who has lived in the area can remember other major fires that the wind drives through the hills. The winds in the area are fierce and the area is already a fire hazard most of the year. Allowing houses in such an area will only increase the risk of fire and make it that much harder for residents to evacuate if there is another fire – how many thousands of people can Canoga handle in an emergency?

Thomas 6 –Response

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Thomas 7 –Comment

7. Noise Dust and Traffic During Grading Operations: All vehicles have only one way to get to and from the site: Canoga Avenue. The proposed development will cause years of noise and dust – and you may remember the dust related health problems that followed the 1994 earthquake when dust rose from the very same hills. The dust from mass grading, even with water control during work hours, will rise when the frequent 20 to 50 mph winds blow at night or on weekends. The dust will settle on the houses downwind, causing health risks, not to mention dust in swimming pools, patios, barbecues and on windows. You simply cannot avoid this when you scrape off vegetation on a hill near the source of the Santa Ana winds.

Thomas 7 –Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Thomas 8 –Comment

8. Wildlife: The hills where the proposed development is located are home to mountain lions, coyotes, possums, birds, snakes and many other animals. The development will not only destroy valuable habitat, it will push at least some of the animals downhill where they will be a threat to small children and pets. It was just months ago that a mountain lion attacked a small child in the new Porter Ranch development.

Thomas 8 –Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

See Section 4.4.2 (CLPA 11 – Response) of this document regarding animal control.

Thomas 9 –Comment

9. Violation of General Plan: The General Plan for the City of Los Angeles has a conservation element that requires the city to "retain, to the extent feasible, the last remaining agricultural features of the city as part of the city's heritage and economy." Since this project falls within the "sphere of influence" of the city, its small lot concept does not mesh with either the city's General Plan or Chatsworth's rural nature. Most of the homes in the city immediately south of this project exceed ½ acre.

Thomas 9 –Response

See Section 4.4.1 (C ECHO 1 – Response) of this document.

Thomas 10 –Comment

10. Failure to Comply With County's Biological Resources Assessment: This project was excluded from a Biological Resources Assessment prepared for the County Regional Planning Department in November 2000. That study indicates this is a Sensitive Ecological Area (SEA) and recommends housing density not exceed one dwelling unit per 10-acre parcel.

Thomas 10 –Response

This comment appears to reference the updated 2000 Significant Ecological Area report to the County. See Section 4.4.1 (C ECHO 2 – Response) of this document.

Thomas 11 –Comment

11. Generalized Promises of Non-Specific Equestrian Preservation: The developer has promised it will create a Community of Facilities District (CFD) to provide funds to build new equestrian trails, but the proposal is too non-specific.

Thomas 11 –Response

See Section 4.4.1 (C ECHO 3 – Response) of this document.

Thomas 12 –Comment

12. No Plan for Horse Trails During Construction: The developer has promised to keep all equestrian trails open during the five-year construction period, but has not provided a detailed plan of how and when this will be accomplished.

Thomas 12 –Response

See Section 4.4.1 (C ECHO 4 – Response) of this document.

Thomas 13 –Comment

13. Time Needed to Develop Traffic Plan: The City of Los Angeles has not properly addressed traffic and equestrian concerns on Canoga Avenue south of the project. We need time to meet with the city to keep horses and riders safe.

Thomas 13 –Response

See Section 4.4.1 (C ECHO 4 – Response) of this document.

Thomas 14 –Comment

14. Why Perpetuate the Strip-Mallization [sic] of the Last Rural Community? As a law student, I had the privilege of studying comparative American and British Land Use Law at Oxford University. In the UK, land use law balances growth with what the British call "amenities," which can be anything from trees to a scenic vista. This concept is to build in away [sic] that keeps England looking like England. The concept is a socio-legal and political recognition that prohibiting certain types of growth or uses is as much of a land use planner's job as permitting development. The last century of urban spread and destruction of hillsides in LA County may have made sense back when there was abundant land for both rural and urban uses, but it is now a senseless perpetuation of why land use planners around the country regularly use the subdivisions and strip malls of Southern

California as a model of what modern land use planning should not look like. Here, the highest and best use of the land is not another sardine can of ugly, small lot tract houses in the middle of a chaparral biome, it is somewhere between preservation and a large-lot subdivision that blends-in and compliments existing uses in the area.

Thomas 14 –Response

The comment has been received and noted.

Thomas 15 –Comment

15. All Politics is [sic] Local – And Developers Don't Vote. We all know there is oil off the coast of Malibu, yet we have not allowed oil companies to sink offshore drilling rigs there. By the same token, we should not permit a developer from San Francisco to come to LA and destroy what little is left of a rural community in LA County. It is inconceivable to me that this project would fly in the City or in Marin, so why are we even considering it here? This is particularly true if the current developer merely plans to grade lot pads and sell the pads to other merchant builders, who are not part of the current approval process and may not keep promises made by the current developer. While your body does not consist of elected officials, those on the distribution list should bear in mind that multiple groups in Chatsworth, from horse owners to the residents in the Heritage area, are crystallizing into a cohesive block of single-issue voters over this development.

Thomas 15 –Response

The comment has been received and noted.

Thomas 16 –Comment

16. In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project. Any further consideration should be conditioned on:

- *A substantial reduction in the number of homes in the project with a large (1 to 3 acre) minimum lot size and zoning for horses;*
- *A more specific proposal for mitigation by the developer with a line item cost breakdown;*
- *Opportunity for public study of and comment on the developer's revised proposals;*
- *An independent study of environmental impact;*
- *All utilities buried underground;*
- *Special assessments on each house to cover usage of city sewers and other facilities;*
- *Requiring the developer to post completion and other surety bonds for all backbone infrastructure;*
- *Make the developer deposit cash collateral or a letter of credit to guaranty that any horse trails or other promised mitigation measures will be installed, regardless of the developer's future financial condition.*
- *Make the developer pay for a road connecting the development to Desoto (where the freeway is) instead of using the existing residential neighborhood as a route to the freeway;*
- *Require the developer to prepare a proposed greenspace plan that contains measures for integrating the development into the existing character of the hills and surrounding community;*
- *Require the developer to conduct seismic and engineering studies to determine if the supports for the 118 Freeway – where it passes over Canoga – are in jeopardy of collapse in a major earthquake. The road now turns to dirt under the freeway and is used by only a few cars and people on horses. If it is going to become a major artery for cars and pedestrians, those of us that live there need to know it is safe.*

- *Require the developer to attend mediation with affected citizen groups that have and are forming to challenge the development. Without this, it is very likely that litigation will be filed to address myriad problems, such as the nuisance conditions that will result from mass-grading and other operations.*

Thomas 16 –Response

Please see Section 4.5.5 (Belkin 3 – Response), Appendices E and O of this document.

As stated in Section 2.4.6 of the Draft EIR and this document, all existing overhead facilities would be replaced with an underground system as part of the project.

Construction of public infrastructure systems, including trails, will be guaranteed by posting of surety bonds.

See Appendix N of this document regarding alternate access to De Soto Avenue.

As stated in Section 4.3 of the Draft EIR, the project has been designed to avoid major riparian areas.

The SR-118 Canoga Avenue overpass was constructed by Caltrans per state seismic standards and requirements.

See Appendix O of this document regarding the applicant's involvement with community representatives.

4.5.123 Rebecca Thompson

January 7, 2002

Thompson 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

How it will impact our already diminishing environment.

Thompson 1 – Response

As discussed in the Draft EIR, the project would not result in significant impacts with implementation of recommended mitigation measures.

Thompson 2 – Comment

How it will further congest traffic in our neighborhood.

Thompson 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Thompson 3 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Thompson 3 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.124 Cindy Todd

January 9, 2002/ January 10, 2002

Todd 1 – Comment

I am very concerned with the building of the Deer Lake Ranch Project and the impact this will have on the already overloaded streets in Chatsworth.

I do not think the EIR sufficiently addressed the impact 484 homes will have on all the streets, not just the main boulevards of Topanga and Desoto.

Todd 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Todd 2 – Comment

I am rather upset that Presidio conducted a traffic study without having schools in session. This is not the first project that Presidio has done. Not to include the school traffic in their data was intentionally misleading- they know better.

Todd 2 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Todd 3 – Comment

Appropriate traffic studies need to be done not only on the Topanga and Desoto Boulevards, but also on Canoga Avenue, Owensmouth Avenue, and Variel Street. These studies need to be conducted while school is in session, and at peak drive times.

Todd 3 – Response

See Todd 1 and 2 – Responses of this document. As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Based on the LOS provided at the Canoga Avenue intersections, it is not anticipated that project-related trips would divert to local streets such as Variel Avenue or Independence Avenue. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

Todd 4 – Comment

I am very concerned about the Deer Lake Ranch Project to divert all run-off water through storm drains into Devils Canyon. Currently there are 7 homes that have run-off into the canyon, and at this time only 4 homes are occupied. The developer is purposing to add 484 additional homes, the pollutants that go along with all that, and think this will not have a significant, major impact on the canyon?! Please take a good look at the Porter Ranch project and see what devastation that kind of thing did to Limekiln Canyon. Due to the water runoff from the streets of the Porter Ranch project, a city park and an equestrian trail are now closed down, most likely forever.

The run-off from the new project should be diverted through storm drains hook up to the Brown's Canyon wash. Currently there are storm drains that take run off from lower Twin Lakes into the Browns Canyon wash. Why cannot this new development do the same.

Please, I am asking the County to review the Limekilm [sic] Canyon catastrophe caused by the Porter Ranch project and review the EIR with regards to this.

Todd 4 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Todd 5 – Comment

I am very concerned about the Deer Lake Ranch Project. I have attended several meetings and have repeatedly heard the current developer Presidio promise our equestrian community that trails and bridle paths will be open and safe during the entire construction period. I have also viewed projected maps of the finished track, and it has a trail/bridle path around it for equestrian access.

Because this developer has let us know that they intend to sell the project once the Tentative Map is approved. I would like to make sure this is also a condition of the final finished Map; that the equestrian access and bridle path, during and after the project is finished, stay with the Final Map plan no matter who is the owner.

How can we make sure this happens? Is this something that should be specifically addressed in the EIR?

Todd 5 – Response

See Appendix D of this document regarding implementation of mitigation measures.

4.5.125 Arthur Toga

January 7, 2002

Toga A 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Traffic congestion

Toga A 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Toga A 2 – Comment

School

Toga A 2 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Toga A 3 – Comment

Crime

Toga A 3 – Response

As stated in Section 4.9 of the Draft EIR, annual crime statistics indicate that the areas, including the project site, served by the Lost Hills/Malibu Station have a crime rate below the countywide average. Implementation of the project would serve to increase the existing funding mechanisms for any additional officers required to serve the project area. Impacts would not be significant with implementation of recommended mitigation measures. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Toga A 4 – Comment

'urbanization'

Toga A 4 – Response

It is unclear as to what the commenter is referring regarding urbanization. No additional response is required.

Toga A 5 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Toga A 5 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.126 Deborah R. Toga

January 7, 2002

Toga D 1 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Lack of basic services.

Toga D 1 – Response

As stated in the Draft EIR, all required services for the project would be available, and with implementation of recommended mitigation measures, no significant impacts would occur.

Toga D 2 – Comment

Destruction of open land.

Toga D 2 – Response

As stated in the Draft EIR, the project would not result in significant impacts with implementation of recommended mitigation measures.

Toga D 3 – Comment

Horse access.

Toga D 3 – Response

As stated in Section 2.4.3 of the Draft EIR, the project includes a proposed trail system that would loop the site, connecting to existing trails east, north, and west of the project site. Please see Section 2.4.7 of this document for additional discussion of this issue.

Toga D 4 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*

- *a more meaningful proposal for mitigation by the applicant: and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Toga D 4 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.127 Unrecognizable (21309 Candice Place)

January 7, 2002

4.5.128 Unrecognizable (11043 Eton Avenue)

January 7, 2002

No comment provided.

4.5.129 Unrecognizable (21401 Mayan Drive)

January 7, 2002

Unrecognizable 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

The impact of this development on the traffic pattern in the neighborhood.

Unrecognizable 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Unrecognizable 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project:*
- *a more meaningful proposal for mitigation by the applicant: and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Unrecognizable 2 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.130 Ana Urban

January 4, 2002/January 5, 2002/January 6, 2002

Urban A 1 – Comment

I am writing concerning the Deerlake Ranch development. I am specifically concerned that there be a "hotline" or someone to call if there is excessive noise, if there are traffic problems, trash problems, heat or dust problems, vandalism problems. Although the applicant has made statements with regard to things he will do to alleviate some of these issues, there is no accountability. Statements made for alleviation are vague and unsubstantiated. My community has long enjoyed a quiet and peaceful

existence with children riding bikes, families riding horses and pets everywhere. The construction of 400 homes will be devastating to our neighborhood in a variety of ways. Please require and demand that the applicant put into place a hotline or office that will respond and alleviate any problems caused by said construction within 24 hours.

Urban A 1 – Response

Please see Appendix E of this document for a full list of conditions required for the project.

Please see Section 4.4.2 (CLPA 2 – Response) of this document regarding the adequacy of the EIR.

Urban A 2 – Comment

I am writing to let you know that I have several concerns about the Deerlake Ranch Development. One of my greatest concerns is the amount of dust that already exists due to high winds in our area and how that amount will be increased by the construction of this huge project. I would like to make sure that the increase is still within legal and environmental guidelines and ask that the applicant be required to show honest impact reports in this regard. I hope this development will not be allowed to proceed if the amount of dust is considered intolerable. The winds in our area can be, and often are, volatile and the construction of 400 almost 500 homes will effect not only our homes but the two schools in our area whose facilities include a pre-school, elementary school, middle school and will possibly soon have high schools.

Urban A 2 – Response

As discussed in Section 4.2 of the Draft EIR, no significant dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Urban A 3 – Comment

I am writing concerning the Deerlake Ranch Development, specifically the increased heat in the area if construction proceeds. As you already know, Chatsworth is considered a fire zone and is extremely hot and dry during the summer months. We have indications that impact reports regarding increase in heat were not done accurately and would like to know, for a fact, that our homes will still be safe during and after the construction of this development. I would appreciate knowing that the applicant will be required to show that increased heat due to the incredible amount of pavement which will be necessary for this project is acceptable under the guidelines of and environmental impact report.

Urban A 3 – Response

Please see Section 4.2.7 (Development Issues 3 – Response) of this document.

Urban A 4 – Comment

The Deerlake Ranch project has presented many concerns for my husband and myself. Our first concern is the increase in traffic that the project would cause. We live just off of Canoga Boulevard and see a substantial increase in traffic flow when the two schools in the area, Sierra Canyon School and Chatsworth Hills Academy, have functions such as sports activities, annual fairs, and graduations to name a few. The parking for such events lines Chatsworth Avenue almost completely and fills the smaller residential streets. It is our understanding that these two schools whose facilities include preschools, elementary and middle schools, have possible plans for adding high schools to their facilities as well as making various other additions. Sierra Canyon is presently constructing athletic fields.

Has the applicant included in his reports, consideration for any traffic increase due to already scheduled construction being done during the same period of time he hopes to be in development? If this 500 home project were not enough to make traffic unbearable, how horrible will it be if there is already substantial construction in progress.

Urban A 4 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Urban A 5 – Comment

I would appreciate having the applicant show how many other construction sites are in the area during his proposed construction time.

Urban A 5 – Response

Section 3.0 of the Draft EIR discusses related projects within the project area.

Urban A 6 – Comment

Also, as a side note, apparently the applicant has done his traffic impact report in such a way that he implies that the people in our neighborhood never leave their homes. I am a wife and homemaker and I can assure you that I leave my home at least four times a day and return. Many times, because my children participate in sports activities at their school, because I volunteer at the school, because they were at two different schools and got out of school at different times, I left and leave my home more often than that. I don't believe there is any neighborhood where the residents, for the most part, do not leave their homes. Therefore, we should be included in a traffic impact report.

Urban A 6 - Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

4.5.131 Bill Urban

January 4, 2002

Urban B 1 – Comment

I am concerned about the above-referenced matter. The Deerlake Ranch development is an incredibly large project that will severely effect [sic] our community. It is essential that a "hot line" be put into place and that there be immediate response to all non-compliance with vague promises to control traffic, noise, air pollution, etc. There must be monetary penalties for all non-compliance with a directive that specifically outlines permissible noise levels, air pollution levels, machinery operation hours to name a few.

Please help us in our attempt to keep some normalcy in our community during what appears to be a project of huge proportions and incredible duration.

Urban B 1 – Response

Please see Appendix D of this document regarding implementation of mitigation measures.

Urban B 2 – Comment

I am writing concerning the Deerlake Ranch development. I am specifically concerned with the increased heat in our area due to the construction of a project that requires so much pavement. As you know, Chatsworth is already considered a fire zone and is extremely hot during the summer and extremely windy during the winter. The increase in heat is particularly alarming. Can anything be done to enforce strict guidelines for temperature control including not allowing the removal of trees that are essential for cool the area?

Urban B 2 – Response

Please see Section 4.2.7 (Development Issues 3 – Response) of this document.

4.5.132 Joanna Urthank

March 8, 2002

Urthank J 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Increased traffic on Canoga Ave.

Urthank J 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Urthank J 2 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Urthank J 2 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.133 Randy Urthank

April 8, 2002

Urthank 1 – Comment

As a property owner located at 10955 Canoga Ave., Chatsworth, I want to object to the Deerlake Ranch development in Chatsworth.

I am very concerned about the increased traffic this project will bring to the area, particularly on Canoga Ave. The streets in this area re already overloaded during peak hours. I don't believe the EIR provided by the developer accurately measures the traffic flow in the area, nor does it adequately provide for new roads to handle the increased amount of traffic this project will necessitate.

Additional concerns I have concerning this project are:

1. *Increased fire hazard to an already high fire-hazard area.*
2. *Increased response times for fire and health services because of inadequate roads.*
3. *The developer not paying enough for the infra structure [sic] costs to support a project of this size.*

I request that you do not approve this project. I think additional time is required for public study and evaluation. At the very least this project should be downsized from its present scope.

Urthank 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

4.5.134Joanna and Randy Urthank

January 8, 2002

Urthank J & R 1 - Comment

As a property owner located at 10955 Canoga Ave., Chatsworth, I want to object to the Deerlake Ranch development in Chatsworth.

I am very concerned about the increased traffic this project will bring to this area. The streets in this area are already overloaded during peak hours. I don't believe the EIR provided by the developer accurately measures the traffic flow in the area, nor does it adequately provide new reads to handle the increased amount of traffic that this project will necessitate.

Urthank J & R 1 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Urthank J & R 2 - Comment

Additional concerns I have concerning this project are:

Increased fire hazard to an already high fire-hazard area.

Urthank J & R 2 - Response

As stated in Section 4.8 of the Draft EIR, impacts to fire protection services would not be significant. Mitigation measures were recommended to ensure impacts would be further reduced. Further, all applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans would be fully enforced. No significant impacts would occur to fire protection services with implementation of the project.

Urthank J & R 3 - Comment

Increased response times for fire and health services because of inadequate roads.

Urthank J & R 3 - Response

As stated in Section 4.9 of the Draft EIR, emergency access to the project would be provided by the existing and proposed street system. Further, implementation of the project would improve emergency access to the existing Twin Lakes community. The project would be designed in accordance with Los Angeles Municipal Code requirements, including regulation of street widths, street lighting, and street signage.

Urthank J & R 4 - Comment

The developer not paying enough for infra structure [sic] costs to support the project of this size.

I request that you do not approve this project. I think additional time is required for public study and evaluation. At the very least this project should be downsized from its present scope.

Urthank J & R 4 - Response

All development fees are based on the requirements of the County of Los Angeles and City of Los Angeles (traffic). The comment is noted.

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue. See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

4.5.135 Evelyn Vadenois

March 8, 2002

Vadenois 1 –Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have continued the public hearing to April 10.

The proposed project is located close to my home, and I am particularly concerned about the following:

Heavy traffic, more than now.

Vadenois 1 –Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Vadenois 2 –Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you do not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the number of homes in the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *opportunity for public study of and comment on the applicant's revised proposals.*

Vadenois 2 –Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.136 Jeff, Judith and Olivia Vergel de Dios

March 28, 2002

Vergel de Dios 1 –Comment

We are the current residents of 21127 Celtic Street in Chatsworth and vehemently oppose the proposed Deerlake Development and, in particular, the use of Canoga Avenue for ingress and egress to it.

We moved into this beautiful neighborhood approximately two years ago along with Olivia, our then 2 year old daughter. We moved here because of the neighborhood – its mature landscape, the wide streets, its residents who are oriented toward a relaxed family lifestyle, and especially its safety for children to grow up in. However, we did not anticipate nor do we approve of any further construction of new homes or street expansion/diversions near the area which would no doubt adversely affect our lifestyle with the additional street traffic and additional commuters, and would ultimately undermine the safety of our great neighborhood.

Vergel de Dios 1 –Response

Public safety is discussed in Sections 4.8 and 4.9 of the Draft EIR. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Vergel de Dios 2 –Comment

Currently, with the two elementary schools situated in the immediate area – namely Sierra Canyon School and Chatsworth Hills Academy, Canoga Avenue and Chatsworth Street are already severely overloaded with daily commuters. Canoga is simply not able to handle the additional volume of

traffic that would come with the construction and completion of Deerlake. Therefore, we strongly oppose the use of Canoga Avenue in connection with the proposed development. We respectfully urge your assistance and support in protecting our interest in saving our established neighborhood. Thank you.

Vergel de Dios 2 –Response

The draft EIR evaluated traffic generation and distribution patterns associated with the proposed project. Please refer to Section 4.3.5 (Traffic – Topical Response) of this document.

4.5.137 Mark Watters

April 5, 2002/May 1, 2002

Attachments to this letter can be found in Appendix A.

Watters M 1 – Comment

The following is a letter which was sent to Presidio Chatsworth Partners, Ltd. From the Twin Lakes Property Owners regarding the community benefits proposed for the Twin Lakes Community in regards to the Deer Lake Ranch development project. Our letter outlines what we would like to see happen. We would like to request that all community conditions eventually agreed upon be placed in the conditional use permit and conditions of approval.

Watters M 1 – Response

The comment is noted. Please see Appendix E of this document for a complete list of the draft conditions of approval regarding community benefits.

Watters M 2 – Comment

Certain community benefits have been proposed to the Twin Lakes Property Owners Association, local equestrian organizations, and citizens of the city of Los Angeles who live south of the 118 Freeway by Presidio, the developer of the Deer Lake Ranch development project. The Twin Lakes community would like to know at what point the county will detail for us what they will and will not uphold and enforce. We feel that the wording of these conditions should be specific when they are submitted along with the project for Tentative Map approval. We are concerned that if these benefits are not specific and enforceable by the county in language at that time, they will be subject to exclusion by the time that it comes to the Final Map, and we as a community will have no input or control over what the final wording shall be. We are concerned that the audit of the La Vina project is not yet complete, and we feel that we should receive a full explanation of what transpired there. Whatever went wrong with that project, we would want to take great care not to repeat.

Watters M 2 – Response

Please see Appendix E of this document. The comment has been received and noted.

4.5.138 Vanessa Watters

January 1, 2002/January 11, 2002/January 23, 2002/April 5, 2002/June 19, 2002

Attachments to this letter can be found in Appendix A.

Watters V 1 – Comment

In Figure 4.71, included in the section discussing noise that would be generated by this development project, we see that there are 4 points at which the current noise level was monitored. All of these points are south of the single-lane bridge that currently separates the lower portion of Twin Lakes from the proposed development site. This study does not take into effect the 7 houses that currently exist north of the bridge, which are in closer proximity to the construction site. Four of these seven houses are currently occupied. I realize that this is a small amount of homes, but I would trust that

we are entitled to the same amount of mitigation regarding the noise level that everyone else would be in Twin Lakes. And further, I would assume that our noise level would be a lot greater due to our proximity to the building site. I feel that a study must be done to accommodate those of us who live north of the bridge.

Also, the mitigation measures for the Twin Lakes area should include some way to assure us of the developer's compliance with County of Los Angeles Noise Ordinance, Title 12. Section 12.08.440. We need a clearer definition of time limits on construction work, an emergency phone number to call to report infractions, and there should be penalties for non-compliance. We should be advised on how many pieces of machinery can be operating at once and make sure that they are required to use newer equipment with noise-shielding devices. The developer has a list in 4.7-2 of mitigations for the project lots, themselves, which is all well and good. I feel that this does not adequately address the concerns of the existing homes in Twin Lakes. Most of the houses in Twin Lakes are older homes, with exterior walls and windows not at state-of the-art level for deflecting sound, and many do not have central air conditioning. Subjectively, noise from construction, no matter how you measure it, is a lot different than roadway noise!

I feel that the EIR is incomplete in this regard and needs for further study.

Watters V 1 – Response

The noise monitoring locations shown in Figure 4.7.1 of the Draft EIR were chosen due the proximity to SR-118. Noise monitoring was completed to determine the current noise environment of site. Homes located north of the bridge would be closer to the proposed construction activities associated with the project, but would not reflect the most sensitive receptors for current site conditions.

As stated in Section 4.7.2 of the Draft EIR, the combination of terrain shielding and compliance with County ordinances would not result in significant noise impacts on the adjacent Twin Lakes Community. In addition, subsequent to distribution of the Draft EIR, additional mitigation measures regarding grading and construction activities have been recommended that would further mitigate impacts, Appendix E of this document.

Watters V 2 – Comment

I am concerned about the removal of 65 oak trees for the purpose of the Deerlack [sic] Ranch Development Project. I understand that 130 mitigation oak trees will be required of the subdivider [sic], according to county regulation – but there are a couple of points that bother me about these mitigation trees.

First of all – they are very small. Oak trees are slow-growing trees, achieving growth of only 1 to 2 feet over the course of a couple of years. I also know that larger trees often do not transplant as well as smaller trees, and that the 15-gallon size is certainly the most cost-effective for the developer. I received information from a local nursery that contacted their supplier for me that lists 15-gallon oaks as costing approximately $33.00 each wholesale. The next size up is the 24-gallon size, which costs about $113.00 a tree.

Watters V 2 – Response

As stated in Section 4.3 of the Draft EIR, 65 existing oak trees would require removal in order to construct the project. However, the revised project (388 units) would preserve an additional four oak trees (for a total of 61). Appendix F.3 of the Draft EIR outlined the protection measures for other oak trees on the project site. None of these oak trees are of heritage status. Impacts would be reduced to less than significant with implementation of mitigation measures, which would be implemented under the review and approval of the County. See Appendices F.3 and E of this document for additional discussion of this issue.

Watters V 3 – Comment

In addition, the Santa Monica Mountains Conservancy, in a letter dated July 26,2000, found in Volume II of the EIR, under comments on the N.O.P, suggested this mitigation measure: to plant a staggered line of irrigated coastal live oak along: 1) the northern boundary of the Deerlake Ranch portion of the project, adjacent to the 10-ft. wide strip that will be dedicated to the Conservancy, and 2) the entire western boundary of the Deerlake Ranch portion of the project.

Watters 3 – Response

The comment is noted. However, the mitigation measure suggested by SMMC's letter is not included as part of the project. The applicant has secured the rights to a 160-acre biological mitigation parcel that serves to mitigate biological impacts on the site. Please see Appendix F.1 of this document for additional discussion of this issue.

Watters V 4 – Comment

It seems to me that since this is an environmentally sensitive area, that has been enjoyed in its natural state for many years, more appropriate measures of preservation should be considered, as opposed to the standard 2 to 1 ratio of 15-gallon cans. I feel that these borders of oaks should be planted, and that the size of the trees removed should be considered-for example, if the height of the tree to be removed exceeds 20 feet, a larger size of mitigation tree should be used.

Watters V 4 – Response

See Watters V 2 – Response of this document.

Watters V 5 – Comment

Second- in the Oak Tree Conditions of Approval, item #17, it is stated that the mitigation trees may be planted either on-site or at an off-site location to be approved by the County Forester. Where would these trees be planted, if not on the site? Does this mean that "our" trees could be used to mitigate an entirely different area of the county? It also very much disturbs me that instead of trees-the developer might instead just make a contribution to the county's Oak Forest Special Fund – with all due respect, how on earth do we know that we will see any of that money – and in the interim, we will have lost 65 oak trees!!! This not only disturbs me- it outrages me. I am angered that any mitigation such as this could be simply paid off with the right amount of dollars.

I must point out that if the County has any integrity at all in this matter, the planning commission must make the developer mitigate the loss of these oaks in a greater rather than lesser fashion.

Watters V 5 – Response

As stated in mitigation measure 4.3-10 of the Draft EIR, oak trees shall be planted in appropriate habitat areas on the project site and/or within the mitigation parcel as approved by the County Forrester and Fire Warden. Priority is usually given to onsite planting. Implementation of mitigation for oak tree impacts would result in less than significant impacts. Compliance with oak tree mitigation will be the responsibility of the County of Los Angeles. See Appendices F.1 and F.3 of this document for additional discussion of this issue.

The commenter's objection to removal of oak trees is noted and will be forwarded to the decision makers.

Watters V 6 – Comment

Presidio Developers have presented the Twin Lakes Property Owners Association with a set of supplemental conditions of approval for the Deerlake Ranch Development Project. These conditions, as promised to the association, are detailed in the attached pages in a draft form.

I would like to request that these conditions, in their final form, be included in the conditions of approval for the Deerlake Ranch project. The Twin Lakes Property Owners Association needs to be

assured of the county's support, protection, and enforcement of any agreement that the association enters into with the Presidio Group.

Watters V 6 – Response

Conditions of Approval for the project are included in Appendix E of this document.

Watters V 7 – Comment

Just a personal note to say thank you on behalf of the Twin Lakes Property Owners Association for attending our meeting January 8. We very much appreciated your giving of your valuable time to explain the EIR process to us. Your presentation was enlightening and informative.

It was a pleasure to meet you in person!

Watters V 7 – Response

The comment has been received and noted. No additional response is needed.

Watters V 8 – Comment

This is the most current set of Deerlake Ranch Supplemental Conditions, with community responses underlined, and strike-throughs indicating the original version, so that you may compare the two. We feel that these conditions are still a work-in-progress, and we need more time in which to decide upon a mutually agreeable set of conditions with the developer.

We request these conditions be attached to the Conditions of Approval.

Watters V 8 – Response

The commenter's edits to the conditions are noted. See Appendix E of this document for a full list of Conditions of Approval.

Watters V 9 – Comment

Since the January 23 initial hearing regarding the Deerlake Ranch Development Project, we have seen very little action on the part of the developer to respond to the community and the commissioners' questions. The effect on the environment and traffic and services are of great concern to me, and there seems to be no change in the developer's stance on these issues, despite repeated comments by the community:

The developer still plans to dump the storm drain water into Devil's Canyon. The filtration system that they propose still will dump a significant amount of untreated water into the creekbed. The developer maintains that the county will not let them pump the storm water into Brown's Canyon. We have not received an answer from the county as to whether or not this is true, and if so, why. Devil's Canyon has a very delicate eco-system that is untouched, and it makes no sense to destroy yet another pristine waterway. I am concerned that the long-term effectiveness of such a filtration system is not yet known.

Watters V 9 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Watters V 10 – Comment

The developer considers the small lot sizes prevalent in Twin Lakes to be a basis for determining the average lot size for the project. In reality, many of the residents of Twin Lakes occupy more than one lot. Also, it has been repeatedly pointed out that much larger lots are the standard in most of Chatsworth, and in adjacent communities. In addition, there is a 2000 study that has not been adopted as of yet regarding the designation of the Deer Lake Highlands area as a Significant Ecological Area (SEA). It seems to me that the potential that this study could be adopted has to be considered in determining how many houses can be built in Deerlake Ranch. In an SEA, there can be

only 1 house per 10 acres. The very nature of Chatsworth will be compromised, if the developer is allowed to build a project of such density. I feel that the alternative presented in the DEIR of 171 homes, minimum lot size 20,000 square feet, is a project much more in keeping with our existing rural community. Equestrian properties must be included in this project, especially up at the top and at the front.

Watters V 10 – Response

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

See Section 4.4.1 (C ECHO 2 – Response) of this document regarding SEA boundary recommendations.

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

Watters V 11 – Comment

This area simply cannot accommodate 484 homes for Deerlake Ranch, in addition to all the other projects under consideration or in process, such as a proposed condominium project and the build-out of Porter Ranch. Our main thoroughfares are already maddeningly over-crowded, our schools and libraries are over-taxed, and we have inadequate sheriff and fire protection as it is. The bottom line is that this is just too many houses, period. In this case, the best mitigation would be a reduction in density of significant proportions. The county General Plan itself states that new development cannot add to problems already in existence. I believe that these problems have been inadequately addressed, and the subject of density needs much further study.

Watters V 11 – Response

Please see Watters V 10 – Response) of this document. The Draft EIR adequately described the impacts associated with the project.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

As stated in Section 4.11 of the Draft EIR, library impacts would be less than significant with implementation of recommended mitigation measures. See Section 4.1.2 (City Council 6 – Response) of this document regarding additional discussion of mitigation of impacts on libraries.

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Watters V 12 – Comment

On Monday, April 1, members of the Chatsworth community and representatives of Presidio Chatsworth Partners, Ltd. met downtown with Conal McNamara, Bob Haueter, and Patti Friedman from Supervisor Antonovich's office to discuss the Deerlake Ranch development project. This was a valuable meeting for our community, and many questions were raised that still need answers. The county has promised to get us those answers and proposed that we have subsequent meetings to further discuss the many issues that confront us in regards to this project. I feel that as a community, we need more time for these meetings to take place, and that the Deerlake Ranch project should not be approved until the questions and concerns raised on April 1 are answered.

Watters V 12 – Response

Please see Appendix O of this document.

Watters V 13 – Comment

In addition, certain community benefits have been promised to the Twin Lakes community, local equestrian organizations, and citizens of the city of Los Angeles who live south of the 118 Freeway. Speaking for the Twin Lakes community, we have detailed to Presidio what we would like to see happen, but we have not received their response as of this date. We need these conditions to be specific, and we need to know that they are enforceable by the county and how they will be enforced. We are concerned that the audit of the La Vina project is not yet complete. Whatever went wrong with that project, we would take great care not to repeat. We need more time for adequate discussion of these proposed benefits, and we need a response from the county regarding ability to protect the community's rights in this matter. We also need to be assured that these conditions will be included in the conditional use permit and conditions of approval.

Watters V 13 – Response

Please see Appendix E of this document. Please see Section 1.1 of this document regarding the comment period for the Draft EIR.

Watters V 14 – Comment

OTHER COMMUNITY QUESTIONS:

PROCEDURE

When will there be an opportunity for the community to hear the responses of the developer to the commissioners' questions posed at the public hearings and if there is no such opportunity – why not?

Watters V 14 – Response

See Section 1.1 of this document

Watters V 15 – Comment

How will the recent Supreme Court ruling upholding the government's power to impose a temporary ban on development without compensating property owners if there are outstanding questions regarding the feasibility of the development affect the decision on this project?

Watters V 15 – Response

This is out of the scope of the EIR. No additional response is required.

Watters V 16 – Comment

Why is Porter Ranch not used as a related project in the tables in the Draft EIR?

Watters V 16 – Response

Porter Ranch was included in Table 3.1 (List of Related Projects) in the Draft EIR.

Watters V 17 – Comment

GENERAL PLAN AND SEA STATUS

Will the county wait to make a decision on this development until the update of the General Plan is completed?

Watters V 17 – Response

The County's decision on the project is not dependent on the General Plan update. A final decision on the updated general plan is still more than a year away.

Watters V 18 – Comment

The County General Plan summary calls for caution regarding development that would overly stress services that are already stressed. Quote: "Discourage the development of existing substandard parcels when it is determined that such development individually or in combination with adjacent

existing and/or proposed development, will result in overburdening of existing and/or planned public services and facilities" (Page LU-3, Land Use Section) How is this statement taken into consideration?

Watters V 18 – Response

The project includes improvements and mitigation that would not result in significant impacts to area services.

Watters V 19 – Comment

Will the county wait to make a decision on this development until the new SEA study is complete? It seems that this is critical, since the SEA recommends only 1 house per 10 acres.

Watters V 19 – Response

The County's decision of the project is not dependent on completion of the SEA study. See Section 4.4.1 (C ECHO 2 – Response) of this document regarding SEA boundary recommendations. The County's policies do not prevent development within an SEA.

Watters V 20 – Comment

COORDINATION BETWEEN THE CITY AND COUNTY

Why is there no coordination of the City and County General Plans?

Watters V 20 – Response

This is out of the scope of the EIR. No additional response is required.

Watters V 21 – Comment

Greig Smith from Hal Bernson's office stated that the City would require more in traffic mitigation than a contribution to ATSAC. What more will they require, and how will it be implemented? How will the City and the County coordinate to resolve the traffic issue?

Watters V 21 – Response

Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Watters V 22 – Comment

EIR QUESTIONS

How are mitigation fees utilized - are they earmarked for the area where the development is being put in? Such as in the case of the removal of the oak trees - will these be replanted on the development - or will the developer merely be required to make a contribution to the Oak Tree Fund?

Watters V 22 – Response

See Appendices F.3 and E of this document for additional discussion of this issue.

Watters V 23 – Comment

No animal control issues are addressed in the Draft EIR - why not?

Watters V 23 – Response

See Section 4.4.2 (CLPA 11 – Response) of this document.

Watters V 24 – Comment

Why is Porter Ranch not used as a related project in the tables in the Draft EIR?

Watters V 24 – Response

Porter Ranch is included as a related project in the Draft EIR. (See Table 3.1 of the Draft EIR).See Watters V 16 – Response of this document.

Watters V 25 – Comment

CONSTRUCTION ISSUES

What is the risk of valley fever when the grading goes on for 2 - 3 years?

Watters V 25 – Response

Valley fever is caused by *Coccidioides immitis*, a fungus that grows naturally in soil in the southwestern United States. Valley fever is spread through the air due to land disturbing activities such as construction, natural disasters, or wind. Airborne dust associated with landslides triggered by the Northridge earthquake resulted in infections in Ventura County. Agricultural and construction workers are at an increased risk for the disease. However, dust control is recommended as the primary measure to reduce risk of exposure. [18]

As stated in Section 4.2 of the Draft EIR, with implementation of dust control and mitigation measures, impacts from dust would not be significant. In addition, planting of grass or paving roads in highly populated areas decrease the amount of airborne dust and lower the risk for Valley Fever. [19] Further, the project includes measures to mitigate impacts from landslides, which would further reduce the risk. Therefore, implementation of the project would reduce the risk for Valley Fever within the project area.

Watters V 26 – Comment

How will dust be controlled when the Santa Ana's are blowing at 60+miles an hour? Can we request 24-hour surveillance?

Watters V 26 – Response

Please see Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document.

Watters V 27 – Comment

How are the conditions pertaining to construction enforced? Will the county support what we are asking for?

Watters V 27 – Response

Please refer to Appendices D and E of this document.

Watters V 28 – Comment

Will new easements have to be created for the new access to vacant land that now has access to Mayan Drive?

Watters V 28 – Response

No new easements would have to be created and all existing easements to Mayan Drive would remain. The westerly end of Mayan Drive would be connected to the proposed public street identified as "A" Street (see Appendix C.1 of this document).

Watters V 29 – Comment

PROTECTIVE SERVICES

What will be the county's commitment to the Sheriff's storefront station? The Sheriff's Department states they do not have the manpower to staff it.

Watters V 29 – Response

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

[18] www.cdc.gov.
[19] Ibid.

Watters V 30 – Comment

LAPD states that its "Mutual Aid" policy with the Sheriff's Department is in cooperation with riots, fires, etc. but not for calls such as domestic violence. How will the community be protected with the closest Sheriff's Station in Lost Hills?

Watters V 30 – Response

See Watters V 29 – Response of this document.

Watters V 31 – Comment

COMMUNITY BENEFITS

Understanding that the County wants to see sewers installed in Twin Lakes, will the County require Presidio to pay condemnation costs that may be incurred in regards to the installation - or will the county pay the cost? We are in the process of gathering information as to the approval or disapproval of the Twin Lakes community of the proposed installation?

Watters V 31 – Response

See Appendix E of this document.

Watters V 32 – Comment

We are concerned that we have submitted responses to the developer's summary of community benefits, and we have no idea whether or not these benefits are enforceable. Many of the items say "subject to approval" of various county agencies. If this approval is not guaranteed before the Tentative Map is approved - how are we protected? Even if the developer pays for the improvement - what is the guarantee that it will be done - if we don't know the extent of the county's commitment?

Watters V 32 – Response

See Section 4.4.3 (ETI 25 – Response) of this document regarding enforcement of mitigation measures and conditions of approval.

Watters V 33 – Comment

Further, in their last letter to the Twin Lakes Property Owners Association, Presidio stated that they were concerned about promising conditions that could not be complied with - so why would it be premature to ask the county to give us answers as to what we can realistically ask for - so that we know that what we agree upon with Presidio can be complied with?

Watters V 33 – Response

See Section 4.4.3 (ETI 25 – Response) of this document regarding enforcement of mitigation measures and conditions of approval.

Watters V 34 – Comment

We feel that there is no point in responding to Presidio until we have the answers. If we submit a letter to Regional Planning with our requests, and our requests to include the community benefits in the Conditions of Approval and Conditional Use Permit, will they be considered, albeit they may be different from the list that Presidio will submit?

Watters V 34 – Response

See Appendices D and E of this document for the draft conditions of approval..

Watters V 35 – Comment

How will the proposed community benefits be enforced? If county agency approval is needed, even if the developer is paying for an improvement -when will it be given? If these conditions are not in their final form in the Tentative Map - if the wording is not agreed upon and considered by the county to be enforceable - how will the community be protected when the Final Map is drawn?

Watters V 35 – Response

See Section 4.4.3 (ETI 25 – Response) of this document regarding enforcement of mitigation measures and conditions of approval.

Watters V 36 – Comment

Will the results of the La Vina audit be made public?

Watters V 36 – Response

This is out of the scope of this EIR. No additional response is required.

Watters V 37 – Comment

At the April 1 meeting downtown, Pike Oliver of Presidio made the comment that the reason some things happened the way they did in La Vina was because on any "offsite" improvements, other agencies (county, we are assuming) were involved. How can community conditions be drawn up between the developer and the community if this issue cannot be resolved before approval to the project is given?

Watters V 37 – Response

See Section 4.4.3 (ETI 25 – Response) of this document regarding enforcement of mitigation measures and conditions of approval.

Watters V 38 – Comment

OTHER SUBMITTED QUESTIONS

1) Is there a possibility that the ramp, lane and signalization changes for the Topanga / Mayan / 118 intersections proposed by the applicant will not be approved by CALTRANS? If any such possibility exists, approval of the project should be deferred until this uncertainty is completely resolved.

Watters V 38 – Response

See Section 4.3.2 of this document for the proposed improvements to this intersection.

Watters V 39 – Comment

2) Given that neither the applicant nor the eventual builder(s) can control the activities of unrelated construction suppliers, how will the safety of schoolchildren on Canoga Avenue be assured during years of construction if material deliveries and site workers use Canoga for access to the project?

Watters V 39 – Response

See Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document.

Watters V 40 – Comment

3) Why is the applicant being allowed to replace mature native oak trees with minimum-sized saplings rather than with the largest, most mature oaks available?

Watters V 40 – Response

See Section 4.2.1 (Topical Responses) andAppendices F.3 and E of this document for additional discussion of this issue.

Watters V 41 – Comment

4) Why has the applicant not prepared traffic projections including the fully-built-out adjacent Porter Ranch project?

Watters V 41 – Response

The Porter Ranch related project in the City of Los Angeles as referenced by the commenter is shown on Table 4.12.3 in the Draft EIR. It is also noted on the table that LADOT required that the traffic

analysis include half the Porter Ranch related traffic in the 2005 traffic study horizon year. This assumption was also approved by the County's Traffic and Lighting Division. The inclusion of half of the Porter Ranch traffic provides for a highly conservative analysis of traffic conditions in 2005 as it is unlikely that the Porter Ranch project will be 50 percent complete by 2005.

Watters V 42 – Comment

5) Why has the applicant not complied with the SCAG requirement to show project impacts under SCAG's 5% annual population growth rate assumption?

Watters V 42 – Response

SCAG has determined that the project is not regionally significant. See Section 4.3.4 of this document.

Watters V 43 – Comment

6) Why has the applicant's draft EIR not complied with the CALTRANS requirement to project traffic impacts through the year 2020?

Watters V 43 – Response

The traffic analysis was completed per the requirements of the LACDWP, LADOT, and Caltrans. As requested by Caltrans and required by LACDWP, the applicant will pay its fair share for long-term (year 2020) improvements at the SR-118/Topanga Canyon Boulevard interchange.

Watters V 44 – Comment

7) Why has the applicant been allowed to assume zero net cut / fill grading when significant soil loss from wind-blown dust is virtually certain in our arid, windy climate?

Watters V 44 – Response

With implementation of recommended mitigation measures, no significant soil loss would occur.

Watters V 45 – Comment

8) The applicant told the Commission on April 10 that they had put in an extended effort on the project redesign but told the community just a few days prior that they would not reduce the density or provide for horsekeeping. Which of the two audiences were they misleading?

Watters V 45 – Response

This comment has been noted. No additional response is required and the project design recommended by the Planning Commission is discussed in Section 2.4 of this document.

Watters V 46 – Comment

9) A commissioner commented on April 10 that a comprehensive development was preferableto[sic] haphazard individual building on the roughly 600 existing lots. Doesn't the fire code preclude building more than 150 homes in the area unless suitable bridges are constructed to provide additional access? If it does, 600 - or even 200 - individual building permits could notr[sic] be issued for this area.

Watters V 46 – Response

The development of the existing 624 Certificate of Compliance lots is described in Alternative No. 2 included in the Additional Environmental Information Document (see Appendix C of this document). Two means of access were provided including two bridges.

Watters V 47 – Comment

Why should Regional Planning Commission give more weight to a 50 year old General Plan that is hopelessly out of date, than a new, albeit proposed, SEA study that proposes one home on 10 acres to protect the environment? (partial duplicate) How can community equestrian trails be protected if nearby property owners must give up property rights to allow access by horses? Developer must be required to ensure all legal access entitlements are granted before dirt is graded or cleared. As

developer said, bonds only protect the projects owned land; need condition to protect adjacent trails necessitated due to this development.

Watters V 47 – Response

The General Plan is a legal document by which the County evaluates land uses. Please refer to 4.4.1 (C ECHO 2 – Response). As stated in Section 2.4.3 of the Draft EIR, the project includes a trail system that would loop the site, connecting to existing trails east, north, and west of the project site. See also Section 4.4.1 (C ECHO 3 & 4 – Responses) of this document regarding trails.

Watters V 48 – Comment

What progress has developer made in securing the required trail easements since January 2002? What progress is expected during next three months?

Watters V 48 – Response

It is unclear as to what the commenter is referring. All trails included in the project would be located within the project site and dedicated to the County. No acquisition of trail easements outside the project boundary is proposed.

Watters V 49 – Comment

Given that the Stein project at Topanga and Chatsworth just obtained a legal ruling that an 11,000 square foot lot is too small for the Chatsworth Porter Ranch general plan, how can you justify a 6000 square foot lot here, based on 98 homes in Twin Lakes alone? You must consider all of Chatsworth, and its General Plan.

Watters V 49 – Response

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Watters V 50 – Comment

If the conservation strip around the property is not respected, a) is that legal given the existing documents? b) if the conservation strip is broken, will all the related effects of development of the 12,800 acres of County land, the Ventura County land that may access through here, and the development of Porter Ranch be considered?

Watters V 50 – Response

See Section 4.4.5 (SSMP 11 – Response) and Appendix M of this document.

Watters V 51 – Comment

What additional infrastructure improvements are needed for larger bridges, sewers, storm water, urban pollution, schools, police, library, etc.?

Watters V 51 – Response

Improvements and mitigation for the above issues are discussed in the Draft EIR. Please also see Section 2.0 and Appendices D and E of this document.

Watters V 52 – Comment

How will Canoga Avenue and the residential neighborhood south of the 118 be affected? What additional street improvements can be made on Chatsworth street to accommodate [sic] 24,000 more homes (or more, if 6000 square foot lots are continued) that access their homes through this residential area?

Watters V 52 – Response

Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Watters V 53 – Comment

What wildlife corridor and/or rare plant preservation is possible with this type of development?

Watters V 53 – Response

See Section 4.2.1 (Topical Response) of this document regarding wildlife corridors. See Section 4.2.1 (Topical Response) and Appendix F.8 of this document regarding mitigation for the lily.

Watters V 54 – Comment

Has the Regional Planning Commission considered the long term effect of allowing 6000 square foot lots? A lot this small, unavoidably will look like an even more dense Porter Ranch development that we are trying to avoid. A lot this size is incompatible with the existing community, the small Twin Lakes ares [sic] should not set the precedent for 12,800 acres. If this is approved, the next development and the next will justify tiny lots based on this project.

Watters V 54 – Response

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Watters V 55 – Comment

Will the community be informed of additional developer proposals and have an opportunity to comment on them, after review for a period of at least a few days (not minutes or hours), as Patti Friedman of the Supervisors office has informed us will be the case? When will we receive anything? Nothing of substance has been received since the initial January hearing.

Watters V 55 – Response

See Section 1.1 and Section 4.5.5 (Belkin L 3 – Response) of this document regarding review periods.

Watters V 56 – Comment

We would ask that all community comments raised in the Supplemental Conditions submitted by the developer, as modified by the community, be addressed for our further review and comments.

Watters V 56 – Response

See Appendix E of this document for the draft Conditions of Approval..

Watters V 57 – Comment

1) I have been told the developer submitted comments/revisions prior to the January, 2002 meeting to the Regional Planning Commission, can those documents be made available to the public by posting them on a website that is publicly available, driving downtown is difficult?

Watters V 57 – Response

Documents regarding the project are available at www.deerlakeranch.com.

Watters V 58 – Comment

2) Can documents submitted by developer prior to the April 10 hearing be made available to the public by posting them on a website that is publicly available?

Watters V 58 – Response

See Watters V 57 – Response of this document.

Watters V 59 – Comment

3) Will the oak tree information in the EIR be updated for the parcel bought later by the developer? (I tried to find a total number of trees destroyed in the EIR, but the later-acquired parcel was not counted apparently)

Watters V 59 – Response

As stated in Section 4.3 of the Draft EIR, 65 existing oak trees would require removal in order to construct the project. However, the revised project (388 units) would preserve an additional four oak trees (for a total of 61). Oak trees were counted in accordance with the County's Oak Tree Ordinance. Appendix F.3 of the Draft EIR outlined the protection measures for other oak trees on the project site. None of these oak trees are of heritage status. Impacts would be reduced to less than significant with implementation of mitigation measures, which would be implemented under the review and approval of the County. See Appendices F.3 and E of this document for additional discussion of this issue.

Watters V 60 – Comment

4) Can the new County proposed rules on oak tree (and sycamore and California walnut, that require the replacement of destroyed trees with trees with equal total trunk diameter) be applied to this project?

Watters V 60 – Response

The project will comply with all County ordinances.

Watters V 61 – Comment

5) Can the County focus on developing a new general plan for this area, and integrate that plan with the SEA studies that are being prepared?

Watters V 61 – Response

This is out of the scope of this EIR. No additional response is required. The County is in the process of updating it's general plan.

Watters V 62 – Comment

6) When can the new County general plan for this area be available?

Watters V 62 – Response

This is out of the scope of this EIR. No additional response is required. The updated general plan is not likely to be adopted by the Board of Supervisors until 2005.

Watters V 63 – Comment

7) What is the track record of applicant for completing grading on similar-sized projects in a three month period, is this realistic?

Watters V 63 – Response

This is out of the scope of this EIR. No additional response is required.

Watters V 64 – Comment

8) Can documents submitted by developer for future meetings be made available to the public?

Watters V 64 – Response

See Sections 1.1 and 4.5.5 (Belkin L 3 – Response), and Appendix A of this document regarding distribution of environmental documents for the project.

Watters V 65 – Comment

9) Can the EIR be posted on the internet, in accordance with current CEQA recommendations?

Watters V 65 – Response

The County does not currently have facilities to place the EIR on the internet, however, the applicant has placed information on the project on the internet. See Watters V 57 and 56 – Responses of this document.

Watters V 66 – Comment

10) What can County do to enforce no Left signs that are proposed, they are not enforced in the City and vehicular traffic ignores them frequently.

Watters V 66 – Response

This comment is out of the scope of the EIR. Enforcement of traffic regulations is provided by local police services.

Watters V 67 – Comment

11) What local streets that go from north to south can be opened up for through traffic to facilitate through traffic and provide actual mitigation for traffic problems? Can this be done before approvals are put in for Deerlake, since proposed traffic mitigations are virtually useless because there is nowhere for existing traffic volume south of the study area to go due to excessive volume?

11a. Mason Avenue south of Lassen

11b. Canoga Avenue south of Lassen

11c. DeSoto Avenue to go through south from Porter Ranch

Watters V 67 – Response

See Sections 3.3.5 and 4.2.6, and Appendices D and K for project mitigation. However, this comment will be forwarded to the decision makers. Also see Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the distribution of project traffic to the local street system.

Watters V 68 – Comment

12) Will the project's approval be delayed until it is known if Caltrans approves freeway offramp/onramp and road redesigns? What happens if project is approved, and roadway changes are not approved?

Watters V 68 – Response

The design and construction of the improvements within the state right-of-way will be processed through the standard Caltrans Encroachment Permit procedure and will be guaranteed by a surety bond. In addition, implementation of mitigation measures and assurance of completion is tied to various aspect of development of the project site and is outlined in the Mitigation Monitoring Program (see Appendix D of this document).

Watters V 69 – Comment

13) Why is the ATSAC system a mitigation to the traffic caused by Deerlake, if the improvements expected from this system (7% improvement) already offset by the growth expected before project is implemented?

Watters V 69 – Response

The amount of ATSAC mitigation fees (including impacted intersections) was determined by the LADOT based on its evaluation of the project's pro rata impact on the ATSAC system.

Watters V 70 – Comment

14) Why are lane increases, which would represent actual mitigation, not considered on intersection streets, such as Topanga Canyon and Desoto?

Watters V 70 – Response

See Section 4.3.6 (Traffic 1 and 2 – Responses) of this document.

Watters V 71 – Comment

15) What mitigations on Chatsworth Street will be implemented, the information provided has been conflicting?

15a. What mitigations at Chatsworth/Desoto?

15b. What mitigations at Chatsworth/Variel?

15c. What mitigations at Chatsworth/Canoga?

15d. What mitigations at Chatsworth/Owensmouth (look at the backup in the morning at this intersection, you will see it should be considered and not eliminated as per the draft EIR).

Watters V 71 – Response

See Section 3.3.5 and Appendices D and K of this document regarding mitigation for Chatsworth Street/De Soto Avenue and Chatsworth Street/Canoga Avenue. No mitigation is required for the intersections of Chatsworth Street/Variel Avenue or Chatsworth Street/Owensmouth Avenue, which were not required to be analyzed by LADOT because of their proximity to other major intersections, which were analyzed.

Watters V 72 – Comment

16) Local residents do not want flashing lights 24/7 at Rinaldi/Canoga intersections, has this been considered, and what present proposal does the County have?

Watters V 72 – Response

The proposed signals at this intersection will be self-actuated by pedestrians and/or equestrians, not continuously flashing. The intersection is within the City of Los Angeles and therefore the signal will be under the jurisdiction of LADOT.

Watters V 73 – Comment

17) Will the County's solution to the signal at Rinaldi/Canoga be respected by the City?

Watters V 73 – Response

See Watters V 72 – Response.

Watters V 74 – Comment

18) The increased traffic coming out of Canoga will increase the left turn lane burden from Lassen to southbound Topanga Canyon (since Canoga does not go through). What mitigations will occur here, there is a huge backup of traffic in the morning on Lassen turning left to Topanga?

Watters V 74 – Response

The intersections of Canoga Avenue/Lassen Street and Lassen Street/Topanga Canyon Boulevard are outside of the study area requested by the City of Los Angeles, because their locations are too far from the project to determine any quantifiable project impact. Therefore, impacts were not analyzed and no mitigation is required.

Watters V 75 – Comment

19) The increased traffic coming out of Canoga will increase the left turn lane burden from Lassen to southbound Owensmouth (since Canoga does not go through). What mitigations will occur here, there is a huge backup of traffic in the morning on Lassen turning left to Owensmouth?

Watters V 75 – Response

See Watters V 74 – Response.

Watters V 76 – Comment

20) What mitigations will occur on DeSoto to improve traffic on this street at

(20a) Chatsworth and

(20b) Devonshire intersections, that operate at F LOS before Deerlake?

Watters V 76 – Response

See Section 3.3.5 of this document regarding mitigation of impacts at the De Soto Avenue and Chatsworth Street intersection. As shown on revised Table 4.12.5 (in Section 3.0 of this document), impacts to De Soto Avenue and Devonshire Street would not be significant and would not require mitigation.

Watters V 77 – Comment

21) What mitigations will occur on Topanga Canyon to improve traffic on this street at

(21a) Devonshire

(21b) Lassen

(21c) Marilla

(21d) Plummer,

that backup regularly far beyond "F" levels, which therefore do not allow additional traffic to make it through Topanga Canyon?

Watters V 77 – Response

As shown on revised Table 4.12.5 (in Section 3.0 of this document), impacts to Topanga Canyon Boulevard and Devonshire Street would not be significant and would not require mitigation. The other intersections mentioned by the commenter are outside of the study area requested by the City of Los Angeles. Therefore, impacts were not analyzed and no mitigation is required.

Watters V 78 – Comment

22) Has the decision-maker read the Proposed SEAs, even the Executive Summary?

Watters V 78 – Response

This comment is beyond the scope of the EIR. No additional response is required.

Watters V 79 – Comment

23) Why does the decision-maker state the area will be reduced, when the water sources that are so important to the wildlife are at the south edge of the SEA?

Watters V 79 – Response

It is unclear as to what the commenter is referring. No additional response is required.

Watters V 80 – Comment

24) Why would the Deerlake area be eliminated from the SEA when the SEA states that larger areas are necessary for SEAs than previously thought to ensure genetic diversity is maintained as best possible?

Watters V 80 – Response

See Section 4.4.1 (C ECHO 2 – Response) of this document regarding SEA boundary recommendations. The Deerlake project area is not currently within an SEA and any new SEA boundary will be recommended by the Regional Planning Commission.

Watters V 81 – Comment

25) What is proposed to resolve the urban runoff problem created by the proposed Deerlake development?

Watters V 81 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Watters V 82 – Comment

26) Will the existing level of water runoff from surrounding properties (ie. not Deerlake, but other properties in the watershed of Devil Canyon and Browns Canyon be retained, so the existing natural vegetation has a chance of survival?

Watters V 82 – Response

All runoff from surrounding properties, which are within the project's watershed area would continue to flow through the project area and would not be diverted. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Watters V 83 – Comment

27) What resolution is there to providing police/sheriff protection to Deerlake residents? Will there be coverage by the City police, or is that to only continue on an major emergency basis like a riot?

Watters V 83 – Response

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Watters V 84 – Comment

28) Is the developer going to actually going to put in a sheriff storefront, or is that not going to happen due to

28a) objection by an easement holder

28b) lack of funding 28c) lack of staffing available?

Watters V 84 – Response

Construction of the Sheriff's storefront facility is a condition of approval of the project (see Appendix E of this document).

Watters V 85 – Comment

29) Where is the 159 acre parcel proposed as a mitigation parcel?

Watters V 85 – Response

Please see also Section 4.2.1 and Appendix F.1 of this document for additional discussion of this issue.

Watters V 86 – Comment

30) Is the replacement of the oak trees to occur on site or on the mitigation parcel?

Watters V 86 – Response

Please see also Section 4.2.1 and Appendix F.3 of this document for additional discussion of this issue. The location of replacement trees will be determined by the County Forester.Watters V 87 – Comment

31) Given that the draft EIR indicates transplantation of plants generally does not work and is not encouraged, why is the transplantation program proposed for the Plummers Mariposa Lily apparently being approved?

Watters V 87 – Response

Please see also Section 4.2.1 and Appendix F.8 of this document for additional discussion of this issue.

Watters V 88 – Comment

32) Does the area the Plummers Mariposa Lily is proposed to be transplanted to presently have that plant on site?

Watters V 88 – Response

See Watters V 87 – Response of this document.

Watters V 89 – Comment

33) What differences in environment exist between Deerlake and the mitigation parcel that affect the continued viability of the Plummers Mariposa Lily?

Watters V 89 – Response

See Watters V 87 – Response of this document.

Watters V 90 – Comment

34) What is the present development percentage of the 3,400 residences in Porter Ranch disclosed in the draft EIR?

Watters V 90 – Response

As stated in the Draft EIR, the traffic analysis assumes a 50 % of Porter Ranch would be developed by 2005.

Watters V 91 – Comment

35) What is the effect of the development there over the next (35a) five years (35b) ten years (35c) 20 years (as required by Caltrans)?

Watters V 91 – Response

See Watters 43 – Response.

Watters V 92 – Comment

36) What increases in traffic will occur during the traffic projection forecast period due to Porter Ranch, and how have they been reported in the traffic study?

Watters V 92 – Response

The traffic study included related projects, such as Porter Ranch in the analysis for the project. See Appendix K of this document for additional discussion of this issue.

Watters V 93 – Comment

37) How can the traffic study presently be approved, if Porter Ranch increases have not been considered?

Watters V 93 – Response

See Watters V 92 and 93 – Responses of this document.

Watters V 94 – Comment

38) Has the Regional Planning Commission noticed the physical development of Porter Ranch immediately to the east of Deerlake?

Watters V 94 – Response

This is out of the scope of this EIR. No additional response is required.

Watters V 95 – Comment

39) Will the EIR be revised to correct the figure showing the location of Porter Ranch as a related project to include areas near DeSoto as well as Tampa?

Watters V 95 – Response

Figure 3.1 in the Draft EIR was intended to give a general location of related projects. See Figure 2.6 in this document for a more detailed view of surrounding land uses.

Watters V 96 – Comment

40) Will an additional traffic study be done at a time when the local colleges are in session, as well as local schools?

Watters V 96 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Watters V 97 – Comment

41) What requirements will be placed on the project to ensure the trails shown on the project are accessible?

Watters V 97 – Response

See Section 4.4.1 (C ECHO 3 & 4 – Responses) of this document.

Watters V 98 – Comment

42) Will the County ensure required trail access easements are obtained prior to project approval?

Watters V 98 – Response

See Section 4.4.3 (ETI 25 – Response) of this document.

Watters V 99 – Comment

43) Can future public hearings be postponed if the developer does not provide any additional information by two weeks before the hearing, it is irritating to have hundreds of people keep coming downtown for multiple meetings with no responses from the developer, merely to show we still care?

Watters V 99 – Response

Public hearing procedures are established by state law, County ordinances and are at the discretion of the Regional Planning Commission. Responses to comments at public hearings and written comments are appropriately included in this document. Please see Section 1.1 of this document regarding the comment period for the Final EIR.

Watters V 100 – Comment

44) Can the EIR be posted on the internet in accordance with current CEQA recommendations?

Watters V 100 – Response

County staff does not currently have the resources to post a document as extensive as the Draft EIR and Response to Comments on the internet.

Watters V 101 – Comment

45) Can draft responses to our EIR comment letters be posted on the internet so we know if you have understood our comment letters and know if additional comments are needed on specific areas of concern?

Watters V 101 – Response

See Watters V 100 – Response of this document. Draft responses to the community concerns have been presented at a number of community meetings prior to the Planning Commission taking action. (See Appendix O of this document).

Watters V 102 – Comment

46) Can additional documents being used in the EIR, such as the updated traffic study from early January, 2002 be included in the public information that needs posted?

Watters V 102 – Response

A revised traffic study, as well as other revised studies and reports, are in included in the Appendices of this document.

Watters V 103 – Comment

47) Can the EIR, revised traffic study, comments, etc., be posted at the temporary Chatsworth library (only open in the afternoons on weekdays) and at Porter Ranch library so evening and Saturday access is available?

Watters V 103 – Response

As stated in Section 1.1 of this document, copies of the environmental reports are available at the Los Angeles County Library – San Fernando Branch and the Los Angeles County Department of Regional Planning and the project website (www.deerlakeranch.com), as well as the Chatsworth Library.

Watters V 104 – Comment

48) Has any study been done to determine the accuracy of the traffic patterns listed in the traffic study? Specifically,

(48a) can the southbound traffic percentage be justified, if so how?

(48b) Can the percentage of westbound freeway traffic be justified?

(48c) Can the percentage of use on Topanga Canyon vs. Canoga Avenue be justified?

Watters V 104 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Watters V 105 – Comment

49) Is Porter Ranch included as a related project in the traffic study?

Watters V 105 – Response

As shown on Table 4.12.3 of the Draft EIR, Porter Ranch was included in the traffic analysis.

Watters V 106 – Comment

50) Can the EIR be revised to show what related projects are included in each area that is studied? The Related Projects table is not representative of what is included in each area, apparently, since page 4.11-2 says Porter Ranch is not within in the project area.

Watters V 106 – Response

Each cumulative impact section in the Draft EIR included a description of related projects that were applicable to that particular environmental issue

Watters V 107 – Comment

51) As to Porter Ranch, future traffic projections need to consider that the only southbound streets available from Porter Ranch are Mason (on the West side) and Tampa (on the East side), so these streets will carry all traffic from Porter Ranch that is going to the south. If DeSoto is opened to Porter Ranch, DeSoto may also be affected. Have the increases in traffic on

(51a) Mason from Porter Ranch been considered?

(51b) have any expected increases in traffic on DeSoto from Porter Ranch been considered?

Watters V 107 – Response

See Watters V 105 – Response in this document.

Watters V 108 – Comment

52) Has the increased traffic on Topanga Canyon from the condominium project that is expected near the 118 freeway and Topanga Canyon been incorporated in the traffic increases covered by the project?

Watters V 108 – Response

As shown in Table 4.12.3 of the Draft EIR, the condominium project was included in the traffic analysis.

Watters V 109 – Comment

53) Have population increases of 5% a year been considered (as required by SCAG) in the traffic study? If so, why does it appear the traffic only increases about 2% a year in the traffic study?

Watters V 109 – Response

The annual growth rate used in the traffic analysis is intended to forecast annual increases in traffic volumes in the study area based on historical patterns. As noted in the Draft EIR, the growth rate used in the traffic analysis was 2% per year (or approximately a 10% increase in the 2000 existing traffic volumes to the 2005 build-out year). The selection of the growth rate and traffic study horizon year by Los Angeles County is consistent with the methodology used by LADOT, as well as the CMP. By comparison, the CMP manual forecasts an annual increase in traffic of approximately 0.58% per year between 2000 and 2005. Therefore the 2% annual growth rate utilized in the Draft EIR is conservative.

Watters V 110 – Comment

54) How have major increases expected in traffic due to huge developments in Santa Clarita been handled in the traffic studies?

Watters V 110 – Response

Because of the distance of the project site and the City of Santa Clarita, any potential impact of future traffic from Santa Clarita on the project area would be regional in nature and is beyond the scope of this EIR. No additional response is required.

Watters V 111 – Comment

55) Why does James Noyes, Director of Public Works for the County of Los Angeles, recommend the intersection at Topanga/Mayan/Poema not be incorporated in the ATSAC system?

Watters V 111 – Response

The ATSAC system is used for intersections within the City of Los Angeles. The intersection included by the commenter is located within the County of Los Angeles.

Watters V 112 – Comment

56) What noise mitigations will be provided to existing homes that are impacted south of the 118 freeway?

Watters V 112 – Response

As stated in Section 4.7 of the Draft EIR, offsite noise impact would be 5.0 dB along Canoga Avenue from the project site to Rinaldi Street. Freeway background noise would substantially mask the project contribution. With incorporation of background effects, noise levels would change less than 1.0 dB near SR-118 and slightly over 1.0 dB near Rinaldi. As there were no significant impacts to residences south of SR-118, no mitigation measures are required.

Watters V 113 – Comment

57) How will a problem with compliance with construction conditions be handled during evening, night, weekend and holiday hours?

Watters V 113 – Response

See Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document.

Watters V 114 – Comment

58) What penalties will the developer or their successor be subject to for noncompliance with conditions?

Watters V 114 – Response

See Section 4.4.3 (ETI 25 – Response) of this document.

Watters V 115 – Comment

59) Why can't the development provide for acre or more lots to be consistent with Chatsworth lots, such as exist in other outlying areas of Chatsworth?

Watters V 115 – Response

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Watters V 116 – Comment

60) Why can't the development provide for one house on 10 acres, to be consistent with the housing development standard set forth in the proposed SEA?

Watters V 116 – Response

See Watters V 115 – Response of this document. See also Section 4.4.1 (C ECHO 2 – Response) of this document regarding SEA boundary recommendations and the proposed development standards.

Watters V 117 – Comment

61) Why would a 50 year old general plan that was created when the north San Fernando Valley was farmland, be more respected in considering development standards than a proposed SEA dated in year 2000?

Watters V 117 – Response

The County's General Plan dates from 1980 with numerous local amendments since its adoption. See Section 4.4.1 (C ECHO 2 – Response) of this document regarding SEA boundary recommendations.

Watters V 118 – Comment

62) Is there any special geologic feature that has contributed to the success of the Plummers Mariposa Lily in the area?

Watters V 118 – Response

Plummer's Mariposa Lily occurs on a variety of soils and there is no known specific geologic feature from the project site. See Section 4.2.1 and Appendix F.8 of this document regarding additional discussion of the lily.

Watters V 119 – Comment

63) Has elimination of homes and grading over the Plummers Mariposa Lily area of intense populations been considered to allow this Federal Species of Concern to survive?

Watters V 119 – Response

See Section 4.2.1 and Appendix F.8 of this document regarding additional discussion of the lily.

Watters V 120 – Comment

64) Can an escrow or other type of bond be placed to ensure survival of the Plummers Mariposa Lily in the population presently identified on site?

Watters V 120 – Response

See Section 4.2.1 and Appendix F.8 of this document regarding additional discussion of the lily.

Watters V 121 – Comment

65) (a) Does the three months of grading allowed for the project in the EIR represent the actual amount of time the grading will occur?

Watters V 121 – Response

See Section 4.2.7 (Development Issues 6 – Response) of this document.

Watters V 122 – Comment

(65b) Can penalty provisions be placed for failure to complete in the specified period?

Watters V 122 – Response

Project construction schedules are normally not regulated by public agencies, providing that specific construction permits are kept in full force and effect.

Watters V 123 – Comment

66) If grading is truly expected to be completed in three months, can an appropriate time of year for grading be specified to reduce problems with fugitive dust that would occur if grading occurred in the fall while Santa Ana winds are prevalent?

Watters V 123 – Response

See Watters V 121 – Response. Mitigation measures have been included to reduce impacts from fugitive dust to less than significant. See Section 4.2.3 (Noise/Dust 2 – Response) of this document for further discussion of this issue.

Watters V 124 – Comment

67) Can the County call the principals of the local public schools to confirm date obtained by usual procedures is accurate?

(67b) If not, why not?

Watters V 124 – Response

Information regarding student population was obtained from LAUSD. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Watters V 125 – Comment

68) Can a condition be drafted that requires school fees to be used in the local area?

(68b) if not, why not?

Watters V 125 – Response

Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Watters V 126 – Comment

69) Why are there sufficient utilities available, when we hear daily we must conserve power and water?

Watters V 126 – Response

As stated in the Draft EIR, no significant service or utility impacts would occur with implementation of recommended mitigation measures.

Watters V 127 – Comment

70) We have been told there are additional trails through the development, can information on this be provided to the community?

Watters V 127 – Response

See Section 4.4.1 (C ECHO 3 & 4 – Responses) of this document.

Watters V 128 – Comment

71) Can the trails have gaps in the outside fence periodically to enable access by equestrians to the outside areas such as Browns Canyon and Devil Canyon?

Watters V 128 – Response

Yes, gaps will be provided on the trails.

Watters V 129 – Comment

72) Will there be a fence around the development, if so, can it have similar gaps to enable equestrians to the outside areas?

Watters V 129 – Response

Gaps in fences and/or walls will be provided where appropriate to provide continuity in the proposed trail system.

Watters V 130 – Comment

73) When will a revised drainage and runoff proposal be provided by the developer? Without this information, further questions on this area are not possible.

Watters V 130 – Response

See Section 4.2.2 (Urban Runoff I – Response) and Appendix I of this document for additional discussion of this issue.

Watters V 131 – Comment

74) What problems occurred at the La Vina project that was started by the same developers (currently under investigation by the Supervisors)?

Watters V 131 – Response

This is out of the scope of the EIR. No additional response is required.

Watters V 132 – Comment

74b) How can those problems be avoided at Deerlake?

Watters V 132 – Response

See Watters V 131 – Response and Section 4.4.3 (ETI 25 – Response) of this document.

Watters V 133 – Comment

75) Will the sewers for Twin Lakes proposed by the developer only be implemented if the CFD is formed, or will it be implemented in any case?

Watters V 133 – Response

As stated in the Draft Conditions of Approval (Appendix E of this document), the financing of the Twin Lakes sewer system is contingent on the County forming a CFD, which would include financing for the sewers.

Watters V 134 – Comment

76) Will the developer be required to actually make improvements (rather than propose study, recommend, etc.) to the

(76a) Topanga/118/Mayan Drive/Poema intersection

(76b) the offramps on Topanga Canyon to increase lanes

Watters V 134 – Response

Please see Sections 3.3.5 and 4.2.6, and Appendices E and K of this document for additional discussion of traffic impacts, conditions of approval and mitigation measures.

Watters V 135 – Comment

(76c) the various improvements mentioned by the developer for Chatsworth Street. (76d) the various no lefts and speed humps for Canoga near Celtic, Rinaldi, Candice.

Watters V 135 – Response

See Watters V 134 – Response.

Watters V 136 – Comment

77) What specific traffic improvements are being required to be made, to the extent not covered elsewhere?

Watters V 136 – Response

See Watters V 134 – Response.

Watters V 137 – Comment

78) Will damage on Canoga Avenue during construction period be repaired at the end of the project?

Watters V 137 – Response

See mitigation measure 4.12-8 included in Section 3.0 and Appendix D of this document.

Watters V 138 – Comment

79) Who pays for sewer expansion along Canoga Avenue?

Watters V 138 – Response

The developer will be responsible for construction of the sewer system along Canoga Avenue.

Watters V 139 – Comment

80) Will the proposed increase in the sewer main allow for further growth north of the project that could occur after the northerly property owners win an access lawsuit?

Watters V 139 – Response

The sewer improvements included in the EIR are intended to mitigate impacts associated with the project. The potential for development north of the project site is speculative and out of the scope of the EIR. However, all new projects will have to similarly mitigate impacts to less than significant levels.

Watters V 140 – Comment

81) Does the EIR accurately show the effect of this project on future development, or does it mis-state the effect of the conservation easement?

Watters V 140 – Response

See Section 4.5.3 (Augello 1 - Response) and Appendix Mof this document.

Watters V 141 – Comment

82) Will various community suggestions on the developers "Supplemental Conditions" be implemented?

Watters V 141 – Response

See Appendix E of this document.

Watters V 142 – Comment

83) Will developer be required to provide playground equipment in pocket parks instead of "may" provide?

Watters V 142 – Response

There is no requirement to provide playground equipment.

Watters V 143 – Comment

84) Will hours of deliveries during the construction and grading period be limited, to end by 2pm, due to school and summer camps that operate in the area?

Watters V 143 – Response

See Section 4.2.3 (Noise/Dust 1 – Response) of this document.

Watters V 144 – Comment

85) Will hours of deliveries and construction be limited to eliminate Saturday due to extensive equestrian use and recreational use during weekends?

Watters V 144 – Response

See Section 4.2.3 (Noise/Dust 1 – Response) of this document.

Watters V 145 – Comment

86) Will construction and grading hours be limited to 8 to 5?

Watters V 145 – Response

Construction hours will not be limited to 8 A.M. to 5 P.M. See Appendix E of this document.

Watters V 146 – Comment

87) What are the limitations on "warm up" period?

Watters V 146 – Response

See Watters V 145 – Response.

Watters V 147 – Comment

88) What amount of time is allowed for developer/contractor to fix problems with non-compliance with conditions during grading and construction?

Watters V 147 – Response

See Appendix E of this document regarding compliance issues.

Watters V 148 – Comment

89) What penalties will be placed on developer/contractor for failure to comply with conditions?

Watters V 148 – Response

See Section 4.4.3 (ETI 25 – Response) of this document.

Watters V 149 – Comment

90) Who will enforce conditions and be familiar with them?

Watters V 149 – Response

See Section 4.4.3 (ETI 25 – Response) and Appendix E of this document.

Watters V 150 – Comment

91) Where will elementary school children be able to be enrolled, since Chatsworth Park Elementary School is completely full in certain grades?

Watters V 150 – Response

Assignment of students to specific schools is the responsibility of LAUSD and is out of the scope of the EIR. As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Watters V 151 – Comment

92) Will this condition be implemented, from the Supplemental Conditions, "Off-site vehicular traffic through the Twin Lakes community by construction equipment and/or contractors' vehicles shall be prohibited. Subdivider will post necessary signs and/or personnel at all entries to Twin Lakes to insure enforcement of this prohibition."?

Watters V 151 – Response

Yes. See Section 4.2.3 (Noise/Dust 1 – Response) of this document.

Watters V 152 – Comment

93) Will this condition be implemented, from the Supplemental Conditions, "All vehicles belonging to construction personnel shall be parked on-site. Parking of such vehicles shall be not be permitted along Mayan Drive, Canoga Avenue, nor within any portion of the nearby communities."?

Watters V 152 – Response

Yes. See Section 4.2.3 (Noise/Dust 1 – Response) of this document.

Watters V 153 – Comment

94) Will this condition be implemented, from the Supplemental Conditions, "Water tanks and water trucks shall be available on-site prior to commencing any grading operations to insure that effective dust control measures can be implemented and sustained during these operations."?

Watters V 153 – Response

Yes. See Section 4.3.3 (Noise/Dust 2 – Response) of this document.

Watters V 154 – Comment

95) Why doesn't the County require development compatible with other outlying areas of Chatsworth, and require at least acre lots?

Watters V 154 – Response

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Watters V 155 – Comment

96) Why should a 50 year old County general plan, created when all was open space, be allowed to justify development when general plans are supposed to up updated every 20 years?

Watters V 155 – Response

This is out of the scope of the EIR. No additional response is required. Please see Watters V 117 Response.

Watters V 156 – Comment

97) Can proposed responses to EIR comment letters be posted on the internet, to make them available to the public, as they are processed?

Watters V 156 – Response

See Watters 100 and 101 – Responses of this document..

Watters V 157 – Comment

98) How can we get the decision-makers to acknowledge that Porter Ranch is currently in the process of being built, so ignoring the large increases in traffic at that project is inappropriate?

Watters V 157 – Response

See Watters 105 – Response of this document.

Watters V 158 – Comment

Will County draft conditions, to require developer to actually achieve promises that are being made, or will County accept comments such as "developer to negotiate", "developer to prepare study", developer to build unless", that eliminate the necessity to accomplish the stated mitigation measure? (for example, to negotiate school fees benefiting local community, to prepare study for Chatsworth Street traffic issues, to build sheriffs substation unless an easement holder objects, etc., etc.,)

Watters V 158 – Response

See Appendix E (Draft Conditions of Approval) of this document.

Watters V 159 – Comment

Log of Construction Concerns

April 2002

1) *There was damage to the asphalt road north of the old bridge – in bringing test drilling equipment over the bridge. The developer was contacted and promised to repair the damage. So far, nothing has been done.*

Watters V 159 – Response

This is beyond the scope of the EIR. No additional response is required.

Watters V 160 – Comment

2) We received no notification of this testing.

Watters V 160 – Response

This is beyond the scope of the EIR. No additional response is required.

Watters V 161 – Comment

3) There was drilling on a Saturday morning during the two-week period of testing.

Watters V 161 – Response

This is beyond the scope of the EIR. No additional response is required.

Watters V 162 – Comment

4) A horseback rider was thrown because of unexpected noise - can signs be posted in the future to notify riders that activity is going on?

Watters V 162 – Response

This is beyond the scope of the EIR. No additional response is required.

Watters V 163 – Comment

5) Notification was not properly given regarding resuming drilling in the vicinity of the owl's nest - neither in manner or in regards to time span to respond to the notice.

Watters V 163 – Response

This is beyond the scope of the EIR. No additional response is required.

4.5.139 - Patrick Weir

March 26, 2002

Weir 1 –Comment

As I understand it, the referenced project will exempt the developer from taking responsibility for ingress/egress traffic resulting from this first of many planned developments.

Excuse me???? This development is not even in the city of Los Angeles, it is county land. And the county is being allowed to turn our residential streets into thoroughfares in order to make the development feasible enough for the developer to proceed with the project? Is the increase in property tax revenues already being counted?

Porter Ranch built commercial thoroughfares to route traffic so that our residential streets would not pay the price for the developer. It is not right that you can take part in approving a footprint of nearly five hundred houses and not require the developer to provide their own streets.

At present, this is an insult. If followed through, it will be tyranny. How dare you even think about approving this. Approveal [sic] will ruin our neighborhood, reduce safety and destroy property values. The developer will get his money, the builder will get his money, the city and county will get their money and our neighborhood will get shafted.

We know that all of the open spaces we moved here for are scheduled for eventual slaughter and we would be naïve to think that we can preserve this land.

But, get your own streets.

Weir 1 –Response

This comment is not related to the EIR. The comment has been received and noted.

4.5.140 Katherine Weisman

January 7, 2002

Weisman 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

Impact on the environment, (size of the project, effect on the land, animals, health of the residents- i.e. Valley Fever).

Weisman 1 - Response

As stated in the Draft EIR, project impacts would not be significant with implementation of recommended mitigation measures.

Please see Section 4.5.136 (Watters V 25 – Response) of this document regarding Valley Fever.

Weisman 2 - Comment

Traffic is also a grave concern-already it backs up terribly at Topanga & the 118 fwy.

Weisman 2 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Weisman 3 - Comment

The area to be developed is one of the very last open areas in the San Fernando Valley. The development of this area represents the death of the beauty and tranquility that brought people to settle the area in the first place. Please leave this small area intact!!

Weisman 3 - Response

The commenter's opposition to the project is noted and will be forwarded to the decision makers.

Weisman 4 - Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Weisman 4 - Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.141 John and Shannon Wetzel

January 4, 2002/January 7, 2002

Wetzel 1 – Comment

As residents and horse-owners of Chatsworth, we are very concerned about the Deer Lake Ranch Project plan to divert all run-off water through storm drains into Devil's Canyon. Devil's Canyon has a very delicate eco-system that has basically never been disturbed – the beauty of which is enjoyed by many horse trail riders including us. Currently, the area that runs off into that canyon has

only 7 homes, 4 of which are occupied. If you add 484 additional homes and the pollutants that go with them, all natural habitat and wildlife will be threatened! We do not see how removing natural vegetation, even if it reduces the run-off, and having polluting chemicals run through the basin instead, would be good for the creek bed's eco-system. There are currently storm drains that take the run-off from lower Twin Lakes into the Brown's Canyon wash. The run-off from the new project should be diverted through storm drains that hook-up to these, bypassing the natural creek bed.

Wetzel 1 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Wetzel 2 – Comment

The developer's plan to mitigate with a SUSMP (Standard Urban Storm-water Mitigation Plan) will not be sufficient. No matter how many signs are posted or how much you try to educate people about the hazards of household products and yard wastes, these substances will continue to pollute the water run-off. The amount of polluted run-off from a building project of this scope will be enormous. Will the series of filtration points be adequate to remove all toxins? How will the use of non-toxic pesticides and fertilizers by the developer in landscaping the project be enforced?

Wetzel 2 – Response

See Wetzel 1 – Response of this document.

Wetzel 3 – Comment

We feel that the EIR deals with this matter in a totally inadequate manner. If we are to preserve the small amount of untouched areas that we have left amidst our increasing degree of urban development, we must be more creative in solutions to hazardous waste management.

Wetzel 3 – Response

See Wetzel 1 – Response of this document.

Wetzel 4 – Comment

Additionally, the reduction of available, established horse trails in our beautiful backyard mountains would be a crime of our generation.

Wetzel 4 – Response

The comment has been noted. See Section 4.4.1 (C ECHO 3 & 4 – Responses) of this document regarding trails.

Wetzel 5 – Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing.

The proposed project is located close to my home, and I am particularly concerned about the following:

The local ecology is in danger.

Wetzel 5 – Response

As stated in the Draft EIR, project impacts would be less than significant with implementation of recommended mitigation measures.

Wetzel 6 – Comment

Traffic will increase on Chatsworth St. at De Soto Blvd and Independence Ave.

Wetzel 6 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Wetzel 7 – Comment

In light of the significant adverse impact this project would have on my neighborhood and the lack of meaningful measures to alleviate that impact, I request that you not approve the project as currently presented. Any further consideration of the project should be conditioned on:

- *a substantial reduction in the size and scope of the project;*
- *a more meaningful proposal for mitigation by the applicant; and*
- *postponement of a Commission recommendation in order to allow time for adequate public study and evaluation of the applicant's revised proposals.*

Wetzel 7 – Response

Please see Section 4.5.5 (Belkin, L 3 – Response) of this document.

4.5.142 Mark and Karel Wild

January 7, 2002

Wild 1 – Comment

Wildlife, Wildlife, Wildlife, Wildlife, Wildlife, Wildlife, Wildlife, Wildlife, Wildlife. See Attached (Form Comment Letter - Biology, Form Comment Letter – Fire Services, Form Comment Letter – Police Services, and Form Comment Letter – Non-Traffic Issues).

Wild 1 – Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

See Section 4.2 for response to form letters.

4.5.143 Heather Williams

January 12, 2002

Williams H 1 - Comment

I am a senior at Chatsworth High School and previously attended Lawrence Middle School. According to the EIR for the proposed Deerlake Ranch project, Chatsworth High School has adequate capacity to handle the anticipated enrollment increase from the project. I don't know where they got their information, but I find that hard to believe.

There are NO lockers available for any freshmen. I share a locker with my sister who is a freshman so that she doesn't have to carry two backpacks around all day. Sometimes I have to wait almost the entire lunch period to use the bathroom because the lines are so long. I sometimes wait in line 10 minutes to buy lunch, and sometimes when I get to the front of the line, they've run out of what I want.

The EIR says that there's room for 1291 more area residents to enroll at Chatsworth High School. WOW! We're already bursting at the seams. We've added bungalows to try to accommodate all of the students. The halls are so crowded that I barely have time between periods to make it to class on time. I've had some classes where we didn't have enough textbooks to go around. In one English class, we couldn't take our textbooks home because we had to share them with another period.

This semester, one of my classes has over 40 students. Some of the students have to sit off to the side because of the lack of space. Some of the students had to sit at the teacher's desk at the beginning of the semester until the counselor could find other classroom space for them. My teacher has difficulty physically moving about the classroom to help students because it's so crowded. My teacher doesn't have time to answer all the students' questions because there are just too many. In my painting and zoology classes, there are no empty seats.

When I was a sophomore, some teachers didn't have their own classroom. They had to move around every period to a classroom where the teacher had a conference period. In my science class, the teacher could hardly do any science demonstrations because he couldn't move all his materials from class to class.

Williams H 1 - Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Williams H 2 - Comment

In addition to the impact on schools, the project area is my favorite places [sic] to hike. I go at least twice a week, and I can walk there right from my front door. I've seen coyotes, bobcats, quail, snakes, red-tailed hawks, frogs and tadpoles. I'm concerned that the project will destroy the habitat for these animals.

Williams H 2 - Response

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Williams H 3 - Comment

Please don't approve the project unless they scale it way down.

Williams H 3 - Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

See Section 4.2.7 (Development Issue 10 -- Response) and Appendix L of this document regarding land use density.

4.5.144 Judy Williams

January 15, 2002

Williams J 1 - Comment

The Deerlake Ranch Project EIR does not address any impacts on mountain biking in the area. We have a group of up to 8 or10 who ride together every Saturday morning including some who bike individually almost daily. I have no idea how many other mountain bikers frequent the area, but we see other bikers regularly. The area between Rocky Peak and Limekiln Canyon is extremely popular for mountain bikers throughout the West Valley.

One of our favorite rides goes right along the eastern boundary of the project area to access mountain bike routes north of the project area. The EIR does not address how continued safe access will be guaranteed for mountain bikers. As a mitigation measure, Presidio Development should

provide a safe, designated bike route through the project area both during and after construction to permit access to the north of the project. This should be spelled out in the Conditions of Approval.

Presidio Development may be tempted to assume this issue is already addressed with mitigation measures for equestrian access. This is definitely not the case. Not all equestrian trails are suitable for mountain bikers and vice versa. In particular, we favor the ridge routes and unpaved roads that avoid conflicts with equestrian riders or allow ample room to pass safely.

Williams J 1 - Response

The project includes a public hiking and equestrian trail system, to be constructed to County standards, that would loop the site, connecting to existing trails east, north, and west of the project site. Trails are proposed to be used by all in the area. There is no requirement for separate trails to be constructed for mountain bike riders. Please see Section 2.0 of this document regarding additional trails included in the project.

Williams J 2 - Comment

Besides riding routes north of the project area, mountain bikers frequently ride north on Canoga Ave. to Mayan Dr. to Poema Place to access the Johnson Trail through Indian Hills Estates and to access other routes from Santa Susana Pass Road such as Rocky Peak. Since the project will necessitate substantial alteration of Canoga and Topanga just north of SR 118 and will tremendously increase traffic along Canoga, the EIR needs to address how project developers will maintain safe access for mountain bikers from the intersection of Canoga and Chatsworth north to Mayan Drive and then west across the intersection with Topanga.

Williams J 2 - Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures, including safety measures for trail crossings.

Williams J 3 - Comment

Can we trust ANY findings in this EIR? I don't know anyone who has time to independently verify the entire document, but EVERY finding I attempted to verify either independently or through a third party was contradicted.

In Tables 4.10.1 and 4.10.3, the EIR utilizes the legitimate sounding "resident area enrollment" of 2211 at Chatsworth High School with an official capacity of 3502 to conclude that the projected addition of 165 students would have no significant impact and still leave space for 1126 more students. The only hint that these figures might not reflect reality is a vague footnote that does NOT state that they have conveniently ignored the non-resident enrollment. Throughout the text and in Table 4.10.5, they conveniently drop the caveat in the footnote of the previous tables and give the deflated figures as the ACTUAL enrollment.

These figures are extremely misleading, and they clearly use these figures to DELIBERATELY obscure the true situation. I don't make this accusation lightly. The true enrollment figures are easier to access than the "area resident enrollment" and are the obvious measure of available space. It is extremely unlikely they would have a sub-category figure like the "resident area enrollment" without also knowing the non-resident enrollment and actual total enrollment.

Even the misleading figures they have chosen to use are wrong. This MAY be explained if they got their figures from the LAUSD instead of from the high school. Regardless, one simple phone call would give them the correct figures. The administration of Chatsworth High School gives their capacity as 3311, almost 200 less than the 3502 in the EIR. Furthermore, the current enrollment is 3175, a far cry from 2211 "area resident enrollment" which they clearly intend the reader to infer

reflects the actual enrollment. Even at 3175, slightly less than capacity, officials wish they could reduce the number of students to ease crowding.

Williams J 3 - Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Williams J 4 - Comment

The deliberate use of misleading facts (that upon investigation are incorrect anyway) calls into question the validity of the entire document. At the public meeting on January 8, the principal of Chatsworth Park Elementary School similarly contradicted their "facts" about her school. A neighbor down the street uncovered flaws and outright fabrication in the traffic study. Another neighbor identified a half dozen heritage oaks that were supposedly nonexistent on the property.

The applicant demonstrates clear contempt for the EIR process and utter disregard for the impacted residents of Chatsworth. I urge you to throw out the entire document and recommend the NO ACTION alternative until the applicant produces a legitimate, factual, honest EIR. Furthermore, if the project goes forward in some form, I urge you to support a project of AT MOST one-fourth the size of the currently proposal [sic]. This would be more compatible with nearby neighborhoods and would lessen the impact on the infrastructure which is already at or near capacity.

Thank you for your time and consideration.

Williams J 4 - Response

Please see Section 4.4.2 (CLPA 2 - Response) of this document regarding the adequacy of the EIR. The commenter's opposition to the project is noted and will be forwarded on to the decision makers.

4.5.145 Marv Williams

January 16, 2002

Williams M 1 - Comment

I am writing to express my objection to the proposed Deerlake Ranch development in Chatsworth. The proposed project is located close to my home (I live in the City of Los Angeles), and I am particularly concerned about several items. During the construction phase all the heavy equipment and regular traffic will be through Canoga Avenue. This will drastically change the atmosphere of our quiet neighborhood. Not only will the noise increase, but also the dirt and debris from the construction will be horrendous.

Williams M 1 – Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. Please refer to Section 4.2.3 of this document for additional discussion of impacts and mitigation.

Williams M 2 - Comment

Once the project is complete, Canoga Avenue and Topanga Canyon will be the only points of entrance and egress. With Topanga Canyon already crowded to capacity, Canoga will become the major thoroughfare for people going to work, school, grocery stores, and other shopping areas. Our once quiet community will be changed forever. One suggestion would be to build a road off of Brown's Canyon. This extra access road will diminish road traffic in all areas, and will not affect nearly as many homes as the original plan. Brown's Canyon has a direct link to the 118 Freeway and traffic would have an impact on only five or six homes.

Williams M 2 – Response

See Appendix N of this document regarding alternate access to the project site.

Williams M 3 - Comment

Many of the facts mentioned in the EIR are inaccurate and misleading. The conclusion that there will be no impact on public schools is absurd. After contacting all three public schools, Chatsworth High School, Lawrence Middle School, and Chatsworth Park Elementary School, the actual enrollment figures far exceed those given in the EIR. The EIR speaks of "Resident Area Enrollment" but mentions nothing of the children being bused. Including these students in their calculations would surely put the schools in question over the allotted amount. This is in direct opposition to Governor Davis' plan of limiting the size of classrooms.

Williams M 3 – Response

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Williams M 4 - Comment

The beautiful scenery of the boulder-strewn hills of Chatsworth makes it such a wonderful area for equestrians, mountain bikers, hikers, and nature lovers. With this large development much of the scenery and many of the existing trails and paths would be destroyed and lost forever. I urge you to drastically reduce the size of this project so that the many who now live in this area can continue to enjoy the small amount of untouched land that remains.

Thank you for your consideration.

Williams M 4 – Response

The project has been revised to reduce the total number of residential units from 484 to 388. This includes 155 minimum 15,000 square foot estate lots, of which 55 would be equestrian lots. Please see Section 2.0 of this document for further discussion of this issue.

See Section 4.2.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

4.5.146 Martin Woll

December 20, 2001/January 15, 2002/January 16, 2002

Woll 1 – Comment

I recently sent you a comment letter addressing Section 4.12 Transportation/Traffic of the Draft Environmental Impact Report ("EIR") for Project No. 99-239(5), the proposed Deerlake Ranch development project ("Project"). In that letter I pointed our numerous gross inaccuracies that render the EIR useless for its intended purpose of evaluating the Project's impact on our Chatsworth neighborhood. Further to those comments, responsible CALTRANS personnel have advised me that the draft EIR does not adequately address their many concerns.

Woll 1 – Response

Responses have been prepared to all letters providing comments to the Draft EIR. Please see Appendix B and Section 4.0 of this document.

The commenter has not provided additional details regarding comments provided to him by representatives from Caltrans. However, Caltrans has issued a letter with comments to the Draft EIR, and these comments have been responded to in this document (see Section 4.3.2).

Woll 2 – Comment

In light of the significant changes required in the EIR in order for it to be not misleading or materially deficient, I hereby request that:

the applicant be required to prepare a subsequent or supplemental EIR which corrects the deficiencies noted in my comment letter; and

Woll 2 – Response

Opinions expressed regarding the adequacy of the Draft EIR will be forwarded to the decision maker. No deficiencies have been identified that would require the need to prepare a subsequent or supplemental EIR.

Woll 3 – Comment

the public be given adequate time to study and comment on the revised data, analyses and proposed mitigation measures offered by the applicant.

Woll 3 – Response

Please see Sections 1.1 and 4.5.5 (Belkin L 3 – Response) of this document regarding the comment period for the Draft EIR.

Woll 4 – Comment

Accordingly, I ask that you extend the deadline for public comment on the EIR to a date at least 45 days after the date on which the applicant files the subsequent or supplemental EIR and makes it available to the affected community. Although I don't speak for CALTRANS, it is my understanding that it intends to send you a similar request.

I understand that it is common practice for developers to reply to public comments by simply stating that they will make corrections in the final EIR, after which they submit a final EIR that may or may not be adequately responsive to the concerns of the community. We do not want to be short-changed in this manner. Revisions to the EIR, especially such pervasive and substantial revisions as are clearly needed in this instance, should be subject to the same public and official scrutiny as was applied to the original document.

Woll 4 – Response

Please see Sections 1.1 and 4.5.5 (Belkin L 3 – Response) of this document regarding the comment period for the Draft EIR.

Woll 5– Comment

I am writing to express my concern over inadequate, vague and unenforceable mitigating actions and conditions with respect to construction activities proposed by the applicant in the Draft Environmental Impact Report ("DEIR") for the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)). As currently presented in the DEIR and draft list of conditions, the neighborhood residents are left with inadequate protection from construction noise, dust and the hazards of large-vehicle operation.

Woll 5 – Response

See Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document. See also Appendix E of this document regarding the conditions of approval.

Woll 6 – Comment

The applicant proposes a "hot line" for community complaints and questions. This will be effective only if: a) response is made within 24 hours or less after a call is received, b) a log of complaints and dispositions is maintained locally and is open for a public inspection, c) repeated noncompliance results in financial penalties to the developer, and d) the call-in telephone number is toll free to area residents. All these provisions should be incorporated into the conditions of approval.

Woll 6 – Response

See Appendix E of this document.

Woll 7 – Comment

The DEIR refers to dust control measures, but the conditions make only passing reference to the availability of water trucks for dust control. Conditions similar to those imposed on another current nearby project (City Plan Case No. 2000-3583-CU) should be imposed (see Attachment 1). Conditions should specify compliance with SCAQMD District Rule 403. Wind speed of 15 mph - not 25 mph - should trigger cessation of grading and excavating. Wind should be measured with and on-site anemometer, not by reference to an offsite location such as Van Nuys Airport where winds are typically weaker than the [sic] are in the foothills. All these provisions should be incorporated into the conditions of approval.

Woll 7 – Response

As discussed in Sections 4.2 and 4.7 of the Draft EIR, no significant noise or dust impact would occur from the project with implementation of recommended mitigation measures. See Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document. See also Appendix E of this document regarding conditions of approval.

Woll 8 – Comment

Because the proposed project borders on the City of Los Angeles incorporated area and because construction activity may be audible in homes within the City of Los Angeles, the conditions of approval should include: a) compliance with City Noise Ordinance No. 144,331 and 161,574 and any subsequent ordinances governing the emission or creation of noise, to the extent more stringent than state or county statutes; b) requirement to use of state-of-the-art noise muffling and shielding devices on all construction and grading equipment; and c) limits on the number of pieces of equipment that can be used simultaneously. Similar conditions have been imposed on another current nearby project (City Plan Case No. 2000-3583-CU).

Woll 8 – Response

See Section 4.3.5 (City Council 1 – Response) of this document.

Woll 9 – Comment

Because the proposed project borders on and drains into the City of Los Angeles incorporated area and because construction traffic will traverse Los Angeles City streets, the conditions of approval should require full compliance with Los Angeles Municipal Code Art. IX Ch. 1 Div. 70, covering grading and excavating activities.

Woll 9 – Response

See Section 4.3.5 (City Council 1 – Response) of this document.

Woll 10 – Comment

Construction equipment and heavy delivery vehicles are incompatible with equestrian, bcyclists [sic], joggers, hikers and other recreational users of the area surrounding the proposed project. Such use is heaviest on weekends; accordingly, the conditions of approval should prohibit ingress and egress of these vehicles all day on Saturdays as well as on Sundays.

The same incompatibility discussed in the preceding paragraph presents a hazard to all current users of Canoga Avenue. The developer should be required either to find an alternate route for the entire duration of the project or to discontinue the use of Canoga as a route for grading, construction and delivery vehicles by a firm date not later than 14 months from the commencement of the project.

Woll 10 – Response

See Section 4.2.3 (Noise/Dust 1 – Response) of this document.

Woll 11 – Comment

Changes in economic conditions could cause grading or construction activities to be discontinued for the extended periods of time. Uncompleted such activities could pose a variety of threats including erosion, runoff, dust, earth movement, incomplete traffic control measures and pollution, among others. The conditions of approval should require completion bonds for all promised mitigation measures and improvements.

Because the measures described in this letter are important for the protection of local residents, I request that you not take action on the project until the conditions of approval are formalized so as to include all the appropriate safeguards related to the construction period.

Woll 11 – Response

See Appendix E of this document. Construction activities, such as grading, require that a surety bond be posted with the County to guarantee completion of the work.

Woll 12 – Comment

I am writing to advise you of another deficiency in the Draft Environmental Impact Report ("DEIR") for the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)). This deficiency relates to the proposed mitigation measures at and near the intersections of SR-118 and Topanga Canyon Boulevard.

The applicant has touted the significance of two mitigation measures in connection with the severely impacted intersections mentioned above. One measure is contribution to Los Angeles City's ATSAC project, which would add communication links and enhanced coordination among traffic signals at key intersections in the San Fernando Valley. The other is intersection modification, including coordination of traffic signals. However, there are two major obstacles to placing reliance on these measures.

First, James Noyes, County Director of Public Works, recommended in his March 29, 2001 letter to the applicant's traffic consultants (Draft EIR Appendix A.3) that none of the traffic signals described above be connected to the ATSAC. This means that there can be no expectation of the ATSAC relief from the congestion on Topanga that often backs up the area of the intersection with SR-118.

Woll 12 – Response

The Draft EIR on page 4.12-28 specifies the recommended traffic mitigation measures for the intersection of Topanga Canyon Boulevard and the SR-118 westbound on/off ramps, which is located in unincorporated Los Angeles County. These measures (mitigation measures 4.12-1 through 4.12-4) do not include the installation of the ATSAC traffic signal system improvements at this location.

Mitigation measure 4.12-5 in the Draft EIR recommends the installation of the ATSAC traffic signal system improvements at the intersection of Topanga Canyon Boulevard and the SR-118 eastbound on/off ramps. This intersection is located in the City of Los Angeles, and therefore is under the jurisdiction of LADOT. This measure is consistent with the recommendations outlined in the LADOT correspondence dated January 11, 2002 which contains their comments to the Draft EIR. ATSAC will also be installed at intersections along Topanga Canyon Boulevard south of SR-118 by LADOT, which are under jurisdiction of the City and not the County.

The traffic signals at the Topanga Canyon Boulevard intersections with the SR-118 eastbound and westbound on/off ramps are maintained by Caltrans. Although the intersections are in separate jurisdictions (i.e., the County and the City), the timing of the traffic signals are coordinated. With the implementation of the recommended traffic mitigation measures outlined in the Draft EIR, Caltrans will continue to maintain and coordinate the traffic signal operations at the two intersections. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Woll 13 – Comment

Second, the proposed modifications to the Topanga/SR-118 area are subject to a formal project study by the California Department of Transportation ("CALTRANS"). I am advised by CALTRANS that this study can take several years and that approval is not assured. If you approve this development as currently proposed before the CALTRANS study is completed, there is a possibility that we in the neighborhood will be left with, literally, an unmitigated disaster in terms of local street impact and with no one to bear the financial responsibility for remedial action.

Woll 13 – Response

The commenter is referring to traffic mitigation measures 4.12-1 through 4.12-4 which are listed in the Draft EIR on page 4.12-28. The design and construction of the improvements within the state right-of-way will be processed through the standard Caltrans Encroachment Permit procedure. This is confirmed in the Caltrans correspondence dated February 15, 2002 (see Appendix K of this document).

Implementation of mitigation measures and assurance of completion is tied to various aspect of development of the project site and is outlined in the Mitigation Monitoring Program (see Appendix D of this document).

Woll 14 – Comment

In light of significant risk to area residents, I request that you not approve the project as currently presented and that you defer any decision at least until the uncertainty surrounding the final result of the CALTRANS study is completely resolved.

Woll 14 – Response

See Woll 13 – Response of this document.

Woll 15– Comment

I am writing to advise you of a further deficiency in the Draft Environmental Impact Report ("DEIR") for the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) for which you have scheduled a January 23 hearing. This deficiency relates to the Los Angeles County Metropolitan Transportation Authority's ("MTA") requirement for a Traffic Impact Assessment ("TIA") on SR-118, the Ronald Reagan Freeway.

In my comment letter of December 17, 2001, I advised you that the DEIR was deficient in that it attempted to sidestep the TIA by utilizing a measurement point outside the normal flow of traffic from this development. The applicant's January 7, 2001 response to my comment claims that the project will generate fewer than the 150 freeway trips that trigger the requirement for a TIA. However, the applicant has conveniently juggled the numbers so as to come just under that threshold.

Woll 15 – Response

See Section 4.2.6 (Topical Response) of this document.

Woll 16 – Comment

A proper analysis (Attachment A) shows that 160 or more A.M. peak-hour freeway trips in the congestion-impacted direction are likely to be generated by this project. Accordingly, the TIA must be performed and subjected to review and evaluation by the MTA and by the public before you take action on this development project. It is important to note that traffic at the applicable monitoring station (Woodley Avenue at SR-118) is currently rated on the verge of a "Failing" level of service by the MTA. Project-generated traffic will push it over the edge, adding to already-unacceptable congestion.

In light of this serious defect in the analysis of environmental impact, I request that you not approve the project as currently presented.

Woll 16 – Response

See Section 4.2.6 (Topical Response) of this document.

Woll 17– Comment

I am writing to object to the Draft Environmental Impact Report ("DEIR") for the proposed Deerlake Ranch development in Chatsworth (Project No. 99-239(5)) as it addresses "Related Projects" and underlying assumptions concerning population growth.

Section 3.0 of the DEIR includes a footnote stating that the traffic and other analyses therein consider only half of the 3,400 homes and less than half the 3 million square feet of commercial space now under construction in the mammoth adjacent Porter Ranch development. When evaluating the long-term impact of the proposed project on our neighborhood, it is wrong to ignore the effect of such a massive nearby development solely because it won't be completed when the subject project is finished.

Woll 17 – Response

The evaluation of cumulative traffic impacts in the Draft EIR is consistent with the requirements of CEQA. Section 15130 of CEQA requires that the lead agency (i.e., Los Angeles County) preparing the Draft EIR for the project evaluate potential cumulative impacts by considering the traffic effects of past, present and probable future projects (i.e., the related projects). The traffic analysis in the Draft EIR complies with the CEQA requirement (see the list of related projects provided in the Draft EIR on Table 4.12.3).

The LACDWP requires analysis of cumulative traffic impacts to the year of project build-out (estimated at the year 2005). This is also consistent with selection of the traffic study horizon year required by LADOT. The analysis and assessment of potential project-related traffic impacts based on an assumed build-out year of 2005 is reasonably foreseeable and therefore appropriate. Traffic conditions that may occur beyond 2005 becomes somewhat speculative and thus, would not yield any new meaningful information.

The Porter Ranch related project in the City of Los Angeles as referenced by the commenter is shown on Table 4.12.3 in the Draft EIR. It is also noted on the table that LADOT required that the traffic analysis include half the Porter Ranch related traffic in the 2005 traffic study horizon year. This assumption was also approved by the LACDWP. The inclusion of half of the Porter Ranch traffic provides for a highly conservative analysis of traffic conditions in 2005 as it is unlikely that the Porter Ranch project will be 50 percent complete by 2005. Further, while LADOT and LACDWP required inclusion of the Porter Ranch traffic, there is no "benefit" assumed in the Draft EIR traffic analysis for the traffic mitigation measures that the Porter Ranch project has been required to implement in the study area. Therefore, it is concluded that the traffic analysis in the Draft EIR provides a sufficiently conservative assessment of the cumulative traffic impacts associated with the Porter Ranch project and no further analysis is required.

Woll 18 – Comment

Appendix A.2 of the DEIR includes a comment letter from the Southern California Association of Governments. Page 2 of that comment letter contains a requirement that the DEIR reflect the most current SCAG population growth forecasts for unincorporated County areas. The accompanying table reflects a compound growth rate of 5.7% for years 2000 through 2005 and comparable rates through the year 2020. The applicant has used a rate of only 2%, thus grossly understating the load on the surrounding infrastructure and making the project's "fit" appear much better than it will actually be.

Woll 18 – Response

See Woll 17 – Response of this document for a discussion of the analysis of cumulative impacts.

In addition to the analysis of related projects, the cumulative impacts in the Draft EIR are also evaluated through application of an annual traffic growth factor applied to the existing traffic counts. The purpose of this traffic growth factor (commonly called the ambient growth factor) is to account for future traffic that may be generated at the study locations by other development projects not included in the list of related projects (i.e., because they are located outside the geographic area considered in the search of related projects or they are unknown at the time the traffic analysis was prepared).

The County's Traffic and Lighting Division requires application of the annual traffic growth factor to the year of project build-out (estimated at the year 2005). The annual growth rate used in the traffic analysis is intended to forecast annual increases in traffic volumes in the study area based on historical patterns. As noted in the Draft EIR, the growth rate used in the traffic analysis is 2% per year (or approximately a 10% increase in the 2000 existing traffic volumes to the 2005 build-out year). The selection of the growth rate and traffic study horizon year by L.A. County is consistent with the methodology used by the LADOT, as well as the CMP for Los Angeles County, County of Los Angeles MTA, November, 1997 (the CMP manual). By comparison, the CMP manual forecasts an annual increase in traffic of approximately 0.58% per year between 2000 and 2005. Therefore, the 2% annual growth rate utilized in the Draft EIR is highly conservative.

The letter and data referenced by the commenter appears to be related to a relatively narrow forecast of population, households and employment in the "Los Angeles City Unincorporated County area." The letter from SCAG does not require that these forecasts be used as a basis for forecasting traffic volumes in the study area, as suggested by the commenter. By contrast, the forecasts provided in the CMP manual are specifically provided to address future traffic volume growth on streets and freeways in the project area. As previously noted, the annual ambient growth traffic factor utilized in the Draft EIR (2% per year) between 2000 and 2005 is significantly higher than the growth rate cited in the CMP manual (0.58% per year). Therefore, it is concluded that the traffic analysis in the Draft EIR provides a sufficiently conservative assessment of future traffic volumes using the 2% annual ambient growth factor (in addition to the analysis of related projects) and no further analysis is required.

Woll 19 – Comment

The applicant would like us to take this project out of the real context in which we will have to put up with it and has taken unwarranted liberties with numbers in order to fool us. The two gross errors noted above pervade not only DEIR Section 4.12 (Transportation/Traffic) but sections that purport to evaluate the impact on schools, fire protection, law enforcement and other shared services.

I request that you not take action on this project until all affected sections of the DEIR are prepared anew reflecting all known and reasonably foreseeable increases in occupancy and use of the neighboring area. When seen against a backdrop of overloading and overcrowding, this project will make even less sense at its currently proposed density!

Woll 19 – Response

See 4.5 Woll 17 and 18 – Responses of this document.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

As stated in Section 4.9 of the Draft EIR, annual crime statistics indicate that the areas, including the project site, served by the Lost Hills/Malibu Station have a crime rate below the countywide average. Implementation of the project would serve to increase the existing funding mechanisms for any additional officers required to serve the project area. Impacts would not be significant with implementation of recommended mitigation measures. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

4.5.147 Martin Woll and David Tweet

December 17, 2001

Attachments to this letter can be found in Appendix A.

Woll/Tweet 1 – Comment

The accompanying comment letter addresses Section 4.12 Transportation/Traffic of the Draft Environmental Impact Report ("EIR") for Project No. 99-239(5), the proposed Deerlake Ranch development project ("Project"). The facts we have gathered and presented in our letter support our' contentions that EIR is materially deficient in its assessment of the Project's impact on traffic and that the proposed mitigation measures are inadequate to alleviate the effects of the Project on local street traffic.

For your convenience we have summarized the key points of our comments:

Nearly half of the intersections addressed in the traffic study are already rated severely congested, and increased traffic from a project of this density will make things worse.

Woll/Tweet 1 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Woll/Tweet 2 – Comment

Applicant's data gathering is flawed. The EIR traffic study utilizes traffic counts purportedly but not actually done and counts on days when schools were not in session.

Woll/Tweet 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Woll/Tweet 3 – Comment

Applicant ignored factors cited in the Institute of Traffic Engineers' Trip Generation Manual, thus significantly underestimating Project-generated trips.

Woll/Tweet 3 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Woll/Tweet 4 – Comment

Applicant assumed traffic patterns that do not reflect present or likely future traffic flow.

Woll/Tweet 4 – Response

Figure 4.12.6 of the Draft EIR provides the project traffic distribution pattern approved for use in the Draft EIR by the County's Traffic and Lighting Division and LADOT. The figure indicates that approximately 62% of the project trips are anticipated to use Topanga Canyon Boulevard (via "A" Street) for access with the remaining 38% utilizing Canoga Avenue. The project traffic distribution pattern provides a reasonable basis for assessing the traffic impacts of the project.

To address the concerns raised by the commenter, observations were conducted of trip distribution activity associated with the existing Twin Lakes community located immediately south of the project

site. Similar to the project, the Twin Lakes community is located north of SR-118 and has access to both Topanga Canyon Boulevard and Canoga Avenue. These observations concluded that approximately 75 percent of the Twin Lakes traffic utilized Topanga Canyon Boulevard while 25 percent utilized Canoga Avenue. These findings are summarized in a correspondence dated January 9, 2002 and has been provided to the County's Traffic and Lighting Division and LADOT. Therefore, the trip distribution observations conducted at the existing Twin Lakes community provide further support to the conclusion that the project traffic distribution pattern utilized in the Draft EIR provides a reasonable basis for assessing the traffic impacts of the project.

Woll/Tweet 5 – Comment

Applicant avoided performing a required freeway impact study by selecting an inappropriately located monitoring station as their measurement point.

Woll/Tweet 5 – Response

See Section 4.2.6 (Topical Response) of this document.

Woll/Tweet 6 – Comment

There are no proposed mitigation efforts involving improvement of roads, signals or intersections south of SR-118.

Woll/Tweet 6 – Response

See Section 3.0 and Appendices D and K of this document for additional mitigation.

Woll/Tweet 7 – Comment

Please read and consider our comments as you evaluate the proposed project. We believe you will find the adverse effects of this project on our neighborhood are unacceptable and the EIR lacks the accuracy and completeness to address those effects adequately.

Woll/Tweet 7 – Response

Please see Section 4.4.2 (CLPA 2 - Response) of this document regarding the adequacy of the EIR.

Woll/Tweet 8 – Comment

This comment letter addresses Section 4.12 Transportation/Traffic of the Draft Environmental Impact Report ("EIR") for project No. 99-239(5), the proposed Deerlake Ranch development project ("Project"), formerly named Chatsworth Ridge Estates. The facts we have gathered and presented in this letter support our contention that:

(1) the EIR is materially deficient in its assessment of the Project's impact on local street, highway and freeway traffic; and

Woll/Tweet 8 – Response

Please see Section 4.4.2 (CLPA 2 - Response) of this document regarding the adequacy of the EIR.

Woll/Tweet 9 – Comment

(2) the proposed mitigation measures are inadequate to alleviate the effects of the Project on local street traffic.

Woll/Tweet 9 – Response

Recommended traffic mitigation would reduce impacts to less than significant. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Woll/Tweet 10 – Comment

Status of Existing Intersections

The 13 intersections addressed in the traffic study include four presently rated "F" in level of service ("LOS") and two with an LOS rating of "E." (source: EIR Table 4.12.2) Because of the significant

proportion of severely congested intersections (nearly half of those studied), any increase in traffic due to the project will exacerbate an already unacceptable situation. Further, the estimated severity of the Project's impact will vary significantly with the assumptions used to develop the projections of Project-generated trips. We have found, as detailed below, that many of the applicant's assumptions are flawed by faulty data gathering inconsistent with factors cited in the Institute of Traffic Engineers' Trip Generation Manual, 6th edition ("ITE Manual"), and unrealistic. Further, the applicant's specific mitigation efforts are virtually all directed at a few intersections near the junction of Topanga Canyon Boulevard and SR-118, to the near exclusion of the remaining intersections which serve a far greater number of local residents at present.

Woll/Tweet 10 – Response

See Woll/Tweet 1 -- Response of this document for a discussion of the existing LOS at the study intersections, as well as for a discussion of significance thresholds used in the Draft EIR for the determination of significant traffic impacts.

See Section 4.2.6 (Traffic 1 and 2 -- Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Woll/Tweet 11 – Comment

Data Gathering Methodology

The EIR traffic study utilizes traffic counts purportedly but not actually done and counts on non-representative days.

The applicant has admitted that several study intersections were not actually observed and counted for traffic flow. Other intersections were observed and traffic counts recorded on Jan 4, 2000, when some local schools were not in session.

Accordingly, the entire premise of the traffic study is invalid and, for this reason alone, the results of the EIR traffic study are of questionable value. (See also "Deficient Analysis of Freeway Impact" elsewhere in this comment letter.)

Woll/Tweet 11 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Woll/Tweet 12 – Comment

Trip Generation Methodology

The study names the ITE Manual as its source for the Project-generated trip assumptions. That manual summarizes several hundred development- related traffic studies made throughout the United States and Canada. Some of these studies are 30 to 40 years old, and none are more recent than five years old.

Section 210 of the ITE Manual states, "This land use [single-family detached housing] includes data from a wide variety of units with different sizes, price ranges, locations and ages. Consequently, there is a wide variation in trips generated within this category. [Ranges vary from 5:1 to over 7:1.] As expected, dwelling units that were larger in size, more expensive, ore farther away from the central business district (CBD) had a higher rate of trip generation per unit than those that were smaller in size, less expensive, or closer to the CBD" [emphasis added]. In other words, the ITE study averages are not the appropriate benchmark for many developments, including this one.

The EIR assumes trip levels that are actually below the ITE study average of trips vs. dwelling units (Table 1), even though the Project contains all of the factors that the ITE Manual states lead to higher-than-average trip-generation rates:

Woll/Tweet 12 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Woll/Tweet 13 – Comment

More expensive homes The Project includes homes with expected selling prices according to the developer, ranging from over $500,000 to well over $800,000. This range is roughly two to three times the San Fernando Valley median home price of $270,500 (Note 1), and 2-1/2 to 4 times the Los Angeles County median home price of $205,000 (Note 2).

Woll/Tweet 13 – Response

This comment is out of the scope of the EIR. No additional response is required.

Woll/Tweet 14 – Comment

Larger homes Although the applicant has not disclosed the planned dwelling unit sizes, such high-end homes must be substantially larger that the county mean in order to command multiples of the mean area selling process and in order to qualify for institutional financing.

Woll/Tweet 14 – Response

This comment is out of the scope of the EIR. No additional response is required.

Woll/Tweet 15 – Comment

Farther from CBD Located in the far northwest corner of Los Angeles County, the Project is approximately 30 miles driving distance from downtown Los Angeles and more than 20 miles driving distance from the nearest business district in the Los Angeles basin. Even the "local" Warner Center office complex is seven miles away. By any standard, these homes are not close to the central business district.

Woll/Tweet 15 – Response

This comment is out of the scope of the EIR. No additional response is required.

Woll/Tweet 16 – Comment

Add to these factors the fact that Los Angeles is on of the most automobile-dependent and traffic-congested locations in the United States. It is clear that the likely traffic impact of the Project will be not only well above the averages noted in the ITE Manual but close to the top end of the applicable study ranges.

We believe that the EIR should calculate Project-generated trips using ITE Manual data at least one standard deviation above the average. We have shown in Table 2 the effect of using this more realistic assumption. The result is a 46% increase in total Project-generated weekday trips and a more than doubling of the Project-generated peak-hour weekday trips from the numbers assumed in the EIR. It is apparent that the use of misleading averages in the EIR results in substantial underestimation of the Projects impact on traffic congestion.

To put the foregoing in concrete terms, the EIR assumes that, on average, nearly half (46%) of all Project households will have no outbound trips during the morning peak hour—no work commute, no school commute! Under our more realistic yet conservative assumptions, on average each Project household would have 1.25 outbound morning peak-hour trips. This more closely matches the typical pattern of at least one work commute per household and school commutes for at least some households.

As an additional reasonableness test of our suggested methodology, we used the analysis of Trips vs. Vehicles contained in Section210 of the ITE Manual. As shown in Table 3, we found that even the study average number of trips, at 2.2-vehicles per household (note3), was nearly identical to our projections in Table 2 and well above those assumed in the EIR.

Woll/Tweet 16 – Response

Through the speculations of the commenter, there is no evidence provided or cited by the commenter that the trip generation forecast provided in the Draft EIR provides an unreasonable or unrealistic forecast of the number of trips to be generated by the project during the A.M. and P.M. peak hours.

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Woll/Tweet 17 – Comment

Trip Distribution Methodology

The assumed distribution of Project-generated trips also has a significant effect on the expected impact of the Project on local intersections. EIR page 4.12.18, states, "Project generated traffic was assigned to the local roadway system based on a traffic distribution pattern approved by LADOT staff." When we questioned the responsible staff of the Los Angeles City Department of Transportation, they could produce little factual basis for the approved patterns. We have found the assumed patterns to be unrealistic and contrary to current traffic patterns in several respects.

First, EIR Figure 4.12.6 shows that 65% of the outbound Project traffic entering SR-118 travels eastbound and 35% travels westbound. The applicant appears to be using current Topanga-to-118 distribution as a basis for this assumption. However, this ignores the huge eastbound component entering at DeSoto, the other freeway ramp serving this neighborhood. A more comprehensive analysis of current area traffic on EIR Figure 4.12.2 shows that over 80% of combined Topanga and De Soto entry to SR-118 is eastbound and less than 20% is westbound. Absent compelling evidence to the contrary, the applicant should assume the higher percentage of eastbound trips.

Woll/Tweet 17 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Woll/Tweet 18 – Comment

Next, the applicant assumes, as reflected on the EIR Figure 4.12.6, that 62% of peak morning Project traffic will exit the development to the West, onto Topanga. When we questioned LADOT as to this assumption, the response was that this is the "front entrance" and that "it's closer." In fact, based on the EIR Figure 2.10, the east exit to Canoga and SR-118 is about the same distance as or closer than the west exit to Topanga for most project residents. For those traveling to local schools, local grocery stores, the library, and points east in the San Fernando Valley, the Canoga exit is a shorter path. For those desiring to travel eastbound on SR-118, there is only about ½ mile difference between entering via Topanga and entering via Canoga/Chatsworth/De Soto, and the latter path bypasses ½ mile of morning freeway tie-up. It is much more reasonable to assume that many, if not most, Project commuters will take surface streets in their intended direction of travel rather than double back and endure and extra dose of freeway jam. The EIR should reflect this more logical and realistic assumption.

Woll/Tweet 18 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Woll/Tweet 19 – Comment

The Effect on Our Intersections

When a more reasonable umber of Project-generated trips and more logical pattern of traffic distribution are assumed, the impact on several local intersections is much more pronounced. We do not have access to the traffic software used by the applicant and suggest that the EIR analyses be re-run using the assumptions contained in this response in order to more accurately estimate Project

impact. However, we calculate that several study intersections will be impacted by the Project with an increase of more than 10% in the volume-to-capacity ratio("V/C"), thus degrading the LOS rating of these intersections by at least one letter grade. The impact on Canoga Avenue and on morning eastbound travel over Chatsworth Street near De Soto will be severe.

Woll/Tweet 19 – Response

See Section 4.2.6 (Traffic 1 and 2 – Responses) and Appendix K of this document for a discussion of the project trip generation and traffic distribution forecasts provided in the Draft EIR.

Woll/Tweet 20 – Comment

Deficient Analysis of Freeway Impact

The state's Congestion Monitoring Program ("CMP") requires an analysis of the Project's potential impact at CMP monitoring stations. The applicant states on page 4.12.21 of the EIR that, "the closest CMP freeway monitoring station to the project site is located on SR-118 at the Los Angeles/Ventura County line (approximately 2.5 miles west of the project site)." This station is located before the point where Project-generated morning traffic would join the new town-bound morning commute and past the point at which Project residents returning from the business districts of Los Angeles in the evening would exit the freeway. SR-118 is lightly traveled westbound in the morning and lightly traveled eastbound in the evening a this station. Thus, the station selected by the applicant cannot measure the Project's potential impact on commuting traffic that is subject to morning and evening congestion. On the premise of this inappropriately selected monitoring station, the applicant concludes that "...no impact would occur and further analysis is not required." We beg to differ!

The applicant acknowledges on EIR page 4.12.21 and in EIR Figure 4.12.6 that the vast majority of Project traffic using SR-118 is expected to travel eastbound from the Project in the morning and westbound to the Project in the evening. The applicant also acknowledges in EIR Figures 4.12.2 and 4.12.3 that the vast majority of measured present traffic using SR-118 travel eastbound in the morning and westbound in the evening. This is consistent with what local residents and commuters already know all too well: that there is substantial morning congestion on SR-118 in the eastbound direction and substantial evening congestion in the westbound direction. The Project would add to the congestion in both directions.

A proper analysis of freeway traffic impact would require use of the closest CMP monitoring station east of the Project site; this would be the station at SR-118 and Wilbur Avenue (three miles east of the Project site). A proper analysis would also require use of more appropriate and realistic traffic generation assumptions as detailed elsewhere in this letter.

Woll/Tweet 20 – Response

See Section 4.2.6 (Topical Response) of this document.

Woll/Tweet 21 – Comment

Inadequate Mitigation Measures

Substantially all specific mitigating improvements proposed by the applicant are devoted to a few County-controlled intersections. Even these proposed measured must be subjected to the CALTRANS project review process, and it could be years before they are actually implemented, assuming they are allowed to proceed at all.

For City-controlled intersections, which impact far more local residents, proposed mitigation consists solely of contributing toward the "118 Corridor" portion of the Automated Traffic Surveillance and Control ("ATSAC") project slated for future implementation. However, the ATSAC project involves:

-no intersection modification,

-no street widening,

-no signal addition,

-no protection for residential streets

In fact, there is no assurance that ATSAC, with or with out the applicant's financial contribution, will alleviate any of the burdens certain to be imposed on local residents by the Project. The problems caused by a project of this density cannot be solved without widening of several street segments, including Chatsworth Street and Canoga Avenue (for both of which the City already has rights-of-way), and enhancement of traffic signals at Chatsworth & De Soto and possibly other affected interactions.

As an aside, future ATSAC cost overruns which LADOT personnel say are likely, may not be recoverable from the applicant unless a letter of credit, surety bond or other form of future payment guarantee is provided by the applicant. The EIR contains no mention we could find of any such payment guarantee.

Woll/Tweet 21 – Response

Implementation of mitigation measures and assurance of completion is tied to various aspect of development of the project site and is outlined in the Mitigation Monitoring Program. Please see Appendix D of this document.

LADOT recommended in their January 11, 2002 correspondence that the project provide funding to the design and construction of the ATSAC and ATCS at two intersections in the City of Los Angeles. LADOT has recommended that funds be guaranteed through a cash payment prior to the issuance of any building permits related to the project. With payment of these funds, LADOT concluded that the project's traffic impacts in the City of Los Angeles would be mitigated. Therefore, no additional traffic mitigation measures are required or recommended.

Woll/Tweet 22 – Comment

Conclusion

As local residents, we know where Project-generated traffic is likely to flow: not on the already-congested highways but through our neighborhoods. Our streets lead to the schools, the stores, and the most desirable freeway entrances and exits. The EIR analysis does not reflect reality in either the volume or the distribution of Project-generated trips. It applies flawed logic to a base of flawed data; it is useless as currently presented.

As local residents, we also know where our traffic problems are and have a good idea what it will take to alleviate them. The mitigation measures proposed in the EIR will do nothing to solve the problems caused by the Project. The only ways to reduce the adverse effects of the Project in streets south of SR-118 are to make substantial improvements to intersections and adjacent roadways or to make a substantial reduction in the number of homes included in the Project.

Woll/Tweet 22 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Woll/Tweet 23 – Comment

We are writing to alert you to a deficiency in the Draft Environmental Impact Report ("EIR") for Project No. 99-239(5), the proposed Deerlake Ranch development project ("Project"), formerly named Chatsworth Ridge Estates. This deficiency, one of many we have found in our review of the Traffic section of the EIR, concerns the analysis- or rather the lack thereof of the Project's impact on traffic over SR-118, the Ronald Reagan Freeway, in the Chatsworth area. It is my understanding that you have jurisdiction over this issue.

Woll/Tweet 23 – Response

Comment noted.

Woll/Tweet 24 – Comment

The state's Congestion Monitoring Program ("CMP") requires and analysis of the Project's potential impact at CMP monitoring stations. The applicant states on page 4.12.21 of the EIR that, "the closest CMP freeway monitoring station to the project site is located on SR-118 at the Los Angeles/Ventura County line (approximately 2.5 miles west of the project site)." This station is located before the point where Project-generated morning traffic would join the town-bound morning commute and past the point at which Project residents returning from the business districts of Los Angeles in the evening would exit the freeway. SR- 118 is lightly traveled westbound in the morning and lightly traveled eastbound I the evening at this station. Thus, the station selected by the applicant cannot measure the Project's potential impact on commuting traffic that is subject to morning and evening congestion because it is not in the path of that traffic. On the premise of this inappropriately selected monitoring station, the applicant concludes that "... no impact would occur and further analysis is not required." We beg to differ!

The applicant acknowledges on EIR page 4.12.21 and in EIR Figure 4.12.6 that the vast majority of Project traffic using SR-118 is expected to travel eastbound from the Project in the morning and westbound to the Project in the evening. The applicant also acknowledges in EIR Figures 4.12.22 and 4.12.3 that the vast majority of measured present traffic using SR-118 travel eastbound in the morning and westbound in the evening. This is consistent with what local residents and commuters already know all too well: that there is substantial morning congestion on SR-118 in the eastbound direct and substantial evening congestion in the westbound direction. The Project would add to the congestion in both directions.

A proper analysis of freeway traffic impact would require use of the closest CMP monitoring station east of the Project site: this would be the station at SR-118 and Wilbur Avenue (three miles east of the Project site). The draft EIR also contains numerous flaws in data gathering, traffic generation assumptions and traffic distribution assumptions, all of which we have detailed in our comment letter on the draft EIR. The effect of these flaws is to understate both surface and freeway traffic by more than 50%. If corrected, the 150-vehicle reporting threshold would be exceeded.

If you agree with the foregoing, please advise Presidio Partners L.L.C., the applicant in this EIR, that they need to perform a proper freeway impact study using the CMP monitoring station at SR-118 and Wilbur and using corrected traffic volume and distribution assumptions. We would appreciate being kept informed of your actions in this matter and receiving copies of any related correspondence between your office and the applicant.

For your convenience we have enclosed a copy of EIR page 4.12.21 and a copy of our comment letter on the Traffic/Transportation section of the EIR. Please let us know if we can provide you with any additional information of clarification.

Woll/Tweet 24 – Response

See Section 4.2.6 (Topical Response) of this document.

4.5.148 Robin Wright

No date on letter, received by Regional Planning 4/15/2002

Wright 1 – Comment

I am writing this letter to express my concerns over the pending development at my doorstep. As a licensed general contractor with more than 20 years of building experience I know from the past that "the development" will occur as it has occurred so many times, and in so many places before.

If we take a moment to step back and look at the natural beauty of this area, the large rock formations that have stood for over 100,000 years, and the greenbelt valleys where the animals and birds find

safe harbor and water, to the unassuming horny toad peeking out at the days sun... one might reconsider the magnitude of destruction. and negative effects that a development of this size will have.

I have lived on Coya Trail for 10 years now, I have stopped my car to rescue baby quails which nest in the low lying brush, tarantulas which have found their way onto the road, not to mention rapid braking to miss a bobcat running down a hill to cross the road. It is all of our responsibilities to respect, cherish and protect the area. animals and their habitat, since they do not have a seat on the board.

I know it will happen one way or another, the homes will come, and in all fairness the developer has the right, as he has expended an enormous amount of money to own the land, in addition to meeting all the criterion imposed upon them.

Let is build responsibly, we need to look at the overall impact this development will have on everything as a whole: the area schools, area traffic, water supply, rain runoff and wildlife.

As I am only person, I am one of many that have deep concerns. It would be a shame to look into a Webster's dictionary 20 years from now and realize the word "foothill" no longer exists.

In closing I ask that you remember the beauty you saw when you passed through our neighborhood and keep this in mind when making a decision that will affect everything in this developments path, including ones conscience.

Thank you for your time and consideration on this matter.

Wright 1 – Response

The comment has been received and noted.

4.5.149 Lisa Ybarra

January 10, 2002

Ybarra 1 - Comment

I am writing to express my concerns regarding the Environmental Impact Report of the Deerlake Ranch project, CUP/Oak Tree Permit No. 99239, Tentative Tract Map 53138.

Evidently the EIR has not been thorough and is full of inconsistencies. I urge you to persist and ensure that this development does not destroy one of the remaining natural areas of our city and county.

As it stands this development will create a devastating impact on Chatsworth area and on unincorporated areas of Los Angeles County, as well as on our equine community (which co-exists with this natural environment).

Ybarra 1 – Response

Please see Section 4.4.2 (CLPA 2 - Response) of this document regarding the adequacy of the EIR.

Ybarra 2 - Comment

As a Chatsworth homeowner and resident. I am very disturbed by the planning of this development project. The devastation will affect the following:

the overcrowded streets and schools

Ybarra 2 – Response

As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Ybarra 3 - Comment

storm-water runoff will create a devastating affect on the natural environment, the disturbance of wildlife

Ybarra 3 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Section 4.3 of the Draft EIR included a discussion of impacts upon sensitive species, nesting birds and raptors, and wildlife movement. Impacts to biological resources would not be significant with implementation of recommended mitigation measures. Please see also Section 4.2.1 of this document for additional discussion of this issue.

Ybarra 4 - Comment

the disturbance of natural landscape

Ybarra 4 – Response

As stated in Section 4.1 of the Draft EIR, impacts to aesthetic resources would not be significant.

Ybarra 5 - Comment

the pollution in this very uncontaminated and natural environment

I am not opposed to development, but the destruction of nature as well as a valued and age old culture. There must be a better way to protect this beautiful place, the last area of uncontaminated nature left in the valley.

Ybarra 5 – Response

See Ybarra 3 – Response of this document.

Ybarra 6 - Comment

We need the horse trails provided and preserved. People from all over regularly trailer their horses here to ride our beautiful hills and canyons, probably because where they live, developers invaded and gave empty promises.

We bought real-estate in Chatsworth, horse property, so that we could live our dream. Live among other horse owners, live close to trails and wildlife.

Ybarra 6 – Response

As stated in Section 2.4.3 of the Draft EIR, the project includes a trail system that would loop the site, connecting to existing trails east, north, and west of the project site. See also Sections 2.4.7 and 4.4.1 (C ECHO 3 & 4 – Responses) of this document.

Ybarra 7 - Comment

Please protect this area from the destruction that is planned. Please take all the very needed steps and precautions necessary to preserve the last beautiful, uncontaminated, unpolluted area of Los Angeles.

Ybarra 7 – Response

The comment is noted. No additional response is required.

4.6 ADDITIONAL ENVIRONMENTAL INFORMATION DOCUMENT COMMENTS

4.6.1 State of California – Governor's Office of Planning and Research - State Clearinghouse

Terry Roberts, Senior Planner, State Clearinghouse

May 28, 2003

SCH 1 - Comment

The enclosed comment(s) on your Supplemental EIR was (were) received by the State Clearinghouse after the end of the state review period, which closed on August 16, 2002. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document.

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action the proposed project.

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (2000061049) when contacting this office.

SCH 1 - Response

The comment has been received and noted. No response is required.

4.6.2 State of California, Business, Transportation and Housing Agency - Department of Transportation

Stephen J. Buswell, IGR/CEQA Branch Chief

May 22, 2003

Caltrans 1 - Comment

This letter supplements our tentative agreement on the traffic mitigation for this project. All traffic mitigation will equate to "C" in the Equitable Cost formula found in the appendix of the Caltrans Guide for the Preparation of Traffic Impact Studies. We have the following comments on the recent traffic report.

The results of traffic analysis shown in Tables 5 and 6 should include forecasts of future (year 2020) traffic volumes with and without improvements.

Please provide queue lengths and delays on both northbound and southbound Topanga Canyon Boulevard (SR-27) in Table 7. Analysis should include results for year 2020 with improvements for Topanga Canyon Boulevard and also other locations shown in Table 7.

The details of Synchro Analysis including worksheets and outputs should be presented.

Caltrans 1 - Response

As agreed between the subdivider and the California Department of Transportation (Caltrans), the subdivider shall contribute to Caltrans $441,000 as its fair-share contribution toward long-term traffic improvements within State rights-of-way at the Topanga Canyon Boulevard (SR-27) and SR-118 Freeway interchange. The contribution shall be made prior to recordation of the first final tract map for the Project. Caltrans has agreed that payment of this contribution, along with other improvements at this interchange that are the subject of separate conditions, will fully mitigate the Project's potential present or long-term traffic impacts at the Topanga Canyon Boulevard (SR-27) and SR-118 Freeway interchange.

Tables 5 and 6 of the traffic study (included in Appendix K of this document) summarize the LOS of the study intersections for 2025 conditions. The LOS analysis was prepared in compliance with County and City of Los Angeles analysis methodologies. Analysis for 2020 conditions is not required to satisfy CEQA requirements.

It should be noted that in compliance with Caltrans requirements, the Permit Engineering Evaluation Report (PEER) evaluates current and future (2020) operations at the interchange with and without the recommended improvements. The PEER has been submitted to the Caltrans Permit Office for review in conjunction with the Encroachment Permit application for the interchange improvements.

The January 2, 2002 PEER prepared by LLG includes detailed year 2020 queuing and delay analyses associated with the Topanga Canyon Boulevard and SR-118 westbound ramps intersection. The PEER was submitted as part of the encroachment permit application to Andy Still (Caltrans Office of Permits) on January 4, 2002 for distribution and review.

All synchro analysis worksheets are included in Appendix B of the PEER, which was submitted on January 4, 2002.

Caltrans 2 - Comment

As shown in Table 5, the Levels of Service (LOS) at the Topanga Canyon Boulevard (SR-27)/freeway SR-118 W/B on/off ramps and Mayan Drive/Poema Place at year 2005 with project mitigation are E and F, respectively. A Monitoring Program including future traffic counts taken and reported on a regular basis should be implemented. Once the Program shows LOS and queue lengths becoming worse, further mitigation should be provided.

Caltrans 2 - Response

The traffic study provides a highly conservative forecast of future traffic volumes at the study intersections. The traffic study evaluates potential cumulative traffic impacts consistent with the requirements of CEQA. Section 15130 of CEQA requires that the lead agency (i.e., Los Angeles County) preparing the Draft EIR for the project evaluate potential cumulative impacts by considering the traffic effects of past, present and probable future projects (i.e., the related projects). The project traffic study complies with the CEQA requirement (see the list of related projects provided in the traffic study on Table 3, page 22).

In addition to the analysis of related projects, the cumulative impacts in the project traffic study are also evaluated through application of an annual traffic growth factor applied to the existing traffic counts. The purpose of this traffic growth factor (commonly called the ambient growth factor) is to account for future traffic that may be generated at the study locations by other development projects not included in the list of related projects (i.e., located outside the geographic area or unknown at the time the traffic analysis was prepared). The selection of the growth rate and traffic study horizon year by the County is consistent with the methodology used by LADOT, as well as the CMP.

Of further note is the conservative forecast of trips related to the project at the Topanga Canyon Boulevard intersection with the SR-118 westbound on/off ramps. The Draft EIR traffic study evaluated the potential traffic impacts associated with the development of 484 single-family homes. However, the current project has been reduced to 388 single-family homes.

In summary, the traffic study provides a highly conservative (i.e., worst case) forecast of future traffic volumes at the Topanga Canyon Boulevard intersection with the SR-118 westbound on/off ramps. Thus, future monitoring of the intersection is not required.

Table 7 (page 43) in the traffic study was prepared to provide additional review and data with respect to existing and future operations on the key approaches to the Topanga Canyon Boulevard / SR-118 intersection. Key findings from this table are as follows:

- The eastbound Poema Place, westbound Mayan Drive and the SR-118 westbound off-ramp primarily function at the LOS E and F ranges. Further, in the future condition without the project (and its associated interchange improvements), the interchange is forecast to operate primarily at an LOS F condition during the A.M. and P.M. peak hours.
- Implementation of the recommended mitigation measures will substantially improve operations at the interchange, with LOS D or better operations forecast for the three primary approaches during the A.M. and P.M. peak hours.

Therefore, the recommended mitigation measures will mitigate not only the project's traffic impacts, but also a significant portion of the existing and future traffic congestion not related to the project. The suggestion in the comment to conduct follow-up counts and measurements at the interchange, as well as the potential need to implement additional improvements is inappropriate based on the following:

- Under CEQA (Section 15097), a Mitigation Monitoring Program is intended to ensure that the mitigation measures recommended in the EIR are implemented. The Mitigation Monitoring Program is not intended to ensure the effectiveness of the recommended mitigation measures.
- It is logical to conclude that following the implementation of any improvement at the interchange that traffic volume growth (and therefore delay) will gradually increase. It is not appropriate to require the implementation of new mitigation measures at the interchange on a continual basis due to local and regional traffic growth not related to the project.
- The traffic study utilizes traffic forecasting and analysis tools and methodologies that are widely accepted in the traffic engineering industry (e.g., by Caltrans, County of Los Angeles, City of Los Angeles, Institute of Transportation Engineers, etc.) in demonstrating the effectiveness of the proposed improvements at the interchange in mitigating the incremental traffic impacts of the project. Therefore, no additional traffic mitigation measures are required or recommended.

Caltrans 3 - Comment

Statement on page 42 (paragraphs 1 and 2) of the report is, that the significant impacts are expected to be fully mitigated. Further mitigation measures need to be proposed, however, to improve the level of service at the following intersections, which remains at LOS "F", even after the currently specified mitigation.

- *Topanga Canyon Boulevard and SR-118 E/B on/off ramps*
- *Topanga Canyon Boulevard and Santa Susana Pass Road*
- *Topanga Canyon Boulevard and Chatsworth Street*
- *Topanga Canyon Boulevard and Devonshire Street*

In the Project Mitigation section beginning on page 40 of the report, long-term facility improvements for mitigation should be addressed in regard to widening specific roads to provide three travel lanes in each direction. These roads are Topanga Canyon Boulevard (between SR-118 westbound ramps) and Chatsworth Street.

Caltrans 3 - Response

Based on the significant impact criteria set forth by the lead agency (i.e., Los Angeles County), **all** of the significant impacts are expected to be fully mitigated. Therefore, no further mitigation measures are required for this project to satisfy CEQA requirements. The suggestion in the comment to

consider additional measures to mitigate current and/or future congestion not related to the project at the listed intersections is considered beyond the scope of the traffic impact study.

However, as a follow-up to a meeting on January 24, 2002 with representatives from Caltrans and LCDPW, the applicant has agreed to prepare a Caltrans PSR to address long-term traffic operations and potential improvements at the SR-118 interchange with Topanga Canyon Boulevard. The preparation of the PSR for long-term improvements would be in addition to the design and construction of the traffic improvements identified in the Draft EIR. The IGR/CEQA Branch at Caltrans agreed that the PSR is the appropriate document to review potential regional improvements on Topanga Canyon Boulevard in the vicinity of the SR-118 interchange in its letter dated February 15, 2002.

Caltrans 4 - Comment

We suggest further consideration of a "Roundabout" design option for the area of Topanga Canyon Boulevard at Poema Place / Mayan Drive and the State Route 118 W/B on/off ramps.

Caltrans 4 - Response

The concept of a roundabout design for the area of Topanga Canyon Boulevard at SR-118 westbound ramps and Poema Place/Mayan Drive was thoroughly studied in a technical report submitted to Caltrans on November 15, 2001. It was determined that the roundabout alternative is not feasible due to operational, safety, right-of-way, and cost constraints. A copy of this analysis is included in the PEER.

In addition, at a subsequent meeting with Caltrans, concurrence with our analysis of the roundabout design was indicated. Therefore, no further review of a roundabout design is required.

4.6.3 County of Los Angeles Fire Department

David R. Leninger, Acting Chief, Forestry Division Prevention Bureau

August 23, 2002

LACFD 1 - Comment

Planning Division: There appears to be some discrepancy between the mitigation measures proposed in this document and those specified by the Fire Department in previous correspondence. The description of the helispot required for fire protection and emergency medical service, on page 2-7, states: "Although the helispot would be graded, no pavement or other facilities would be constructed." Our August 28, 2002, letter setting forth the requirement for this facility (enclosed) specified, "The helispot shall have a 20' wide paved access and a fire hydrant on-site. . ."

Additionally, the Fire Department's requirements regarding helispots have been recently updated to accommodate the heavier Sikorsky Firehawks, which have been purchased to help wildland firefighting, especially in areas such as Chatsworth. The new specification includes a concrete pad, improved with a 60' by 60' concrete pad, 6: deep, reinforced 24" on center, #4 rebar, 3000 PSI concrete. The remaining graded area would be covered by #2 rock, 5" deep. Updating the mitigation requirements to this enhanced specification will greatly improve the versatility of this helispot in wildland firefighting.

LACFD 1 - Response

The proposed improvements to the helispot as described above will be implemented (see Appendix E of this document).

LACFD 2 - Comment

Land Development Unit – General Requirements: The Department may condition future development to provide additional means of access. The development of this project must comply with all

applicable code and ordinance requirements for construction, access, water mains, fire flows and hydrants.

This property is located within the area described by the Forester and Fire Warden as Fire Zone 4, Very High Fire Hazard Severity Zone (VHFHSA). All applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans, must be met.

Specific fire and life safety requirements for the construction phase will be addressed at the building fire plan check. There may be additional fire and life safety requirements during this time.

Every building constructed shall be accessible to Fire Department apparatus by way of access roadways, with an all weather surface of not less than the prescribed width, unobstructed, clear-to-sky. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

When a bridge is required, to be used as part of a fire access road, it shall be constructed and maintained in accordance with nationally recognized standards and designed for a live load sufficient to carry a minimum of 75,000 pounds.

Helipad improvements are required, and an approved mechanism must be employed to ensure that the Helipad is maintained serviceable at all times. The maximum allowable grade shall not exceed 15% except where the topography makes it impractical to keep within such grade, and then an absolute maximum of 20% will be allowed for up to 150 feet in distance. The average maximum allowed grade, including topography difficulties, shall be no more than 17%. Grade breaks shall not exceed 10% in 10 feet.

When involved with a subdivision, Fire Department requirements for access, fire flows and hydrants are addressed at the Los Angeles County Subdivision Committee meeting, during the subdivision tentative map stage. The development of this project must comply with all conditions imposed during the subdivision tentative tract map review process.

Fire sprinkler systems are required in some residential and most commercial occupancies. For those occupancies not requiring fire sprinkler systems, it is strongly suggested that fire sprinkler systems be installed. This will reduce potential fire and life losses. Systems are now technically and economically feasible for residential use.

LACFD 2 - Response

The project will comply with all Fire Code requirements and other ordinances (see Appendix E of this document). In addition, the load bearing capacity of the proposed bridges will be verified by the Department of Public Works prior to issuance of a construction permit. The preliminary fuel modification plan for this project has been approved by the Fire Department (see Appendix C.4 of this document).

LACFD 3 - Comment

<u>Single-Family Dwelling Units</u>: Single-family detached homes shall require a fire flow of 1,250 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration. Fire hydrant spacing shall be 500 feet and shall meet the following requirements:

1. *No portion of lot frontage shall be more than 450 feet via vehicular access from a public fire hydrant.*
2. *No portion of a structure should be placed on a lot where it exceeds 750 feet via vehicular access from a properly spaced public fire hydrant.*
3. *When cul-de-sac depth exceeds 450 feet on a residential street, hydrants shall be required at the corner and mid-block.*
4. *Additional hydrants will be required if hydrant spacing exceeds specified distances.*

LACFD 3 - Response

See Appendix H.2 of this document regarding fire flows for the project. Fire hydrants will be located as directed by the Fire Department.

LACFD 4 - Comment

Fire Department access shall be provided to within 150 feet of all portions of the exterior walls of the first story of any single unit. If exceeding 150 feet, provide 20-foot, paved width "Private Driveway/Fire Lane" to within 150 feet of all portions of the exterior walls of the unit. Fire Lanes serving 3-4 units shall be increased to 24 feet in width, and if serving 5 or more units, the fire lane shall be increased to 26 feet.

LACFD 4 - Response

All private driveways/fire lanes would meet the above requirements (see Appendix C.1 of this document).

LACFD 5 - Comment

A Fire Department approved turning area shall be provided for all driveways exceeding 150 feet in length and at the end of all cul-de-sacs. Streets or driveways within the development shall be provided with the following:

1. *Provide 36 feet in width on all collector streets and those streets where parking is allowed on both sides.*
2. *Provide 34 feet in width on cul-de-sacs up to 700 feet in length. This allows parking on both sides of the street.*
3. *Provide 36 feet in width on cul-de-sacs from 701 to 1,000 feet in length. This allows parking on both sides of the street.*
4. *For streets or driveways with parking restrictions: The entrance to the street/driveway and intermittent spacing distances of 150 feet shall be posted with Fire Department approved signs stating "NO PARKING – FIRE LANE" in three-inch high letters. Driveway labeling is necessary to ensure access for Fire Department use.*
5. *Turning radii shall not be less than 32 feet. The measurement shall be determined at the centerline of the road.*
6. *A Fire Department approved turning area shall be provided, at the end of a driveway of 300 feet or more in length.*

LACFD 5 - Response

All private and future streets would meet the above requirements (see Appendix C.1 of this document).

LACFD 6 - Comment

Limited Access Devices (Gates Etc.):

1. *Any single gate used for ingress and egress shall be minimum of 26 feet in width, clear-to-sky.*
2. *Any gate used for a single direction of travel, used in conjunction with another gate, used for travel in the opposite direction, (split gates) shall have a minimum width of 20 feet each, clear-to-sky.*
3. *Gates and/or control devices shall be positioned a minimum of 50 feet from a public right-of-way, and shall be provided with a turnaround having a minimum of 32 feet of turning radius. If an intercom system is used, the 50 feet shall be measured from the right-of-way to the intercom control device.*
4. *All limited access devices shall be of a type approved by the Fire Department.*

5. *Gate plans shall be submitted to the Fire Department, prior to installation. These plans shall show all locations, widths and details of the proposed gates.*

LACFD 6 - Response

All proposed gates and gate approaches would meet the above requirements (see Appendix C.1 of this document).

LACFD 7 - Comment

Traffic Calming Measures: All proposals for traffic calming measures (speed humps/bumps, traffic circles, roundabouts, etc.) shall be submitted to the Fire Department for review, prior to implementation/installation.

Should any questions arise regarding design and construction, and/or water and access, please contact Inspector Scott Greenelsh at (323) 890-4243.

LACFD 7 - Response

Comment is acknowledged.

LACFD 8 - Comment

Forestry Division – Other Environmental Concerns: The statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources and the County Oak Tree Ordinance.

The applicant has addressed most impacts in these area. However, our review and recommended conditions of approval for the project's Oak Tree Report (Oak Tree Report #99-239) are no longer valid. The Oak Tree Report and supporting maps are dated December 20, 2000, from L. Newman Design Group, Inc. which do not reflect the changes included within this document. The applicant must submit a new Oak Tree Report and maps for an accurate analysis by the Department's Environmental Review Unit.

LACFD 8 - Response

The revised Oak Tree Report has been submitted to and approved by LACFD (see Appendix F.3 of this document).

4.6.4 County of Los Angeles Public Library

Michele Mathieu, Administrative Assistant

August 14, 2002

LACPL 1 - Comment

This memo is in response to the additional environmental information on the above-referenced project. We have reviewed Section 3.0 regarding library services and request that the information be changed as follows:

Page 3-14, Section 3.0 – Public Services – Library

*Second sentence, **delete** and **change** 1,430 to **1,496**, 501 to **582**, and 2,860 to **2,992**.*

In addition, attached is a response to a request for comments for Deerlake Ranch from Public Library addressed to Mr. Kerwin Chih of Regional Planning. The response was mailed in February 2002.

LACPL 1 - Response

Comment noted, the impacts to library services have been changed to reflect the revised project. Please see Section 3.3 of this document.

4.6.5 County of Los Angeles Department of Public Works

Rod Kubomoto, Watershed Management Division

October 24, 2002

LACDPW 1 – Comment

Environmental Programs

As projected in the Los Angeles County Countywide Siting Element, which was approved by a majority of the cities in the County of Los Angeles in late 1997 and by the County Board of Supervisors in January 1998, a shortfall in permitted daily landfill capacity may be experienced in the County within the next few years. The construction and predevelopment activities associated with the proposed construction of 484 resident units will increase the generation of solid waste. Therefore, the proposed environmental document must identify what measures the project proponent plans to implement to mitigate the impact. Otherwise, the cumulative impact of these development projects will negatively impact the solid waste management infrastructure in the County. Mitigation measures may include, but are not limited to, implementation of waste reduction and recycling programs to divert the solid waste, including construction and demolition waste, from the landfills.

LACDPW 1 - Response

Comment noted. As stated in Section 4.15 of the Draft EIR, solid waste impacts would be less than significant due to adequate landfill capacity in the project service area. The Draft EIR included mitigation measures that would reduce waste going to landfills (see Page 4.15-7 of the Draft EIR and Appendix D of this document).

LACDPW 2 - Comment

Flood Maintenance

The proposed Continuous Deflective Separation (CDS) units, described under the subsection titled, "Drainage Improvement," pages 2-6, will be subject to design review and approval by Public Works before they can be transferred to Public Works for future operation and maintenance.

Public Works has just recently begun maintenance of newly accepted CDS units. Our current technique to cleanse and maintain the CDS units is by periodic vacuuming of the entrapped trash and sediment from the subsurface vaults with "Vactor" trucks. Depending on the location and trash loading of the proposed CDS units, Public Works' future maintenance activities may contribute to degradation of noise to nearby residential dwellings, and increased traffic congestion in the vicinity of the CDS units, if no off-street staging area is provided for our vacuuming operations.

The document should analyze these issues and address the potential impacts.

LACDPW 2 - Response

CDS units will be located under the streets within the project site. Although maintenance of these units will require temporary traffic control measures around vacuum trucks, the volume of traffic generated within the project site is not sufficient to create significant congestion. In addition, it is anticipated that the short-term and infrequent noise associated with the vacuuming operations of the CDS units would not be significant and similar to other urban activities such as street sweeping and solid waste collection.

LACDPW 3 - Comment

Geotechnical and Materials Engineering

The proposed project will not have significant environmental effects from a geology and soils standpoint, provided the appropriate ordinances and codes are followed. Portions of the project are located within both mapped potentially liquefiable areas and seismically induced landslide areas, per the State of California Seismic Hazard Zone Map, Oat Mountain Quadrangle. However, liquefaction

and seismic slope stability analyses are not warranted at this time. Detailed liquefaction and seismic stability analyses, conforming to the requirements of the State of California Division of Mines and Geology Special Publication 117, must be conducted at the tentative map and/or grading/building plan stages.

LACDPW 3 - Response

The comment is noted. Please see Appendix E of this document.

LACDPW 4 - Comment

Land Development (Grading and Drainage)

The Additional Environmental Information for the DEIR addresses the varying development alternatives proposed in response to comments received during the DEIR review period. The alternatives proposed in the Additional Environmental Information do not significantly affect drainage and water quality issues provided that proposed mitigation measures shown on the Drainage Concept approved by Public Works on March 6, 2001, are followed. We recommend that the approved Drainage Concept be included in the Environmental Impact Report.

LACDPW 4 - Response

The comment is noted. Please see Appendix H.1 of this document.

LACDPW 5 - Comment

Watershed Management (Los Angeles River and Malibu)

Since the project consists of single-family hillside residences, the project must comply with Standard Urban Stormwater Mitigation Plan requirements, as set forth by the Regional Water Quality Control Board.

It should be noted that Browns Sediment Placement Site is located southeast of the proposed developed area. Currently, it is an active flood control facility where Public Works places sediment as needed.

Water Resources Division should review this project to access impacts to Browns Canyon.

LACDPW 5 - Response

The comment is noted. Please see Appendices H.1 and I of this document.

LACDPW 6 - Comment

Watershed Management

The proposed project should include investigation of watershed management opportunities to maximize capture of local rainfall on the project site, eliminate incremental increases in flows to the storm drain system, and provide filtering of flows to capture contaminants originating from the project site.

LACDPW 6 - Response

See Appendix I of this document regarding capturing rainfall onsite. See Appendices H.1 and I of this document regarding runoff flow reduction and Stormwater filtration.

4.6.6 Las Virgenes Waster District

C. Eugene Talmage, RA, Planning Administrator

August 13, 2002

LVWD 1 - Comment

We are in receipt of additional Environmental Information to the Draft Environmental Impact Report for Deerlake Ranch Development also known as Tentative Tract No. 53138. The project calls for 484

unit single-family residential lots located on 230.58 acres. After reviewing the current document dated July 2002, the only notable change would be less water demand on our system with the reduced number of single-family units.

The following information was in our letter to Regional Planning dated January 16, 2002:

The district prepared a Water System Design Report (WSDR) for this project at the developer's expense in February of 2001. After comparing the WSDR criteria with the EIR, it appears that the Draft Environmental Impact Report has addressed all-important issues, including the construction of a new pipeline from Twin lakes Tanks to the project site. The potable water demand for this project as shown in our Water System Design Report is consistent with the Draft EIR.

The Draft Environmental Impact Report is consistent with the Los Angeles County General Plan's Land Use Element. The district's demand projections in its Potable Water System Master Plan and its Urban Water Management Plan (UWMP) are based on proposed development consistent with the County's General Plan land use designations within the LVMWD service area, the proposed project is consistent with the district's Master Plan and UWMP and would not have a significant impact on Las Virgenes Municipal Water District's ability to meet its objectives as prescribed in the California Water Code.

The Draft Environmental Impact Report has addressed the mitigated measures to the satisfaction of the district stating to build the proposed water supply system to district standards and to use water conservation measures such as low-flow toilets and show-heads to reduce water consumption.

LVWD 1 - Response

The comment is noted. Please see Appendix H.2 of this document.

4.6.7 Save Chatsworth, Inc., Philip J. Hess, Attorney

July 24, 2002

Hess 1 - Comment

I represent Save Chatsworth, Inc. (SCI), a nonprofit corporation organized to respond to development that threatens the rural, equestrian character of the Chatsworth area of the City and County of Los Angeles. On behalf of SCI I offer the following preliminary comments on the above-referenced Draft Additional Environmental Information document (DAEI) issued by your office on or about July 18, 2002.

As indicated in a Notice of Completion filed with the State Clearinghouse, this document will be circulated for comment for a period of only 30 days, ending on August 19,2002. This is a violation of CEQA on one or two alternative grounds, discussed in detail below.

First, the document by its own terms is a recirculation, at least in part, of the Draft EIR for the Deerlake Ranch project. Paragraph 1.2, on page 1-2, refers to Section 15088.5(f)(2) of the CEQA Guidelines. That provision deals exclusively with "Recirculation of an EIR Prior to Certification." Your office has thereby acknowledged that by issuing the DAEI it is recirculating the Draft EIR. What your office has failed to recognize is that Section 15088.5(d) of the CEQA Guidelines states:

> *"Recirculation of an EIR requires notice pursuant to Section 15087 . . . "*

Section 15087(e) in turn requires that "the review period for a draft EIR shall be as provided in Section 15105." and Section 15015(a) requires that "(w)hen a draft EIR is submitted to the State Clearinghouse for review by state agencies [as was the Deerlake Ranch EIR], the public review period shall not be less than 45 days . . . " There is no exception in Section 15088.5 for recirculation of an EIR in part.

The review period for DAEI is accordingly insufficient under the CEQA Guidelines. It should be withdrawn and reissued with a revised notice advising members of the public that the review and comment period is the full 45 days required by CEQA.

Hess 1 - Response

The County recirculated the Draft Additional Environmental Information document, but not because recirculation was required. Instead, the County recirculated the document beginning on or about July 18, 2002, to encourage public participation and wide public involvement in the public hearing process. See Section 4.6.1 of this document concerning the close of the comment period.

Hess 2 - Comment

Second, if your office allowed a thirty day comment because it does not consider the DAEI a recirculation, that determination is a violation of CEQA. Section 15088.5 of the CEQA Guidelines requires recirculation whenever "significant new information" is incorporated into a draft EIR. Two examples of "significant information included by the Guidelines are:

> *"(1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.*
>
> *(2) A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance."*

The DAEI circulated by your office meets both of these tests.

The DAEI discloses, in section 3.4 beginning at page 3-26, the addition of a new street connection between the Deerlake Ranch project and an area to the north. This street appears to have been added at the direction of the County as a new mitigation measure in response to complaints from property owners north of the project that their access or development rights would be impaired.

This new street is acknowledged to have a growth inducing impact, the magnitude of which is estimated on page 3-30 to be 137 single family residential units north of the project site. These additional units represent a twenty-eight percent increase in the potential development density of the area.

The DAEI acknowledges the need to review the potential impacts of this growth increment, but limits its analysis to water supply and sewer capacity. There is no discussion of how this increased density would affect traffic, air quality or the other impacts reviewed in the Draft EIR or in other portions of the DAEI for the other alternatives or project modifications presented.

One way to measure the potential significance of these unmentioned impacts is to utilize the direct proportionality methodology the DAEI applies when analyzing the effects of other project alternatives. The revised Certificate of Compliance buildout (revised Alternative 2), at 444 units, represents a reduction in density of fifteen percent from the 525 lot buildout initially presented, and reduction in density of eight percent from the 484 preferred alternative. The environmental impacts of revised Alternative 2 would, according to page 3-11 of the DAEI, be reduced by the identical fifteen and eight percent amounts, respectively. Additional Alternative 4, the Equestrian Alternative, is 60 lots or twelve percent small than the 484 preferred plan, and is projected on page 3-19 of the DAEI to result in an identical 12% drop in environmental effects.

By this reasoning, the induced growth from the new connection to the north will increase traffic in the area by twenty-eight percent above the impacts projected for the preferred 484 unit alternative. No mitigation measures of any kind are suggested for this significant increase in traffic. The County may wish to dispute the validity of a linear increase in traffic volumes identical to the growth in density, but that would require an analysis of what the appropriate traffic increase should be and an

explanation of why the direct proportionality methodology is considered valid for every other component of the DAEI.

Hess 2 - Response

Recirculation of the Draft Additional Environmental Information document pursuant to state and County environmental procedures was not required, because the additional information was not "significant new information" as defined in Section 15088.5 of the CEQA Guidelines.

Section 3.4 of the Draft Additional Environmental Information document explains why the potential development of the northern properties is not considered a significant growth inducing impact of the project.

Hess 3 - Comment

The amount of growth induced by the new street may also be seriously underestimated. The DAEI acknowledges, on pages 3-29 and 3-30, that the projection of 137 units rests entirely on the assumption that "the county will not develop their [sic] holdings and will more than likely transfer ownership to the [Santa Monica Mountains Conservancy]. Since the Deerlake Ranch project site itself includes 1,319 Record of Survey lots that the County formerly owned, and chose to develop rather than to preserve as open space, the validity of this assumption is certainly open to question. At a minimum, the 137 unit growth projection is a 'best case' assumption, and CEQA requires discussion and analysis of less optimistic scenarios as well.

The new street connection required by the County should accordingly be considered either a new mitigation measure causing a significant impact, or the source of a substantial increase in the severity of impacts previously estimated. Under either characterization it requires recirculation under Section 15088.5 of the CEQA Guidelines.

Hess 3 - Response

It can be assumed that the County will not develop its own properties, situated in either the northern properties or in the Deerlake addition properties, which are described in Section 3.4, for the reasons described in the section and because any such development of the County properties is extremely remote, speculative and without any basis in fact.

Hess 4 - Comment

Since the DAEI triggers an obligation to recirculate the Draft EIR at least in part for a comment period of 45 days the County should, at a minimum, withdraw it and reissue it with a new notice of the proper comment period. Such an action would not, however, cure the failure of the DAEI to provide a full and accurate analysis of the induced growth impacts of the new street connection. The County should accordingly not reissue any portion of the Draft EIR unless and until its content, as well as its comment period, complies with CEQA.

Given the number of new alternatives, project modifications and other new information disclosed by the DAEI on July 18, 2002, the most appropriate course of action for the County to follow upon revision of that document would be to recirculate the entire Draft EIR for Deerlake Ranch. That is the only means of providing the public a meaningful opportunity to review, understand and comment on the project and its various alternatives as they now stand.

Thank you for your consideration of these comments. I will provide additional comments on the DEIR, and on the draft Additional Environmental Information document, as the public review process progresses.

Hess 4 - Response

Recirculation of either the Draft EIR or the Draft Additional Environmental Information document is not required, because recirculation is only required under the circumstances described in Section 15088.5 of the CEQA Guidelines, and those circumstances do not exist here.

4.6.8 Twin Lakes Property Owners Association - Mark Watters, President

May 20, 2003

Watters 1 - Comment

This letter pertains to the Deerlake Ranch Development project that is currently before the Los Angeles Regional Planning Commission (Draft EIR 99-239-5).

A series of meetings organized by your deputy, Patti Friedman, has recently concluded and I felt that it was appropriate to contact you regarding results of those meetings. Totaling six in all, the meeting began in December of 2002 and were hosted by the developer, Presidio Chatsworth Partners, LLC. The purpose of the meetings was to provide the opportunity for various representatives of our community to work with the developer in the hope of coming to an agreement as to the size, design and impact of the proposed development. Thanks, in no small part, to your request that all lots be a minimum 15,000 square feet, the community had every reason to be optimistic that Presidio would see fit to reduce the density and redesign the project to lessen the impact on both the community and the environment.

Many positive changes have been presented over the course of the last six months. The development has been divided into four separate neighborhoods, each differing in style and personality. The equestrian trails have been redesigned to provide access to Devil's Canyon as well as keeping the perimeter trail that had existed in previous designs. Many of the streets are single-loaded and many of the lots feature a "terrace" design that we are told, will minimize the amount of grading needed to complete the project. Although traffic mitigation remains a concern, there has been improvement from the previous design. I feel the developer has worked hard to minimize the impact in most of the areas and it is my hope that they will continue to improve this situation.

Watters 1 - Response

The comment has been noted. No additional response is required.

Watters 2 - Comment

Unfortunately, two serious issues remains that have yet to be resolved. The first pertains to the current plan to allow all of storm drain runoff to flow into Devil's Canyon. Despite our community's plea to change this, there has been no change from the original proposal to run the water through an elaborate filtering system that apparently promise to remove "90% of all contaminants." We are very much concerned that this system has not been tested in Southern California, and furthermore that all tests that have been performed to date were paid for and conducted by the manufacturer. Even if the system proves to be effective, the amount of pollutants that would still pass through would be devastating to the unique ecosystem that exists in this beautiful canyon. The developer has stated that the cost of building a drainage system that would bypass building a drainage system that would bypass Devil's Canyon would be too expensive. I find this unacceptable. Do we permit other businesses to ignore the impact on our environment simply because they cannot afford it? Of course not. I urge you to insist that the developer be required to install the necessary system to protect the wildlife, water and plant life that currently exist in Devil's Canyon.

Watters 2 - Response

See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Watters 3 - Comment

The second issue that has yet to be resolved is the matter of density. In October of 2002, the Regional Planning Commission insisted that the developer "substantially reduce the density" of Deerlake Ranch and "work with the community to redesign the project." At that time, the project was 424 homes. We were very disappointed when Presidio unveiled their latest redesign at 388 homes – a

mere 9% reduction! The current plan features numerous homes crowded together on highly visible ridgelines. Fewer than 150 homes would be built on lots of 15,000 square feet and only 53 homes would allow for private horse ownership. Again, financial hardship was the reason given by the developer for not reducing the density further. We feel that the burden of the developer's financial situation should not rest on the surrounding community – inadequate financial planning is not an excuse for building a project that is not properly suited for the chosen location.

Watters 3 - Response

See Appendix I of this document for additional discussion of this issue.

Watters 4 - Comment

Our response to both of these issues is the same. If Presidio cannot afford to develop this precious resource properly, then they should not be permitted to proceed. Their current plan would pollute a creek that runs as close as 150 feet to numerous homes as well as existing and planned for equestrian and hiking trails. Their current plan would transform these beautiful sequestered hills into another overcrowded "Porter Ranch" disaster. It is our hope that we can continue our discussions with representatives from Presidio Partners on these and other issues. We had hoped to propose specific areas where carefully chosen home sites could be eliminated but our numerous requests for the necessary topo maps were denied by the developer. We remain committed to pointing out these modest reductions and plan to prepare a proposal as to where they might be applied.

Watters 4 - Response

See Section 4.6.9 and Watters 2 and 3 – Responses of this document.

Watters 5 - Comment

One additional concern that we have as a community is the enforcement of numerous community benefits that have been offered to us by the developer. We appreciate the county's assistance in working out the specific wording of the special conditions document that will protect our community down the line and ensure that each and every one of these special conditions will be completed in a timely manner.

Watters 5 - Response

The applicant is required to comply with all Conditions of Approval, which include "community benefits." See Appendix E of this document.

4.6.9 Lorraine D. Deniz

August 2, 2002

Deniz 1 – Comment

I would appreciate it, if you could take a few minutes out of your busy day and consider a few of the concerns that I have regarding my community.

As a long time member of the Chatsworth community, I am very concerned with the ramifications of this extensive development project called Deerlake Highlands. Over the years, many residents have settled in our wonderful community because of the visual ambience of the easy, natural designs that Mother Nature has provided. Many have come here because this is one the last cities in the San Fernando Valley that has property zoned A-2 for agricultural keeping.

In my opinion, it is unfair to myself and other families that have settled here, while you allow this developer to come in and rob us blind and steal our communities Western and Native American history and untouched rural-ness away from us.

Deniz 1 – Response

See Section 4.3.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

As stated in Section 4.4 of the Draft EIR, impacts to cultural and historic resources would not be significant.

Deniz 2 – Comment

I am not against growth, but I do feel there should be limits. Some of these are simple, as other developers had to comply with issues like this in the past. For example, the Heritage housing tract is comprised of nice 3-5 bedroom homes with large lots that are zoned A-2. The homeowners have different tastes and live very happily among one another in this housing tract. As some owners keep their horses, others have pools, some tennis courts and other have a beautiful landscaped oasis that they can relax in after a hard day at the office.

Deniz 2 – Response

See Section 4.3.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Deniz 3 – Comment

Our community has rallied together and we have presented a solid argument pointing out flaws in the EIR. Even the County's own environmental habitat study found that the proposed development is in an ecologically sensitive area. According to the SEA the optimal density for this sensitive area is one dwelling unit per ten acres. Yet at the first public hearing, the LA County Regional Planning Staff Report listed several alternatives for this development. One of those alternatives being titled "Alternative 3." This should be closely examined and considered. As this alternative would be a decision made upon "smart growth" rather than poorly planned growth that would burden the local community socially and economically.

Deniz 3 – Response

See Section 4.4.1 (C ECHO 2 – Response) of this document regarding SEA boundary recommendations. See also Section 4.3.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Deniz 4 – Comment

Other issues are community resources; fire stations, libraries, police department and schools. Will the above-mentioned resources be able to handle this inherited growth?

Deniz 4 – Response

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

As stated in Section 4.9 of the Draft EIR, no significant impacts would occur to police protection services with implementation of the project. See Section 4.2.5 (Police Services 1 and 5 – Responses) and Appendix E of this document for additional discussion regarding this issue.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Deniz 5 – Comment

What about traffic impacts? Currently, traffic levels exceed levels predicted on DeSoto and Topanga at the 118 Freeway. Furthermore, the developers want to widen Canoga Ave using this as a main thoroughfare in the ingress/egress plan. The developer said it could support up to 10,000 vehicle trips

per day. In my opinion, Canoga Ave. is insufficient and will not be able to handle this large increase of traffic during rush hours and in time of emergency assistance.

Deniz 5 – Response

As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

Deniz 6 – Comment

What about storm water run off and pollution that will be dumped into Devil and Browns Canyon?

Deniz 6 – Response

As stated in Section 4.6 of the Draft EIR, impacts with regard to urban runoff would not be significant with implementation of mitigation measures. See Section 4.2.2 (Urban Runoff 1 – Response) and Appendix I of this document for additional discussion of this issue.

Deniz 7 – Comment

These are some of the many questions that I have. I am hoping you will consider the above questions and have an open mind with visions of what our communities' future will be when it comes time for you to make your final decision. Please remember the plea of the local residents and there feelings and help our community preserve what is left of the wildlife, the natural beauty of our hills and stream lined valley and the small town feeling for future generations to come.

Deniz 7 – Response

The comment is noted and the commenter's opposition to the project will be forwarded on to the decision makers.

4.6.10 Gary Schwagerle

November 15, 2002

Schwagerle 1 - Comment

I was hoping to get an update report on the status of the Deerlake Ranch Development. Can you mail me the minutes from the last meetings. I believe there was a meeting August 21, 2002? Where's it at and where's it going? In particular is my interest in parcel APN #2819-009-001. Any new information would greatly be appreciated.

Schwagerle 1 - Response

The comment has been noted. No additional response is required.

4.7 REVISED PROJECT DESIGN SUMMARY DOCUMENT COMMENTS

4.7.1 Southern California Association of Governments

Jeffrey M. Smith, AICP, Senior Regional Planner, Intergovernmental Review

July 8, 2003

SCAG 1 - Comment

Thank you for submitting the Deerlake Ranch Project for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. The activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance

provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

We have reviewed the Deerlake Ranch Project, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). The proposed project is not a residential development of more than 500 dwelling units. Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time.

A description of the proposed Project was published in SCAG's June 16-30, 2003 Intergovernmental Review Clearinghouse Report for public review and comment.

SCAG 1 - Response

This comment has been noted. No additional response is required.

4.7.2 County of Los Angeles Fire Department

David R. Leininger, Chief, Forestry Division Prevention Bureau

July 14, 2003

LACFD 1 - Comment

Land Development Unit – General Requirements:

The Department may condition future development to provide additional means of access. The development of this project must comply with all applicable code and ordinance requirements for construction, access, water mains, fire flows and hydrants.

This property is located within the area described by the Forester and Fire Warden as a Fire Zone 4, Very High Fire Hazard Severity Zone (VHFHSZ). All applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans, must be met.

Specific fire and life safety requirements for the construction phase will be addressed at the building fire plan check. There may be additional fire and life safety requirements during this time.

Every building constructed shall be accessible to Fire Department apparatus by way of access roadways, with an all-weather surface of not less than the prescribed width, unobstructed, clear-to-sky. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

When a bridge is required, to be used as part of a fire access road, it shall be constructed and maintained in accordance with nationally recognized standards and designed for a live load sufficient to carry a minimum of 75,000 pounds.

The maximum allowable grade shall not exceed 15% except where the topography makes it impractical to keep within such grade, and then an absolute maximum of 20% will be allowed for up to 150 feet I distance. The average maximum allowed grade, including topography difficulties, shall be no more than 17%. Grade breaks shall not exceed 10% in 10 feet.

When involved with a subdivision in unincorporated areas within the County of Los Angeles, Fire Department requirements for access, fire flows and hydrants are addressed at the Los Angeles County Subdivision Committee meeting, during the subdivision tentative map stage.

Fire sprinkler systems are required in some residential and most commercial occupancies. For those occupancies not requiring fire sprinkler systems, it is strongly suggested that fire sprinkler systems be installed. This will reduce potential fire and life losses. Systems are now technically and economically feasible for residential use.

LACFD 1 - Response

See Section 4.6.3 (LACFD 1 and 2 Responses) of this document.

LACFD 2 - Comment

Single-Family/Two-Family Dwelling Units

Single-family detached homes shall require a minimum fire flow of 1,250 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration. Two-family dwelling units (duplexes) shall require a fire flow of 1,500 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration. When there are five (5) or more units taking access on a single driveway, the minimum fire flow shall be increased to 1,500 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration. Fire hydrant spacing shall be 600 feet and shall meet the following requirements:

1. *No portion of lot frontage shall be more than 450 feet via vehicular access from a public fire hydrant.*
2. *No portion of a structure should be placed on a lot where it exceeds 750 feet via vehicular access from a properly spaced public fire hydrant.*
3. *When cul-de-sac depth exceeds 450 feet on a residential street, hydrants shall be required at the corner and mid-block.*
4. *Additional hydrants will be required if hydrant spacing exceeds specified distances.*

LACFD 2 - Response

See Section 4.6.3 (LACFD 3 Response) of this document.

LACFD 3 - Comment

Fire Department access shall be provided to within 150 feet of all portions of the exterior walls of the first story of any single unit. If exceeding 150 feet, provide 20 feet, paved width "Private Driveway/Fire Lane" to within 150 feet of all portions of the exterior walls of the unit. Fire Lanes serving 3-4 units shall be increased to 24 feet in width, and if serving 5 or more units, the Fire Lane shall be increased to 26 feet. A Fire Department approved turning area shall be provided for all driveways exceeding 150 feet in length and at the end of all cul-de-sacs. Streets or driveways within the development shall be provided with the following:

1. *Provide 36 feet in width on all collector streets and those streets where parking is allowed on both sides.*
2. *Provide 34 feet in width on cul-de-sacs up to 700 feet in length. This allows parking on both sides of the street.*
3. *Provide 36 feet in width on cul-de-sacs from 701 to 1,000 feet in length. This allows parking on both sides of the street.*
4. *For streets or driveways with parking restrictions: The entrance to the street/driveway and intermittent spacing distances of 150 feet shall be posted with Fire Department approved signs stating "NO PARKING – FIRE LANE" in three-inch high letters. Driveway labeling is necessary to ensure access for Fire Department use.*
5. *Turning radii shall not be less than 32 feet. This measurement shall be determined at the centerline of the road.*
6. *A Fire Department approved turning area shall be provided, at the end of a driveway of 300 feet or more in length.*

LACFD 3 - Response

See Section 4.6.3 (LACFD 5 - Response) of this document.

LACFD 4 - Comment

Limited Access Devices (Gates etc.):

All access devices and gates shall meet the following requirements:

1. *Any single gated opening used for ingress and egress shall be a minimum of 26 feet in width. clear-to-sky.*
2. *Any divided gate opening (when each gate is used for a single direction of travel – i.e., ingress or egress) shall be a minimum width of 20 feet clear-to-sky.*
3. *Gates and/or control devices shall be positioned a minimum of 50 feet from a public right-of-way, and shall be provided with a turnaround having a minimum of 32 feet of turning radius. If an intercom system is used, the 50 feet shall be measured from the right-of-way to the intercom control device.*
4. *All limited access devices shall be of a type approved by the Fire Department.*
5. *Gate plans shall be submitted to the Fire Department, prior to installation. These plans shall show all locations, widths and details of the proposed gates.*

LACFD 4 - Response

See Section 4.6.3 (LACFD 6 - Response) of this document.

LACFD 5 - Comment

Traffic Calming Measures:

All proposals for traffic calming measures (speed humps/bumps, traffic circles, roundabouts, etc.) shall be submitted to the Fire Department for review, prior to implementation.

LACFD 5 - Response

See Section 4.6.3 (LACFD 7 - Response) of this document.

LACFD 6 - Comment

Forestry Division – Other Environmental Concerns:

The statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources, and the County Oak Tree Ordinance. The applicant has addressed most impacts to the areas germane to the statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division.

However, our Environmental Review Unit is currently reviewing the revised Oak Tree Report #99-239 recently received and will withhold further comment until that review is completed and submitted to the Los Angeles County Department of Regional Planning.

LACFD 6 - Response

Comment noted. This review has been completed (see Appendix E of this document).

4.7.3 County of Los Angeles - Department of Public Works

Rod Kubomoto

August 11, 2003

LACDWP 1 - Comment

Environmental Programs

As projected in the Los Angeles County Countywide Siting Element, which was approved by a majority of the cities in the County of Los Angeles in late 1997 and by the County Board of Supervisors in January 1998, a shortfall in permitted daily landfill capacity may be experienced in the

County within the next few years. The construction and/or predevelopment activities and post development operation associated with the proposed project may increase the generation of solid waste and may negatively impact solid waste management infrastructure in the County. Therefore, the proposed environmental document must identify what measures the project proponent plans to implement to mitigate the impact. Mitigation measures may include, but are not limited to, implementation of waste reduction and recycling programs to divert the solid waste, including construction and demolition waste, from the landfills.

The California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires each development project to provide an adequate storage area for collection and removal of recyclable materials. The environmental document should include/discuss standards to provide adequate recyclable storage areas for collection/storage of recyclable and green waste materials for this project.

The existing hazardous waste management (HWM) facilities in this County are inadequate to handle the hazardous waste currently being generated. The proposed project may generate household hazardous waste which could adversely impact existing HWM facilities. This issue should be addressed and mitigation measures provided.

Should any operation within the subject project include the construction/installation, modification or removal of underground storage tanks, our Environmental Programs Division must be contacted for required approvals and operating permits.

LACDWP 1 - Response

See Section 4.6.5 (LACDWP 1 - Response) of this document.

LACDWP 2 - Comment

Geotechnical and Materials Engineering

The proposed project will not have significant environmental effects from a geology and soils standpoint, provided the appropriate ordinances and codes are followed. Portions of the project site are located within both mapped potentially liquefiable areas and mapped potential seismically induced landslide areas, per the State of California Seismic Hazard Zone Map, Oat Mountain Quadrangle. However, liquefaction analysis and seismic slope stability analysis are not warranted at this time. Detailed liquefaction and seismic stability analyses, conforming to the requirements of the State of California Division of Mines and Geology Special Publication 117, must be conducted at the tentative map and/or grading/building plan stages.

LACDWP 2 - Response

See Section 4.6.5 (LACDWP 3 - Response) of this document.

LACDWP 3 - Comment

Land Development

Grading and Drainage – Comply with the drainage concept/Standard Urban Storm Water Mitigation Plan which was conceptually approved on March 28, 2003, to the satisfaction of Public Works.

LACDWP 3 - Response

Comment is noted. No additional response is required.

LACDWP 4 - Comment

Traffic and Lighting

We agree with this document that the traffic generated by the project alone will significantly impact the following intersections. The proposed mitigation measures identified in the document will reduce the impacts to a level less than significant. These mitigation measures shall be made conditions of approval for this project and included in the Final Environmental Impact Report.

County of Los Angeles

Topanga Canyon Boulevard at Mayan Drive/Poema Place

East Approach: One left-turn lane and one shared through/right-turn lane (add one left-turn lane).

South Approach: One left-turn lane and one exclusive right-turn lane (convert shared left-/right-turn lane to a left-turn lane and one exclusive right-turn lane).

West Approach: One share through/right-turn lane and one exclusive right-turn lane (add one exclusive right-turn lane).

Install Traffic Signals: Traffic signals shall be interconnected with the traffic signals at the intersection of Topanga Canyon Boulevard and the Ronald Reagan (SR-118) Freeway per the satisfaction of Caltrans and the County of Los Angeles Department of Public Works.

LACDWP 4 - Response

Comment noted. The requested mitigation measures have been included, see Appendices D and E of this document.

LACDWP 5 - Comment

Topanga Canyon Boulevard at SR-118 Westbound Ramps

North Approach: Two through lanes and one right-turn lane (add exclusive right-turn lane).

LACDWP 5 - Response

Comment noted. The requested mitigation measures have been included, see Appendices D and E of this document.

LACDWP 6 - Comment

City of Los Angeles

We have received a letter from the City of Los Angeles Department of Transportation dated June 6, 2002 (copy attached). The letter contains the City's recommendations of mitigation measures required to fully mitigate the project impacts to the intersections and roadways in the City. We reviewed the letter and the traffic study for the project and concur with their recommendations.

LACDWP 6 - Response

Comment noted. The requested mitigation measures have been included see Appendices D and E of this document.

LACDWP 7 - Comment

Freeways

We concur with the study and recommend that the project pay its fair share toward long-term traffic improvements to the Topanga Canyon Boulevard at SR-118 interchange. The long-term traffic improvements are needed at this interchange since the interchange is operating at its capacity and would need to be upgraded to accommodate additional traffic expected from the cumulative traffic of the proposed project and other related projects in the area. The project shall, prior to recordation of the first final map for this project, work with Caltrans to provide all necessary data and information pertaining to long-term improvements at the Topanga Canyon Boulevard at SR-118 interchange, in accordance with Caltrans Guide for the Preparation of a Project Study Report (PSR). The project shall determine and pay the project's equitable share toward the long-term traffic improvements to the satisfaction of Caltrans. During this period, the permittee shall proceed with diligence in these efforts and inform Public Works' Traffic and Lighting Division of its progress with Caltrans in meeting these requirements.

A Congestion Management Program (CMP) analysis has been conducted in the traffic study to evaluate the project impact on the regional transportation system. We agree with the analysis that no

significant CMP-related traffic impacts will be caused by the project on the CMP monitored route or freeways. The project will have significant CMP traffic impacts to the Topanga Canyon Boulevard at SR-118 westbound and eastbound ramps; however, the proposed mitigation measures for the intersections will fully mitigate the project's impacts to a level less than significant.

LACDWP 7 - Response

Regarding potential CMP impacts, the comment has been noted and mitigation measures are included in Appendices D and E of this document.

LACDWP 8 - Comment

Waterworks and Sewer Maintenance

Sewer Maintenance

Waterworks and Sewer Maintenance Division is responsible for the operation and maintenance of local sewers within the unincorporated areas of the County of Los Angeles. Therefore, the entire project will be required to be annexed to the Consolidated Sewer Maintenance District. The applicant should contact the Land Development Division, Road/Sewer and Water Section at (626) 458-4910, for information regarding plan check procedures and sewer maintenance fees.

LACDWP 8 - Response

The comment is noted and the requested provisions have been included (see Appendix E of this document).

LACDWP 9 - Comment

Watershed Management

The proposed project should include investigation of watershed management opportunities to maximize capture of local rainfall on the project site, eliminate incremental increase in flows to the storm drain system, and provide filtering of flows to capture contaminants originating from the project site.

LACDWP 9 - Response

See Section 4.6.5 (LACDWP 6 - Response) of this document.

LACDWP 10 - Comment

FEMA Support

The project site is located in an area designated as Flood Zone C, which is not prone to major flooding hazards. This is an area of minimal flooding.

LACDWP 10 - Response

The comment is noted. No further response is required.

4.7.4 County of Los Angeles Sheriff's Department Headquarters

Leroy D. Baca, Sheriff

July 1, 2003

LACSD 1 - Comment

Please accept my sincerest appreciation for the opportunity to comment on the Revised Project Design Summary associated with the Draft Environmental Impact Record (DEIR) for the Deerlake Ranch proposal. The Los Angeles County Sheriff's Department, Malibu/Lost Hills Station, provides general law enforcement service to the area, while the California Highway Patrol (CHP) is responsible for the enforcement of traffic-related laws and regulations.

The proposed project site is located in an unincorporated area of Los Angeles County. While the number of residential units and expected residential population would decrease by approximately

20% under the revised plan, it is reasonable to conclude an increased demand for law enforcement services may still occur. In addition, the location of the proposed project may result in extended response times to routine, priority, and emergency calls for service.

I sincerely appreciate the opportunity to comment on this development proposal and the opportunity it has afforded me in evaluating law enforcement service levels in the unincorporated community of Chatsworth.

LACSD 1 - Response

See Section 4.3.5 of this document for a discussion of impacts and updated mitigation measures.

4.7.5 Save Chatsworth

August 29, 2003

Note: Maps and other information referred to in this comment letter is included in Appendix B.3 of this document.

SC1 - Comment

This book is a compilation of the studies and opinions of members of Save Chatsworth, Inc.

We presented the bulk of this material to you at our meeting on Monday, August 18, but also included are documents addressing other remaining concerns.

We believe that we have clear and concise arguments for further reduction in the density of the Deerlake Ranch development project, and we hope that you will take our research under consideration.

Sincerely,

Save Chatsworth, Inc.

SC1 - Response

The document was received and comments have been noted.

SC2 - Comment

Presidio Project Proposed CDS Technologies System for Storm Water Runoff Treatment

History: *The studies and experts cited in the CDS Continuous Deflectory Separation System booklet have been funded by the manufacturer. The filter changes have not been addressed or tested by the County Sanitation Department. There has been no research done when upstream from these devices, storm water runoff capacity is at maximum force. County Land Division engineers were not given a <u>number</u> for dwellings versus existing situation. There is no system currently in use for any length of time, in an area similar in geological, geographical, and density level as the site under discussion. Devil Canyon at flood stage is quite a different volume and flow speed than the testing done in the manual and laboratory. No other project in our area proposes such a system.*

Currently: *The City of Santa Monica has had an apparatus in use for about 2-3 years. Mr. Neil Shapiro of the Watershed Division, City of Santa Monica Storm Water Maintenance Division, reports to me that their unit does not remove all "solids" without additional attachments and filters put on during overflow. About 40 to 60% of the sediments are removed. About 75% of the "first flush" of pollutants are removed, and then there is no guarantee that any more will be removed with the conventional filter, so now filters must be obtained and added. This process has only been in place since July*

of 2001. Further, when the Santa Monica installation reaches a saturation level, it creates a vacuum that closes the separation units.20

I believe this does not address the additional fluids from overflow of swimming pools and extra oils from construction equipment during any construction through the life of the project. In addition, the thousands of acres north of the project are not factored into the system. However, Presidio dismisses concerns with a 2-3-sentence response in the Cox, Castle & Nicholson document dated June 13, 2002 on Page 6, "Storm Water Runoff Issues". Note: Page 5 of the above document outlines mechanics and cost of a conventional tie-in to existing storm drains. B & E Engineers and Hans Giraud, both of whom are on the Presidio staff, dismiss this solution.

Conclusion: The Storm Water Runoff proposal is unacceptable to the community. After studying the book for CDS I found:

1. *The experts' studies cite each other for research documentation. Their research is collusionary and self-funded.*
2. *Overflow capacity of the upstream is not treatable, since in the case of overflow, the mechanism triggers an automatic device to let the pollution bypass the treatment.*
3. *Who or what agency maintains the filters and catch basins? What is the cost? Will they be in place during all construction to prevent pollution of the creek? Is there "Hazardous Waste Disposal?*
4. *Are there any CDS units in the Chatsworth area? Any record or history of this experimental system for any length of time, particularly in this area?*
5. *The estimate of efficiency drops as more water is let in (as in flood stage). This system does not lend itself to the project site or its surroundings.*

I believe that the proposed CDS system to handle the storm water runoff is untested within the current project's concept and may be dangerous in setting a precedent for future upstream construction. According to Mo Kajbaf, Department of Public Works, the system is conceptual and experimental and does not remove 100% of contaminants. To my understanding, he has not had access to a tract map and has not based his opinions on the system in regards to a specific number of units.21

Questions to County and Developers

Tract #53138 has 42% of total acreage in hard surface and has received no improvement plans.

What adaptation does the proposed system advocate when:

1) *Homeowners add swimming pools, extra vehicles, horses/other pets?*
2) *The parkland north of the site has storms of significant drainage to creek or additional development?*

During potential blasting, which Presidio is now proposing in its April 4, 2003 document, fine particulates and sediments and dust will wash into Devil Canyon Creek, decimating the stream's delicate flora that float in the shallow rock beds. If blasting is permitted, how will the runoff be controlled over many years (seasons) of construction, and how will CDS filters put into place before construction ends be cleaned and maintained?

Will there be added County taxes for maintenance of the units to cover hazardous wastes and disposal costs?

20 Don Peterson, Civil Engineer, Sr. Administrative Analyst, City of Santa Monica

21 Mo Kajbaf, Department of Public Works, Jr. Civil Engineer, Land Division
Bruce Hamamoto, Department of Public Works, Associate Civil Engineer, Land Division

In conclusion, I strongly urge the Commission to reject the CDS proposal of storm water runoff and to require the project developer to follow the proposal for the Browns Canyon Diversion outlined on Page 5 of the Cox, Castle & Nicholson document of June 13, 2002.

SC2 - Response

Regarding the use of CDS units to filter the storm water runoff from the Project, and also the proposed diversion of runoff to the Browns Canyon Channel, the County Department of Public Works, in a memo, dated September 2, 2002, stated the following:

> "The following is a clarification of Public Works' review and approval of the Drainage Concept and Standard Urban Stormwater Mitigation Plan (SUSMP) prepared by the applicant for the proposed Deerlake Ranch project. The proposal includes drainage improvements such as storm drains, inlets, debris basins and water quality devices as well as an analysis of two community preferred options. During the review of the Drainage Concept/SUSMP, care was taken to ensure that existing and proposed improvements are not adversely impacted by storm run-off or debris. Public Works concurs with the applicant's findings and has approved the Drainage Concept/SUSMP. Debris retaining inlets have been proposed upstream of the Deerlake project to remove sediment from tributary flows. Catch basins, water quality devices and storm drains intercept, treat and convey storm run-off, while energy dissipaters and riprap pads are used at the outlets of the storm drain system to reduce erosion.
>
> "Drainage case law does not allow new development to divert flows to the detriment of a downstream property owner. Deerlake project engineers were required to show that the post-development Capital storm run-off discharging into Devils Canyon, Browns Creek and other adjacent drainage courses was less than or equal to the pre-developed condition. Capital storm run-off volume from a 50-year storm includes both storm water runoff and debris flow. Due to impervious surfaces created by the proposed project, storm water run-off increases; however, this increase is more than offset by the decrease in total run-off due to removal of debris captured in the debris retaining inlets.
>
> "In regards to water quality, Public Works complies with terms set forth in the Municipal Stormwater Permit issued in 2001 by the California Regional Water Quality Control Board (RWQCB). The permit mandates that defined "priority projects" such as Deerlake use post-construction Best Management Practices (BMP) to address pollutants of concern. Primary pollutants of concern for a residential development include trash, suspended solids, and oil and grease. The Deerlake project contemplates the use of a BMP known as a Vortex Separation System (VSS). The California RWQCB recognizes the VSS as a full capture device and among the best alternatives to evaluate and remove trash generated in a particular drainage area. The proposed VSS for this project is the Continuous Deflection Separation (CDS) system. A full capture device must retain particles five millimeters and greater during a one-year storm without plugging or blocking. Although a one-year storm is defined as 0.6 inches of rain per hour, the CDS units for this project will have the capacity to treat run-off from a 0.75 inch per hour storm. The screen openings will be less than five millimeters (mm) but will not block due to the vortex forces of the storm water flow through the device. Floating absorbent cartridges will be used to trap oil and grease. Based on the Regional Water Quality Control Board's evaluation of these types of devices, Public Works has approved approximately forty construction plans with CDS units. Five of these CDS units have been built and are being maintained and

monitored by Public Works in the Sun Valley, Santa Clarita Valley and Calabasas areas.

"The developer submitted two community preferred alternative Drainage Concept/SUSMPs that proposed routing all storm flows to the upstream end of Browns Creek flood control channel. The first alternative concept required four pump stations and the acquisition of off site right-of-way. This alternative concept was not acceptable to Public Works due to the high maintenance of unnecessary pump stations. Pump stations are utilized for flood control only when there is not an adequate outlet for the storm drain. Devils Canyon is an acceptable storm drain outlet. The second alternative concept contemplates excavations up to 90 feet deep in order to install a gravity storm drain system to eliminate or minimize the use of pump stations. This concept was not acceptable due to constructability issues, utility conflicts and unfeasible future repairs due to the depth of the storm drain. In addition, these concepts would have drastically reduced stream flows in the riparian habitats of Devils and Browns Canyon, which would have been detrimental to wildlife and the natural environment."

Regarding the question about the addition by homeowners of swimming pools, extra vehicles, horses and other pets, the following response apply:

- Swimming pools: According to the Department of Public Works, there are three methods acceptable for discharge of swimming pool water, none of which will have an adverse impact on the quality of storm water runoff: 1) pump it and truck it off; 2) stabilize the water quality and get a permit to discharge into the street/storm drain 3) get permit to discharge to sewer/treatment plant during off peak hours.
- Extra Vehicles: The total number of on-site vehicles has been considered as part of the Revised Traffic Report (see Appendix K of this FEIR); therefore, it is not clear what the commenter means by "extra vehicles".
- Horses and Other Pets: All equestrian trails and horse keeping areas will consist of pervious surfaces, including natural ground and decomposed granite. Therefore, "first flush" storm water will percolate into the ground, and will not be conveyed to the storm drain system. Also, it is anticipated that wastes from household pets will be mostly confined to pervious areas, such as rear yards and planted parkways.

Regarding the comment about impact from potential development from properties to the north, should such development take place (see Appendix M of this FEIR), each development would be required to provide the same storm water runoff mitigation than this Project.

Regarding potential impact of blasting, if necessary, on storm water runoff and the CDS units, the following responses apply. Blasting, if required, would be a sub-surface activity designed to fracture buried rock formations. No above ground blasting would take place. Therefore, any blasting activity would have no impact on storm water runoff. In addition, CDS units would not be put into place prior to completion of grading. Storm water runoff during grading operations will be controlled by measures stated in the Storm Water Pollution Prevention Plan (SWPPP), using Best Management Practices (BMP's). The SWPPP must be approved by the Department of Public Works, and all mitigation measures must be in place on the site, prior to issuance of a grading permit.

Regarding County operating costs of storm water systems, the County Flood Control District has stated that adequate funds are available.

SC3 - Comment

Equestrian and Hiking Trails

As Regards Hiking Especially:

The hiking and equestrian community needs viable access, comparable to existing access which may be eliminated under the "Poema Condominium" project.

SC3 - Response

The project's proposed on-site Hiking and Equestrian Trails meet the standards of the Department of Parks & Recreation, and will be designed to connect to other, off-site trails.

SC4 - Comment

The hiking community needs access without significant elevation ups and downs to optimize use of this unique area, where an almost flat trail exists along the canyon floor.

SC4 - Response

See Section 4.7.5 of this FEIR, SC3 - Response

SC5 - Comment

The hiking community needs parking available for 20 autos along the street. Dawn to dusk weekends. 7 hours weekdays (from 7 a.m.), extended hours upon request via permits to be issued from 5th District Supervisors office.

SC5 - Response

Public parking along any portions of the Project's proposed public streets will be subject to approval of the Department of Public Works and the Fire Department and is beyond the scope of this FEIR

SC6 - Comment

Devil Canyon is a riparian area, blue-line stream, part of major watershed and a feeder into Brown's Canyon. It is deserving of protection, as both the old SEA and the proposed SEA (which extends the boundaries to incorporate almost all undeveloped areas) state.

SC6 - Response

Devil Canyon will be preserved in its natural habitat and will be dedicated to the SMMC

SC7 - Comment

The Effect of the Poema Condominium Project:

Although the Developer showed a switchback trail near the west side of their project (near the existing Mayan Drive Twin Lakes Community Information Board) since the beginning, the community did not realize this trail, and this trailhead was to replace the existing access point from the Poema Condominium project, shown on the ©2001 "Los Angeles County Riding and Hiking Trails" map as a dedicated trail. If the trail head moves to this area, key issues are the same as above: parking availability, and minimal grade access.

SC7 - Response

See Section 4.7.5 of this FEIR, SC3 and SC5 - Responses

SC8 - Comment

As Regards Equestrian Especially:

12 Foot Horse Trails vs. 8 Foot Project Trails

"Horse Trails" that are 12 feet wide are shown on the east, north, west boundaries. "Project Trails that are 8 feet wide are shown along the southerly perimeter and along interior areas of the project. The developer has represented 8 foot wide trails are equestrian. Please require a condition to (a) provide 12 foot trails around the entire perimeter, and (b) require County to accept 8 foot wide trails as "multi-use, including equestrian trails" to ensure Chatsworth does not further lose access in its

prime equestrian trail access area. A major portion of the southern perimeter trail goes along new Mayan drive, which will have about 60% of the traffic per the developer's traffic study.

Other areas are a key part of the perimeter trail, so should be the standard width to improve safety and maneuverability issues. The Developer said Parks and Recreation has considered this issue and accepted use of 8 foot wide trails for equestrian use, please ensure this is correct, and will survive the sale of all or a part of the project by clarifying the use. Additionally, no standards of construction/fencing for the 8 foot wide trails have been specified, please specify standards for these trails, suitable for containment of horses and other expected users of these trails. Please provide draft conditions addressing these areas BEFORE any project approval is made; this is a key issue to the local area. Please note the equestrian community has no objection to designating the 12 foot wide trails as "multi-use, including equestrians", either.

SC8 - Response

The proposed 12-ft. wide and 8-ft. wide trails proposed for the project will meet the criteria stated by the commenter.

Also, specific locations and standards for trail fencing are typically designated by the Department of Parks & Recreation on the final construction plans, not at this stage of the entitlement process, and will be established to ensure public safety.

Proposed conditions of approval, which have been submitted previously to the community for comments and responses, are included in Appendix E of this FEIR.

SC9 - Comment

The Old Bridge:

An old bride north of Canoga is to be used for trails. Please confirm in writing the bridge will be accepted for use as a part of the trail, even though it is old, surely not earthquake-reinforced, etc.

SC9 - Response

The bridge/dam will be owned and maintained by the Project's future Homeowners' Association (HOA). An easement across the bridge/dam will be granted to the Department of Parks & Recreation for public trail purposes to ensure the public's right to use this segment of the trail system.

SC10 - Comment

Dead Ends in Trails as Conservancy Areas:

The 8 foot trail (requested to be 12 foot) along the south side is interrupted by a "no trail" area across Devil Canyon. We first saw this in the new map. Please require grading of the Developer's parcels to match/tie into grade of the Conservancy land, so the equestrians and hikers can have a chance of linking the trail.

SC10 - Response

The grading of this portion of trail has been revised to meet the elevation of the SMMC's land within Devil Canyon.

SC11 - Comment

Equestrian/Multi-use Trail, East side of Topanga Canyon:

Shown on Exhibit A3 "Equestrian/Hiking Trail" is a proposed equestrian trail along the east side of Topanga Canyon Blvd. This has not been part of the proposed street improvements to the Topanga Canyon/118 Freeway intersection. Let's get this implemented now, if it is not done as part of the major improvement project underway with this development, it will not be done, and equestrian access to the north will be further impaired.

SC11 - Response

That portion of future trail shown on Exhibit "A-3" is not part of the project site and is shown only to demonstrate how proposed project trails could be connected to other existing or future off-site trails.

SC12 - Comment

Mutual Letters of Intent to Protect Trail Access:

Doug Ring of the Peoma Condominium project indicated there were Letters of Intent between Presidio and Sonderman/Ring to ensure the trail access was protected and available. We have not been able to obtain a copy of these documents to see if the representation was true, we were later told by Sonderman/Ring's representative he believed Public Works had them, but he didn't have a copy. Please require that these documents be provided to the community, if they are to be relied upon in any way in designing the trail access and trail.

SC12 - Response

See Section 4.7.5 of this FEIR, SC3 – Response. Also, any private agreement between property owners is beyond the scope of this FEIR.

SC13 - Comment

Trail Grade after Completion:

Presidio is making major changes to the elevation of their development envelope. We are concerned that a side effect may be to increase grade of various trails that link from the northwest property line down into Devil Canyon. Please condition trail links to adjacent lands to have elevation gains not more steep than is presently the case, and require the developer to match elevation of the off-site trails they link to as part of the grading process.

SC13 - Response

See Section 4.7.5 of this FEIR, SC3

SC14 - Comment

Issues Affecting All Trail Users:

Rim of The Valley Access

This is one of the best areas for a hiker to access the Rim of the Valley trail system that has gained great support as recreational hiking opportunities have gained more widespread support. Retention of access points is a key component to having a usable system.

SC14 - Response

See Section 4.7.5 of this FEIR, SC3

SC15 - Comment

Global Trail Solution/Supervisors Office:

Part of the complexity of the trail solution is that the Sonderman/Ring Poema Condominium Project is based on land that is to be acquired under an option, and is not owned by the proposed developer. Presidio owns the land they propose their project will be built on. We have been told for the last four weeks, a solution supervised by Mr. Antonovich's office is imminent, and a meeting of concerned community members will be happening to provide a solution to what will happen if either Ring goes forward, Presidio goes forward, or both projects are approved. Nothing has been shown to us yet, we ask that any approval be put off until the full effect of any modification of the "dedicated" trial is known, and reviewed by community members that are involved in the trail system in the area.

SC15 - Response

See Appendix R of this FEIR for proposed trail connections between these two properties.

SC16 - Comment

Presidio's comparisons Deerlake to existing Chatsworth

In an effort to sway opinion to accept its project Presidio Partners, the developer, says Chatsworth's equestrian community is bounded by the 118 freeway to the north; De Soto Ave. to the east; Chatsworth St. to the south and Andora Ave. to the west. This study area they claim has 521 homes, but only 20 lots with horses.

As president of the Chatsworth ECHO, a local equestrian group, I knew there were more than 20 lots with horses in the area. And, having dealt with a few horse traders in the past I figured I ought to have a look in this horse's mouth for myself

Deerlake Ranch Comparison To Existing Chatsworth Neighborhood

	Chatsworth Neighborhood (118/DeSoto/Chatsworth/Andora)	Deerlake Ranch 388 Home Project
Acreage	328 acres	235 acres
Homes	521 dwelling units	388 dwelling units
DU/AC	1.6 du/ac	1.65 du/ac
Acreage With Resource Openspace	328 acres	395 acres
DU/AC With Resource Openspace	1.6 du/ac	0.98 du/ac
Average Lot Size	17,100 sq. ft.	12,492 sq. ft.
Average Lot Size With Adjacent Openspace	17,100 sq. ft.	21,200 sq. ft.
Lots Keeping Horses	20 (4%)	37 (Est.) (9%)
Miles of Dedicated & Private Trails	2.4 miles	5.3 miles
GP/Zoning Densities	Very low density 1 to 2 du/ac	Rural Community R-1-6000 2 to 6 du/ac

Aerial photo with dots

I went to the Internet and downloaded aerial photos of the area. With a good picture of the entire area I was able to actually count each house in the area. Next I interviewed many neighbors to ask them about their zoning and horse keeping.

Presidio vs. Echo slide

My ECHO study concluded that there are only 441 homes, not 521 in the area studied. I found 61 lots with horses in Presidio's study area not 20 they state are in the area. My finding showed serious deficiencies and inaccuracies in developer neighborhood comparisons.

441 homes in study area

Presidio chose not to discuss zoning in the study area, but I determined that roughly 69 percent of the study area is zoned RA-1 and will allow horse keeping.

Map of areas not surveyed by Presidio

Keep in mind I said the developer was trying to sway opinion to accept its project that's why they are trying to convince the public and government officials that Chatsworth's equestrian community is much smaller than it actually is.

Here is a comparison map of horse keeping areas as shown in the developer's study area and the real equestrian community in our immediate area.

Pie chart of how few properties are horse property

In conclusion we find Presidio has yielded to pressure and in recent weeks added 53 horse keeping lots to its proposed 388 home subdivision. But, that still means 86 percent of the proposed Deerlake project will exclude horse keeping.

Presidio needs to honor Supervisor Antonovich's request and increase lot size to a minimum of 15,000 square feet so its project will be more compatible with our community.

SC16 - Response

The data presented in Appendix L of this FEIR was prepared to demonstrate reasonable compatibility of the Project with the existing neighborhood south of the 118 Freeway. It was not intended to serve as a specific planning tool to be used to make specific land use or zoning determinations. Therefore, although there appear to be reasonable differences between the data in Appendix L and that presented by the commenter, as shown in the Table below, the conclusions regarding reasonable compatibility between to Project and the existing community south of the 118 Freeway remain unchanged.

Description	Applicant's Chatsworth Neighborhood Data	ECHO Data	Deerlake Ranch Project Data
No. of Homes	521	441	388
No. of lots with horses	20	61	55
% of lots with horses	4%	14%	14%
Study area	328 ac.	328 ac. (assumed)	235
General Plan permitted densities	1 to 2 units/ac.	1 to 2 units/ac.	2 to 6 units/ac
Development density	1.60 units/ac.	1.34 units/ac	1.65 units/ac

Other ancillary comments, which do not address specific Project-related issues, have been noted.

SC17 - Comment

Project Comparisons to local area luxury homes and comparable properties

Supervisor Mike Antonovich

"His position is he would like to see equestrian/estate-sized lots for that project, minimum 15,000 square feet.' said Patti Friedman. Antonovich's deputy. Los Angeles Daily News

In each and every plan that Presidio has presented the community they have failed to provide a community that even approaches Supervisor Antonovich's request. We examined the Los Angeles County tax rolls and found that by analyzing the average lot sizes of property from Topanga Blvd. on the West, De Soto Avenue on the East, Devonshire on the South and the 118 Freeway on the North that the properties average 15,999 Square Feet. This was the general area that Presidio determined was comparable property. We further found that if you expand the area of review to include numerous properties to the West of Topanga Blvd and to the North of the 118 freeway that a large number of properties are much larger than the 15,000 Square Feet. Quite a few of these properties are more than 100,000 Square Feet.

SC17 - Response

See this FEIR Section 4.7.5, SC 16 – Response; Section 3.4.1, C ECHO 1 – Response; and Section 4.1.2, City Council 3 - Response

SC18 - Comment

Comparable Property

In reviewing the Deerlake project we took into account comparable properties and general property sizes and types in the comparable areas of Chatsworth. The developer, Presidio, has maintained, on numerous occasions, that they wanted to retain the unique character of the Chatsworth area. During numerous meetings with members of the community Presidio gave us a glimpse of the types of homes they wanted to build and the how they would go about maintaining the character of the neighborhood. The developer continuously explained to us that the type and density of the project was dictated by the studies they completed on property values in the area. Some of these studies were completed several years ago. With the type of development we were shown by Presidio it was more in line with comparable projects to the West (Indian Springs and Indian Hills). These comparable properties ranged in prices from $1.1 million to over $3.0 million.

Luxury Homes Get More Commonplace

An article in the San Fernando Daily Business Journal May 26, 2003 discussed how there is an extremely strong market for luxury homes in the area. The article stated that "Builders say they are limited in their luxury home efforts only by the availability of land". "Generally what we're seeing is a lack of supply in the marketplace" stated Tom Redwitz, President of John Laing Homes new luxury homes division.

SC18 - Response

Comparisons of area market prices and demands for residential houses are beyond the scope of this EIR. The comments have been noted.

SC19 - Comment

Horse Property requires 15,000 Square Feet Minimum

Under the County of Los Angeles zoning rules a property must be a minimum of 15,000 Square feet in order for it to house a horse. Presidio has repeatedly stated they desired to develop a project comparable to the area surrounding which is mostly zoned for horses.

In an effort to clarify it's position regarding the excessive density of the current 388-home plan of Deerlake Ranch, Save Chatsworth, Inc. has prepared the following suggestions as to how the project could and should be further reduced.

There are three objectives:

1. Increase the lots sizes

In addition to requests from members of our community, Supervisor Mike Antonovich has also requested that all the lots in Deerlake Ranch be minimum 15,000 sq. feet. The current 388-home plan is well below that number. Many lots are as small as 6,000 sq. feet.

SC19 - Response

The Revised 388-unit Project has increased lot sizes significantly from previous proposals, including 155 lots which exceed 15,000 s.f. in size. Of these, 55 lots have been specifically designated for on-site equestrian use. Following is a compilation of lot sizes within the Project:

Lot Size Range	No. of Lots
6000-6500 s.f.	47
6500-7000 s.f.	18
7000-10,000 s.f.	122
10,000-15,000 s.f.	46
Over 15,000 s.f.	155

Although many of these lots have been clustered into smaller to preserve open space and habitat areas, the overall density of the project of 1.68 units per acre is still consistent with the designated density of 1 to 2 units per acre under the City of Los Angeles' Chatsworth-Porter Ranch Community Plan for the existing neighborhood south of the 118 Freeway.

SC20 - Comment

2. Reduce the density of the lots on the ridgelines

These highly visible ridgelines are easily seen from the 118 Freeway to the south, from nearby Porter Ranch to the east and the communities of Twin Lakes, Indian Falls, Indian Springs and the Sommerset condominiums to the west. We would like to see the beauty of these ridgelines maintained by building a development that is less dense.

SC20 - Response

The majority of the project is situated on an extensive plateau, commonly known as Deerlake Highlands. The remainder of the project is situated on varying terrain leading up to the plateau. It is not situated on a ridgelines (see Figure 2.8 of this FEIR).

Under the Performance Review Criteria of the County General Plan's Land Use Element for residential development within Hillside Management Areas, structures are to be sited so as to "achieve compatibility with established community character", "preserve significant views from major existing residential areas", "apply innovative approaches (to house placement) using techniques such as stepped multi-level design", and that "major ridgelines (should) be preserved wherever possible". The project site plan conforms to these criteria.

Also, as stated in Section 4.1 of the DEIR, views of the proposed project would be limited from County designated first priority scenic highway routes, SR-118 and Topanga Canyon Boulevard, due to topography, and because these views would be experienced for a short duration. Although some existing homes within the Lower Twin Lakes community are visible from SR-118, the developed portions of the project site would not be visible. The project site would also not be visible from Topanga Canyon Boulevard. Therefore, the proposed project would be consistent with the Scenic Highways Plan, and view impacts from SR-118 and Topanga Canyon Boulevard would be less than significant.

SC21 - Comment

3. Lots that are adjacent to equestrian trails, should be equestrian properties.

Part One:

*The attached map will show that 13 equestrian lots have been added along the northern and eastern boarders of **Neighborhood 2**. These are all properties that will be adjacent to the "perimeter" equestrian trail that will border the eastern and northern rim of the development. This requires a reduction of only 13 homes and also reduces the density of the eastern ridgeline from 16 homes to 8.*

SC21 - Response

Equestrian lots have been designated within the Project plan so as to preserve the "neighborhood" concepts inherent in the overall plan (see Exhibit A.4 in Appendix E of this FEIR). To add 13 equestrian lots within "Neighborhood 2" would be defeat the neighborhood concept and overall design character of the project.

SC22 - Comment

Part Two:

*The attached map (see appendix B.3) will further show a dramatic reduction to **Neighborhood 3**. In the E.I.R. submitted for Deerlake Ranch, Alternative 3 displayed a plan for 171 homes. **Neighborhood 3**, because of its rugged topography, will require massive grading to allow for the density currently proposed. The attached map shows an easy solution would be to merely take the*

design of the 171-home plan from Alternative 3 in the E.I.R. and paste it over the current plan for this portion of Deerlake Ranch. This significantly reduces the density of the eastern, southern and western ridgelines. All lots in this plan are 20,000 sq. feet. Less grading will be required and it also provides for some much needed community open space at the crest of Neighborhood 3.

This map shows a total reduction in density from 388 homes to a much more sensible plan of 300.

SC22 - Response

The plan for Deerlake Ranch, as initially submitted, called for 538 homes and was reduced to 484 homes at the time the Notice of Preparation (NOP). The plan was further reduced to 424 homes during the course of review by the Regional Planning Commission in 2002. The purpose of numerous meeting with a community advisory committee, which led to further refinement of the plan for Deerlake Ranch, was not to simply reduce the density or yield. The additional purpose of the process with the committee was to develop a further revised plan to allow for a feasible project that addressed, and further resolved, issues of concern to various segments of the community, including community character, an extended trail system, and to provide as many 15,000 square feet lots as reasonably feasible, including lots designated specifically for horse-keeping. This effort led to the revised project of 388 homes, which represents a nearly 28% reduction from the initial 538-home design. The number of lots greater than 15,000 square feet have been increased from 24 to 155, and the number of lots suitable for horse keeping have been increased 12 from to 55.

Also, see Section 4.7.5 of this FEIR, SC17 through SC22 – Responses

Therefore, no further reduction in units is required to meet the requirements of the California Environmental Quality Act.

SC23 - Comment

Members of the Advisory Committee have gone back to the community for response, and the following is a compilation of community opinion and comments on the character statement (January 16, 2003)

We find the community plan concept design with its four separate neighborhood component, to be a good one in a general sense. We would like to see more specifics on how the design will work into the existing topography and more detail on what features of the natural landscape will be retained.

We are expecting a minimum of 15,000 square feet in lot size. Since we do not know at this time how many lots that equates, it would be helpful for us for you to provide us with the actual square footages of all the lots under the old design. We would like a detail of each lot, versus an average for the various sections.

We have concerns about the revision to the EIR, if the number of units has not yet been determined, since every study in the EIR is directly affected by the number of units. We have questions about the dollar amount requested for the CFD, and the usage of said dollar amount. Is this figure intended to cover the infrastructure improvements, such as the bridges, streets and sewers, traffic mitigations for Los Angeles City streets, the child care center, library fees and school fees, as well as Twin Lakes improvements? In the absence of any financial disclosure, and considering the huge impact of this project on traffic and the environment, perhaps the use of the CFD could be broadened to provide other community benefits, such as a community center, a better trail network and more stringent construction period controls.

The sphere of influence for the City of Los Angeles should be considered, and for horsekeeping properties, that mandates lot sizes of a minimum of 17,500 square feet. Throughout the remainder of the document, we have inserted our comments in italics with underlining.

SC23 - Response

Comments on the Community Character Statement for the project are included in Appendix B.3 of this document and are noted. Subsequent to these comments, several revisions in the Community

Statement have been made, and are shown in final Community Character Statement included in Appendix C.3 of this document. However, these specific comments concerning design criteria do not relate to the environmental analysis of the project, and no additional response is required.

SC24 - Comment

Community Response to Proposed Community Benefits/Project Mitigation to be added to the Conditional Use Permit and the Conditions of Approval for the Deerlake Ranch Project

Attached is the community's response to the Special Conditions document dated April 4, 2003, presented to the community advisory committee by Presidio. Community comments are a response to what has been presented so far – there are additional items that will need to be addressed in this document in its final form.

In offering these comments the community is not taking a position on the merits of the Deerlake Ranch project as it has currently been proposed. The community is currently engaged in discussions with representatives of the Deerlake Ranch concerning the project, and in the course of those has not yet been provided with sufficient information to take a position on its merits. The community reserves the right to take a position in the future in favor of or opposed to the Deerlake Ranch project as a whole, or any aspect of the project, and to communicate that position at such times and in such manner as it considered to be appropriate. In addition, the community reserves the right at any time to modify, rescind, restate or revise these comments, or to offer additional comments on the special conditions of project approval proposed by the Deerlake Ranch project developer or any other party.

The proposed matrix for tracking the compliance of all Special Conditions should include ever step or action required to complete each condition and mitigation, but in our opinion, this matrix cannot be finalized until there is agreement as to the wording of the Special Conditions document.

SC24 - Response

Comments on the Special Conditions for the project are included in Appendix B.3 of this document and are noted. The project Conditions of Approval, included in Appendix E of this FEIR, have been revised, where feasible, to reflect the community comments listed in Appendix B.3, based on meetings between the applicant and community representatives. Therefore, no additional, specific responses are required concerning this item. Use of the proposed matrix for tracking project compliance with all Conditions of Approval, as stated in the comment, has been made a Condition of the CUP (see Appendix E of this FEIR).

4.7.6 Santa Susana Mountain Park Association

Jan Miller, President; Nancy Razanski, Vice President
August 27, 2003

SSMPA1 – Comment

There is a serious inadequacy in the Draft Environmental Impact Report (E.I.R.), Volume 1, Section 4.3 page 4.3-12. In reference to wildlife corridors the E.I.R. fails to mention Canoga Avenue which presently offers a very good, albeit impacted, animal crossing route.

Crossing south under the 118 Freeway at Canoga Avenue there is a continuous open space connection (wildlife corridor) all the way to the Santa Monica Monica Mountains. This under crossing is the most easterly of a handful of wildlife crossing points between the San Fernando and Simi Valleys.

The Deerlake Ranch project plans to use Canoga Avenue as one of its two access routes. This will have a tremendously adverse effect on the wildlife crossing.

In Volume II of the Draft E.I.R., Appendix G. Page 4-6. Paul Edelman's 1990 Wildlife Corridor study is referenced. The E.I.R. states, "No on-site regionally important wildlife movement corridors were

identified in these studies." No corridors were identified because Deerlake Ranch was not a part of that study. Edelman's study purposely focused on corridors to the west of this project.

We recommend that a study be undertaken which focuses on the Canoga Avenue underpass and any other potential wildlife crossing points between Topanga Canyon Boulevard and De Soto Avenue.

SSMPA1 - - Response

The comment has been received and noted. As stated in the Draft EIR, regional wildlife movement studies have been prepared for The Nature Conservancy and the Santa Monica Mountains Conservancy (SMMC) and include the vicinity of the project site. No onsite regionally important wildlife movement corridors were identified in these studies. Implementation of the revised project would not prevent the regional movement of wildlife. Although many common animals would be adversely affected by direct impact and/or habitat loss associated with the implementation of the project, impacts to local wildlife populations are considered to be below a level of significance. Local onsite wildlife movement would be affected by the revised project, although these species are expected to move to the open space areas located north, west, and east of the project site and the onsite portions of Devil and Browns Canyons. Wildlife would likely continue to utilize open space portions of the project site via Browns Canyon, upper Devil Canyon and the open space to the north, which provide habitat for a variety of species.

Preservation and dedication of the corridor of willow woodland associated with Devil Canyon, which in some areas exceeds 220 feet in width, provides an important resource for avian species for both local and regional movement. Large blocks of riparian habitat (even when surrounded by development) serve as islands, providing an archipelago effect, whereby migrating or dispersing birds can stop to forage, rest, or seek cover from predators as they move across the landscape. Regional and local wildlife movement for terrestrial species is constrained in the area by development, but the willow woodland is expected to continue to serve an important function for local and regional avian dispersal and migration.

In addition, the 14-acre Horner property located at the northeast corner of the intersection of Canoga Avenue and SR-118 has been purchased by the MRCA with funds provided by the applicant, the County of Los Angeles, and SMMC. This property would be maintained as permanent open space. This acquisition would allow the existing wildlife corridor through this property, between North Stoney Point and Devil and Brown Canyons to be preserved.

The existing Canoga Avenue underpass of SR-118 is approximately 160 feet in length, and ranges from approximately 80 feet wide at road grade, to 130 to 160 feet wide at the top of the buttress slopes under the freeway bridge. The height of the bridge above the road grade is approximately 25 feet. The existing 16-foot wide Canoga Avenue is paved, with bare earth on both sides and extending up onto the slopes under the freeway bridge. Vegetation is sparse on the slopes on the south side of the freeway bridge buttresses, and virtually non-existent in the shaded areas under the bridge. The area under the bridge is also frequently used for illegal dumping of refuse. Conditions for movement of wildlife through the underpass are presently tenuous, especially during daylight hours.

The revised project would require roadway improvements of Canoga Avenue under SR-118 to 36 feet of paved width, and improvement of a 12-foot wide equestrian trail that would extend along the eastern side of the road. These improvements would leave an area approximately 32 feet wide for a wildlife corridor through the underpass. With planting of appropriate vegetation and placement of other screening improvements to provide cover for wildlife (see Appendix F.5 of this document), the potential adverse impact to wildlife through the underpass connection between North Stoney Point and Devil Canyon would be mitigated to a less than significant level.

SSMPA2 - - Comment

We have reviewed the current Deerlake Ranch project in light of the Significant Ecological Area Update dated November 2000. We especially noted the detailed narrative regarding the critical need to expand existing protected areas to preserve natural habitat. We note the recommendation in the report is to develop lands within Significant Ecological Areas (SEAs) at no more than one home per 10 acres (see page 30 of the Santa Susana Mountains/Simi Hills Significant Ecological Area Update Study). The Deerlake Ranch project is entirely within the proposed SEA boundaries.

The Association and the Foundation strongly recommend that development be curtailed to avoid housing density greater than one home per 10 acres, as recommended by the Los Angeles County SEA Study dated November, 2000.

SSMPA2 - - Response

The comment has been received and noted. Please see Section 4.4.1 (C ECHO 2 – Response) of this document.

5.1 INTRODUCTION

In order to comprehensively respond to all comments received at the Public Hearings and address each CEQA issue raised, a matrix has been developed which lists the commenter and the corresponding issues raised. The matrix contains the names and addresses of all commenters, and has been subdivided into 22 major comment categories, outlined as follows:

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

The following is a summary of the Regional Planning Commission Hearings held on January 23, 2002, April 10, 2002, June 19, 2002 and September 3, 2003 for the Deerlake Ranch project. Each speaker was sworn in and testified. This summary is in the same order as was presented at the hearing. Many of the comments presented during the hearing were also submitted as written comments. A complete set of the public hearing transcripts is available for review at the Los Angeles County Department of Regional Planning.

All those who spoke at the Planning Commission Hearings are listed in chronological order in Table 5.1.

Table 5.1. List of Speakers

Comment No.	Speaker	Comment Category
January 23, 2002		
1-7	Dorian Keyser, Santa Susana Mountains Association	9, 12, 21
8-17	Jerry England, Chatsworth Equine Cultural Heritage Organization (ECHO)	3, 10, 21
18-20	Warren Stone, General Public	21
21-24	Greg Smith, Chief of Staff for City Councilman Hal Bernson	10, 11, 12, 21
25-30	Charles Smith, General Public	3, 8, 12, 21
31-32	John McNamara, General Public	10, 12, 21
33-38	Suzanne Eskander, General Public	3, 6, 11, 18, 21
39-41	Marty Woll, General Public	12
42-46	Diana Dixon Davis, General Public	10, 11, 12
47-48	Lynwood Cobley, General Public	3, 18, 21
49-50	Teena Takata, General Public	12, 21

Comment No.	Speaker	Comment Category
51	Pat (unrecognizable last name), General Public	12
52-54	Dan Hoffman, General Public	3, 10, 18
55-59	Susan Gerkes, Member of the Board of Directors of the Santa Susanna Park Association	3
60	Robin Swanson, General Public	10, 12
61	Vanessa Watters, General Public	21
62-64	Linda Stone, General Public	8, 9, 21
65-69	Charlotte Brodie, Representative of the trail organization	3, 6, 8, 9, 10, 11, 12, 21
70-71	Jeannie Plumb, General Public	3, 6
72-73	Margo Miller, General Public	12, 21
74-76	David Tweet, General Public	10, 12, 18
77	Elizabeth Sellers, General Public	12, 21
78-80	Mark Watters, General Public	21
81-84	Anna Cox, Executive Vice President of CHAMP, Chatsworth Homeowner Alliance for Mountain Preservation	3, 5, 6, 21
85	Laura McCormick, General Public	12
86	Kathy Weisman, General Public	21
87-90	Kathleen Misko, General Public	5, 21
91- 96	Greg Smith, General Public	1, 12, 18, 21
97-100	Clara Wall, General Public	3, 12, 21
101	Michael Augello, General Public	21
102-104	Adrian Gauthier, General Public	3, 12, 21
105-110	Walter Prince, Representative of the Pride Homeowners Association	12, 21
111	Deidra Robles, General Public	9, 10, 11, 12, 18, 21
April 10, 2002		
112-116	Mark Watters, General Public	12, 21, 22
117-120	Warren Stone, Vice President of the Twin Lakes Home Owners Association	6, 12, 21, 22
121-127	Anna Cox, Executive Vice President of CHAMP, Chatsworth Homeowner Alliance for Mountain Preservation	3, 5, 6, 8, 9, 21,22
128-129	Charles W. Smith, General Public	6, 12, 21
130-133	Gary Levitt, General Public	3, 12, 21
134-135	Dorian Keiser, General Public	10, 21
136-138	Marty Woll, General Public	2, 10, 12, 21
139-142	Jerry England, Chatsworth Equine Cultural Heritage Organization (ECHO)	3, 21, 22
143-145	Charlotte Brodie, General Public	3, 6, 10, 12, 21
146	Terri Cunningham, General Public	21
147	Suzanne Foss, General Public	12
148-152	Greg Smith, City of Los Angeles	12, 22
153	Chuck Chewian, General Public (served on the Board of Transportation Commissioners for the City)	12, 21

Comment No.	Speaker	Comment Category
154-156	Greg Smith, General Public	1, 12, 21
157-159	Robert Harrington, General Public	3, 8, 9, 12, 21
160-162	Susan Eskander, General Public	1, 3, 5, 6, 10, 11, 21
163-166	Jeannie Plumb, General Public	6, 14, 21
167	Ernie Perlick, General Public	8, 12
168	David Tweet, General Public	21
169	Janice Perlick, General Public	12, 21
170	Liz Ricci, General Public	21
171	Patrick Weir, General Public	12
172	Michael Augello, General Public	8, 9, 12, 21
173-174	Laura McCormick, General Public	10, 12, 21
175-178	Jan Evanston, General Public	3, 21
179-180	Maria Miralles, General Public	21
181-182	Charles Lee, General Public	3, 12, 21
June 19, 2002		
183-185	Warren Stone, VP of Twin Lakes Property Owners Association	6, 21
186-188	Tenna Takata, General Public	3, 12, 21
189-191	Marty Wall, General Public	21
192	Patrick Weir, General Public	21
193-195	Dorian Keyser, General Public	3, 10, 21
196-197	Diana Dixon-Davis, General Public and representative of the Northwest Valley Council PTSA and Chatsworth High School PTSA	10
198	Robert Harrington, General Public	21
199-201	Suzanne Foss (spelling?), General Public	12, 21
202-205	Michael Aguello (spelling?), General Public	8, 9, 21
206-207	Terese Brown, General Public	12
208-209	Susan Escandra, General Public	19, 21
210	Janet Evanson, General Public	12
211-215	Jeannie Plum, General Public	6, 21
216-219	Allan Glaser, General Public and President of the Chatsworth-Porter Ranch Chamber of Commerce	12, 21
220	Jed Levy, General Public	21
221	Charles Lee, General Public	21
222-223	Unidentified woman	6, 21
224-228	Charles Smith, General Public	12, 21
229	Robert Harrington, General Public	21
230-234	David Tweet, General Public	2, 12, 21
235	Ernie Perlich, General Public	21
236-239	Jerry England, Chatsworth ECHO	3, 21

Comment No.	Speaker	Comment Category
September 3, 2003		
240	Kobe King	21
241	Brendan Huffman	21
242	Ruth Gerson	21
243	Irwin Boychenko	21
244-245	Paul Edelman	21
246-250	Charlotte Brodie	3, 21, 19
251	Linda Corbridge	21
252	Michael Augello	21
253	Charles Lee	21
254	Laura McCormick	21
255	Jean Plumb	6
256-262	Teena Takata	21, 19
263	Jerry England	21
264	Allan Glazer	21
265	Vanessa Watters	12, 21
266	Anna Cox	21
267	Marty Woll	12, 21
268	Jan Miller	3

5.2 SUMMARY OF HEARING TRANSCRIPTS – JANUARY 23, 2002

The January 23, 2002 Regional Planning Commission hearing was held to receive testimony on the Deerlake Ranch project and the following comments pertain to this development.

Commenter: **Dorian Keyser**

Comment 1: *Raised concern regarding the enforceability of the conditions.*

Response 1: Staff will recommend that the Planning Commission approve the project conditions pertaining to construction-related activities, as proposed in the draft Conditions of Approval (see Appendix E of this document). See Section 4.2.8 (Non-traffic 3 – Response) of this document.

Comment 2: *Stated that the developer's personal knowledge of the project would be lost when the project is sold.*

Response 2: The comment is not CEQA related. No response is required.

Comment 3: *Requested that Mr. Garlinghouse be involved as an advisor to the subsequent developer.*

Response 3: The comment is not CEQA related. No response is required.

Comment 4: *Stated concern regarding the neighboring 154-condominium project.*

Response 4:	A cumulative analysis discussion of the proposed project and related projects, including the 159-unit condominium project, which has since been reduced to 65 units, was included in Sections 3.0 and 4.0 of the Draft EIR. Individual impacts of the condominium project are not within the scope of the EIR. No additional response is required.
Comment 5:	*Stated that all projects in the area need to be looked at on a cumulative basis.*
Response 5:	Please see Hearing Response 4 of this document.
Comment 6:	*Stated that the Lost Hills Sheriff's Substation, combined with the proposed Sheriff Substation in the project, should be replaced with a subcontract to the City of Los Angeles Police Department.*
Response 6:	This comment is out of the scope of the EIR. However, the comment is noted and will be forwarded on to the decision makers.
Comment 7:	*Stated that it was not required that people go through the project site to access their parcels to the north. Stated there is road that would allow them to go around the project.*
Response 7:	Please see Section 4.2.6 (Topical Response – Traffic) of this document.
Commenter:	**Jerry England**
Comment 8:	*Testified in opposition to the project and requested that the project be restudied for the following reasons: First, the General Plan of the City of Los Angeles requires the City to retain agricultural resources in the City. Stated that the project, which is in the sphere of influence of the City of Los Angeles, has small lots that do not mesh with the surrounding development.*
Response 8:	Please see Section 4.4.1 (C ECHO 1 – Response) of this document.
Comment 9:	*Second, the project was excluded from a biological resources assessment in November 2000, stating that the project was within a sensitive ecological area and that appropriate density should be one unit per ten acres.*
Response 9:	Please see Section 4.4.1 (C ECHO 2 – Response) of this document.
Comment 10:	*Third, the developer's commitment to create a community facilities district was non-specific.*
Response 10:	Please see Section 4.4.1 (C ECHO 3 – Response) of this document.
Comment 11:	*Fourth, a more detailed plan regarding trail access during construction needs to be provided.*
Response 11:	Please see Section 2.0 and Appendix E of this document regarding the applicant's commitments for trail access during construction.
Comment 12:	*Fifth, the project has not addressed the equestrian concerns and traffic on Canoga Avenue south of the project.*
Response 12:	Please see Section 4.4.3 (ETI 13 – Response) of this document.
Comment 13:	*Finally, the project does not mesh with the existing equestrian lifestyle in Chatsworth and adds additional traffic.*

Response 13:	Please see Section 4.5.34 (England 2 Response) of this document.
Comment 14:	*Mentioned schools and public safety concerns.*
Response 14:	Please see Sections 3.0, 4.3.7, 4.5.28, and Appendix J of this document regarding schools. It is unclear as to what the commenter is referring to regarding public safety. No additional response is required.
Comment 15:	*He stated that the project should reduce density and increase lot sizes to 17,500 square feet.*
Response 15:	Please see Section 4.4.1 (C ECHO 1 – Response) of this document.
Comment 16:	*Stated that horse keeping would enhance the value of the project. Stated that small lot sizes would pose a conflict between the suburban homeowners and the existing equestrian community.*
Response 16:	Please see Section 4.5.34 (England 2 – Response) of this document.
Comment 17:	*Requested that the project require horse-keeping properties so that project residents may use the trails.*
Response 17:	Please see Section 4.5.34 (England 2 – Response) of this document.
Commenter:	**Warren Stone**
Comment 18:	*Quoted the staff report in support of the proposition that the non-urban designation requires one lot per acre and therefore the 6,000 square foot lots are inappropriate.*
Response 18:	Please see Section 4.4.1 (C ECHO 1 – Response) of this document.
Comment 19:	*Stated that the property north of the project is within an SEA that requires one unit per ten acres of property. Stated that Indian Springs area has one to two acres per unit.*
Response 19:	Please see Section 4.4.1 (C ECHO 1 and 2 – Responses) regarding the appropriateness of project density and SEAs.
Comment 20:	*Quoted from the Los Angeles County General Plan, which discusses Browns Canyon in terms of large lot equestrian development. Requested a lot size of one acre or larger. Requested that the project site remain non-urban and open to equestrian use.*
Response 20:	Please see Hearing Response 19 and Section 4.4.1 (C ECHO 1 – Response) of this document regarding the appropriateness of project density.
Commenter:	**Greg Smith**
Comment 21:	*Stated that although some aspects of the project had been mitigated, he stated that the project is too large for the two main streets for ingress and egress, based on emergency concerns. He requested that the project be denied.*

Response 21: As stated in the Draft EIR, all impacts from development of the project would be mitigated, with the exception of cumulative air quality. Further, emergency access to the site and adjacent communities (Twin Lakes) would be improved with implementation of the project (see Section 4.12 of the Draft EIR). Please see Sections 2.0 and 3.0, and Appendix K of this document regarding revisions to the traffic analysis. The commenter's opposition to the project is noted and will be forwarded on to the decision makers.

Comment 22: *In the event that the project is to be approved, Mr. Smith recommended that the project be connected to the City of Los Angeles backbone trail system, requested that the size of lots be expanded, and to reduce the density to accommodate horse keeping lots.*

Response 22: As stated in the Draft EIR (Section 2.4.3), the project includes connections to existing trails in the area. Please see Section 2.0 and Appendix K of this document for additional commitments by the applicant regarding trails.

Please see Hearing Response 29 and Section 4.4.1 (C ECHO 1 – Response) of this document regarding the appropriateness of project density.

Comment 23: *Stated that there would be a strain on city resources by this project because no revenues would be allowed to be transferred to the City of Los Angeles, including libraries, parks, and the school district. Stated that the Porter Ranch specific plan does not require construction of the school until 60 percent of buildout of the Porter Ranch. Stated that 60 percent buildout is ten years away. Stated that this project would decrease capacity on the existing schools. Requested that the developer negotiate with the Los Angeles Unified School District to phase the project to match the schools to be built in the Porter Ranch plan and to build a new elementary school.*

Response 23: Please see Section 4.3.5 (City Council responses) of this document regarding fees to the City of Los Angeles.

Please see Sections 2.0, 3.0, 4.3.7, 4.5.28, and Appendix J of this document regarding school capacity.

Comment 24: *Stated that additional traffic mitigation is needed for the project. Asked for mitigation along Canoga and Chatsworth to help mitigate the project. Stated that if the Commission did not work with the city he stated that litigation would result.*

Response 24: As shown on Table 4.12.5 of the Draft EIR, the project would result in incremental, but not significant impacts based on the significance thresholds adopted by LADOT. Therefore, no mitigation measure was recommended for the Canoga Avenue/Chatsworth Street intersection. However subsequent to the release of the Draft EIR, additional mitigation measures have been included as part of the project (including improvements at the Canoga Avenue/Chatsworth Street intersection) for traffic-related impacts at the request of LADOT. Please see Section 4.3.6 and Appendix K of this document.

The comment regarding litigation has been received and noted. No response is required.

Commenter: **Charles Smith**

Comment 25: *Stated that the project would not address a long-standing problem of the Deerlake Ranch subdivision. Stated that there are no dedicated roads north of the 118 Freeway and that the project would not bring such roads. Stated that the proposed development ignores the regional plan for roads in place since 1950. Stated that north of the 118 Freeway not a single dedicated east-west road exists. Stated that the project would ignore access needs of certain property owners and avoids any dedicated properties to the north.*

Response 25: Please see Section 4.5.3 (Augello 1 and 2 – responses) of this document.

Comment 26: *Stated that fire concerns would be exacerbated without public access.*

Response 26: As stated in Section 4.8 of the Draft EIR, the County Fire Department has indicated that the level of staff under these circumstances is adequate to meet fire suppression and emergency medical needs to the project and that no additional staff or service would be required. In addition, the project would include the construction of a helipad for the County Fire Department's use during wild fire operations to serve the surrounding area. The project would also provide extensive fuel modification zones, providing significant buffer areas against wild fires for the existing communities southerly and westerly of the project. No significant impacts would occur.

Comment 27: *Stated that it would be expensive for him to develop his property and that he has endured eminent domain actions against his property.*

Response 27: This comment is out of the scope of the analysis contained in the Draft EIR. No response is required.

Comment 28: *Stated that at the end of Desoto the City Department of Water and Power as part of its debris basin has dumped hundreds of tons of debris, which makes the road extension infeasible.*

Response 28: This comment is out of the scope of the analysis contained in the Draft EIR. No response is required.

Comment 29: *Stated that the Santa Monica Mountains Conservancy and the 10 foot wide buffer strip would control access to the neighboring properties. Stated that the Santa Monica Mountains Conservancy should be required to do weed abatement control.*

Response 29: Please see Section 4.4.5 (SSMPA 11 – Response) of this document.

Comment 30: *Stated Browns Canyon Road is an easement, not a dedicated road, and that therefore many property owners have been thwarted in an attempt to develop their property.*

Response 30: This comment is out of the scope of the analysis contained in the Draft EIR. No response is required.

Commenter: **John McNamara**

Comment 31: *Concerned regarding traffic and schools.*

Response 31: As stated in the Draft EIR, impacts to schools and traffic would not be significant with implementation of mitigation measures. Subsequent to distribution of the

Draft EIR, additional information regarding school capacity was made available by LAUSD. However, these revisions did not change the conclusions included in the Draft EIR. Please see Sections 3.0, 4.3.7, and Appendix J of document regarding school impacts.

As stated in the Draft EIR, the project would not result in significant impacts to area traffic with implementation of recommended mitigation measures. Subsequent to the release of the Draft EIR, additional mitigation measures have been included for traffic-related impacts at the request of LADOT. Please see Section 4.3.6 and Appendix K of this document.

Comment 32: *Requested that the Devil Canyon bridge be relocated to De Soto.*

Response 32: The bridge for vehicular traffic connecting the project site to De Soto Avenue as suggested by the commenter is not proposed as part of the project. Further, the bridge suggested by the commenter is not required to mitigate the potential traffic impacts of the project. Therefore, no further analysis is required.

Commenter: Suzanne Eskander

Comment 33: *Stated that the environmental impact report was flawed. Requested additional time to review the environmental impact report.*

Response 33: Please see Section 4.4.2 (CLPA 2 – Response) of this document regarding the adequacy of the EIR. Please see Section 4.5.5 (Belkin, L3 – Response) of this document regarding additional review time.

Comment 34: *Stated that the EIR does not consider animal control services.*

Response 34: Please see Section 4.4.2 (CLPA 11 – Response) of this document.

Comment 35: *Stated that golden eagles are located in the project site.*

Response 35: Please see Section 4.5.34 (England 4 – Response) of this document.

Comment 36: *Stated that the county library system requested that the county library fee in the EIR be raised to the new amount. In addition, stated that references to the City of Los Angeles library system were not removed in the EIR*

Response 36: As stated in Section 4.11.4 of the Draft EIR, the applicant shall pay the library fee as required per the Los Angeles County Ordinance of $626 or the fee in effect at the time when permits are pulled.

Please see Section 3.0 of this document regarding revisions to the library services section of the Draft EIR.

Comment 37: *Stated the Santa Susanna tar plant is located on the site.*

Response 37: As stated in Section 4.3 of the Draft EIR, the Santa Susana tarplant was located outside of the project area, west of the project site.

Comment 38: *Stated concern regarding Devil Canyon Creek and issues of water quality.*

Response 38: Please see Sections 4.4.2 (CLPA 4 – Response) and 4.4.3 (ETI 7 – Response), and Appendix I of this document.

Commenter: **Marty Woll**

Comment 39: *Raised density concerns and its result on traffic on Canoga.*

Response 39: Section 4.12 of the Draft EIR discussed potential impacts along Canoga Avenue at three intersections: at Rinaldi Street, at Chatsworth Street and at Devonshire Street (see Figures 4.12.7 and 4.12.8). As shown on Table 4.12.5 of the Draft EIR, the project would result in incremental, but not significant impacts based on the significance thresholds adopted by LADOT. Therefore, the Draft EIR does not recommend traffic mitigation measure for Canoga Avenue. However, subsequent to the release of the Draft EIR, additional mitigation measures for traffic-related impacts have been included at the request of LADOT. Please see Section 4.3.6 and Appendix K of this document.

Comment 40: *Questioned the accuracy of the EIR. Questioned the assumptions approved by the LADOT.*

Response 40: Please see Section 4.2.6 and Hearing Response 39 of this document regarding the analysis of potential traffic impacts due to the project as provided in the Draft EIR.

Additional studies and evaluations have been prepared in response to questions raised by members of the community. To address the concerns previously raised by the commenter, supplemental traffic counts were conducted at the study intersections in December 2001 and January 2002 when all local schools (public and private) were in session. It was concluded that based on a traffic impact analysis using these updated traffic counts that no changes occurred regarding the conclusions with respect to potential traffic impacts of the project and the recommended traffic mitigation measures. These findings are summarized in a correspondence dated January 9, 2002 and has been provided to the County's Traffic and Lighting Division and LADOT. The traffic analysis based on the updated traffic counts further support the conclusion that the traffic counts utilized in the Draft EIR traffic analysis provide a reasonable basis for assessing the traffic impacts of the proposed project.

The January 9, 2002 correspondence also summarizes supplemental traffic counts taken to support the assumptions of project trip generation and assignment of project trips to the local street system. It is concluded that the supplemental studies further validate the data, assumptions, analyses, conclusions and recommendations provided in the Draft EIR with respect to the analysis of project traffic impacts and mitigation measures. No changes to the traffic analysis provided in the Draft EIR are required.

Comment 41: *Stated that SCAG requires a five percent background growth rate and a 20-year growth horizon. Stated that the developer showed a growth rate of two percent for a five-year buildout period. Stated that the upscale nature of the homes would generate more trips than the number of trips for homes estimated by the EIR based on ITE numbers. Stated that the EIR should be redone so that the impacts are more accurately reflected. Requested a decrease in density based upon a reconsideration of the EIR.*

Response 41: SCAG stated that this project is too small to fall under those guidelines. Please see Sections 4.3.4 and 4.5.148 (Woll/Tweet 3 – Response), and Hearing Response 40 of this document regarding additional supplemental studies prepared to address prior comments regarding the accuracy of the project's trip generation forecast as provided in the Draft EIR.

Please see Section 4.5.147 (Woll 18 – Response) of this document for a discussion of the assumptions for regional traffic growth utilized in the Draft EIR.

The change in the density of the project as suggested by the commenter is not required to mitigate the potential traffic impacts of the project. Therefore, no further analysis is required of the commenter's proposal.

Commenter: **Diana Dixon Davis**

Comment 42: *Raised concern that county library fees will not support the City of Los Angeles Chatsworth Library. Stated that the Chatsworth Library is over capacity for school children during 3 to 7 P.M.*

Response 42: Please see Section 4.5.28 (Dixon-Davis 10 – Response) of this document.

Comment 43: *Raised concern regarding transportation from and to school. Stated that school related traffic was underestimated in the EIR. Stated that schools in the district are at capacity currently and overcrowding will result by the proposed project.*

Response 43: The trip generation forecast included in the Draft EIR was prepared based on generation rates provided in the *Trip Generation* manual published by the ITE. The ITE manual is required for use in preparing traffic studies by the County's Traffic and Lighting Division and the LADOT. The trip generation forecast includes trips for all project-related origins and destinations including trips to and from work, schools, shopping, recreations, etc. Please see Sections 4.3.6 and 4.5.145 (Woll/Tweet 3 – Response) of this document regarding additional supplemental studies prepared to address prior comments regarding the accuracy of the project's trip generation forecast as provided in the Draft EIR.

Please see Sections 3.0, 4.3.2, and 4.5.28 (Dixon-Davis 1 – Response), and Appendix J of this Document regarding school capacity.

Comment 44: *Stated that payment of mitigation fees would not address the local need in Chatsworth. Suggested that the City of Los Angeles receive the County library fee.*

Response 44: Please see Section 4.5.28 (Dixon-Davis 2 – Response) of this document.

Comment 45: *In addition, stated that a school site should be incorporated into the project and that the developer should provide a turnkey school.*

Response 45: Please see Section 4.5.28 (Dixon-Davis 2 – Response) of this document.

Comment 46: *Stated that there is no transportation linked to the Porter Ranch schools.*

Response 46: LAUSD has the responsibility of determining the need for student transportation. This comment is out of the scope of this EIR.

Commenter: **Lynwood Cobley**

Comment 47: *Stated that he owns five lots in Deerlake Ranch and that he had not been contacted by the developer. He explained the history of the development project area.*

Response 47: Public notice regarding the proposed project was provided according per the requirements of CEQA. The comment is noted and no response is required.

Comment 48: *Expressed concern regarding wildlife impacts created by the project.*

Response 48: As stated in Section 4.3 of the Draft EIR, no significant impacts to wildlife would occur with implementation of recommended mitigation measures.

Commenter: **Teena Takata**

Comment 49: *Indicated her appreciation for the rural environment and lifestyle in Chatsworth.*

Response 49: The comment has been received and noted. No additional response is required.

Comment 50: *Raised concern regarding traffic mitigation and suggested that the mitigation must be in place prior to construction being completed. Stated that the traffic study did not incorporate the Porter Ranch project.*

Response 50: The traffic mitigation measures for the project are summarized in the Draft EIR (Section 4.12.4). Implementation of mitigation measures and assurance of completion is tied to various aspect of development of the project site and is outlined in the Mitigation Monitoring Plan (see Appendix D of this document).

The Porter Ranch project was discussed in the Draft EIR (see Table 4.12.3). It is also noted on Table 4.12.3 that per LADOT, the traffic analysis include half the Porter Ranch related traffic in the 2005 traffic study horizon year. The County's Traffic and Lighting Division also approved this assumption. The inclusion of half of the Porter Ranch traffic provides for a highly conservative analysis of traffic conditions in 2005, as it is unlikely that the Porter Ranch project will be 50 percent complete at that time. Further, while LADOT and the County's Traffic and Lighting Division required inclusion of the Porter Ranch traffic, there is no "benefit" assumed in the Draft EIR traffic analysis for the traffic mitigation measures that the Porter Ranch project has been required to implement in the study area. Therefore, it is concluded that the traffic analysis in the Draft EIR provides a sufficiently conservative assessment of the cumulative traffic impacts associated with the Porter Ranch project and no further analysis is required.

Commenter: **Pat (last name not discernable)**

Comment 51: *Suggested minimizing density to minimize traffic impacts.*

Response 51: As stated in Section 4.12 of the Draft EIR, no significant impacts to traffic would occur with implementation of recommended mitigation measures. Therefore, the change in the density of the project is not required to mitigate the potential traffic impacts of the project.

Commenter:	**Dan Hoffman**
Comment 52:	*Raised concern regarding the current overcrowding of the local schools.*
Response 52:	As stated in the Draft EIR, no significant impacts to schools would occur with implementation of recommended mitigation measures. Please see Sections 3.0, 4.3.7, 4.5.28, and Appendix J of this document.
Comment 53:	*Requested additional time to review the EIR. Raised concern regarding ecological impacts.*
Response 53:	Please see Section 4.5.5 (Belkin L3 – Response) of this document regarding review and comment on the Draft EIR. As stated in the Draft EIR, impacts to biological resources would not be significant with implementation of recommended mitigation measures.
Comment 54:	*In addition, stated that the school impact information is inaccurate.*
Response 54:	Please see Sections 3.0, 4.3.7, 4.5.28 and Appendix J of this document.
Commenter:	**Susan Gerkes**
Comment 55:	*Questioned the mitigation plan for the Plummer's mariposa lily.*
Response 55:	Please see Section 4.4.3 (ETI 1 – Response) of this document.
Comment 56:	*Stated concern for the San Diego horned-lizard which has been identified in the project site.*
Response 56:	Please see Section 4.5.34 (England 4 – Response) of this document.
Comment 57:	*Expressed concern for the lily proposed to be replanted to the off site mitigation property.*
Response 57:	Please see Section 4.4.3 (ETI 1 – Response) of this document.
Comment 58:	*Discussed wildlife movement corridors and the impact of the project.*
Response 58:	Please see Sections 4.4.3 (ETI 6 – Response) and 4.4.5 (SSMPA 5 – Response) of this document.
Comment 59:	*Requested lower density and native landscaping to screen the animals.*
Response 59:	Please see Section 4.2.7 of this document regarding density. As stated in the Draft EIR, impacts to biological resources would not be significant with implementation of recommended mitigation measures. Native landscaping to screen wildlife would not be required. However, the comment will be forwarded to the decision makers.
Commenter:	**Robin Swanson**
Comment 60:	*Raised concern regarding traffic on Canoga and impacts on the schools. Requested speed bumps to slow traffic in response and the fire department representative indicated that speed bumps had negative impacts on response times for emergency services.*

Response 60: Please see Section 4.3.6 and Appendix K of this document regarding additional traffic information.

Commenter: Vanessa Watters

Comment 61: *Stated that the supplemental community conditions need to be more specific. Stated that specifics need to be worked out regarding the cost of the improvements as well as certainty that the developer would be required to complete the improvements. Raised concern regarding the enforcement of the supplemental conditions.*

Response 61: Please see Hearing Response 1 of this document.

Commenter: Linda Stone

Comment 62: *Raised concern regarding fire and sheriff protection. Was concerned regarding staffing of the proposed sheriff substation.*

Response 62: As stated in the Draft EIR, impacts to fire and sheriff services would not be significant, with implementation of recommended mitigation measures. Please see Section 4.2.5 (Topical Response) of this document regarding staffing of the proposed Sheriff substation.

Comment 63: *Requested a park ranger.*

Response 63: A park ranger would not be required to mitigate impacts of the project. However, the comment will be forwarded on to the decision makers.

Comment 64: *Based on the increase in population, requested additional patrolling of the area.*

Response 64: Please see Hearing Response 62 of this document.

Commenter: Charlotte Brodie

Comment 65: *Stated that the density of the project raised issues of public safety, school overcrowding, wildlife, plant life and drainage into Devil Canyon.*

Response 65: As stated in the Draft EIR, no significant impacts with regard to public safety, schools, biology, or drainage would occur with implementation of recommended mitigation measures.

Comment 66: *Stated that the Final EIR needs to include discussions of the impact of trails on the new urban residents and the existing equestrian community. Stated that all trails that cross streets should have some kind of traffic control devices. Asked for adequate trail connections from the project site.*

Response 66: Please see Section 4.5.34 (England 2 – Response) of this document regarding conflicts between urban and equestrian cultures.

Please see Section 2.4.7 of this document regarding trails proposed as part of the project.

Comment 67: *Stated that access needs to be maintained next to the proposed condominium development.*

Response 67: The project would not limit access to the condominium development adjacent to the project site.

Comment 68:	*The County does not have adequate school, library and public safety facilities in these areas so residents would be forced to use City of Los Angeles facilities without any payment of money to the City of Los Angeles to pay for impact.*
Response 68:	Please see Sections 4.3.5 (City Council 1 – Response) and 4.5.28 (Dixon-Davis 2 – Response) of this document.
Comment 69:	*Raised concerns regarding wildlife corridor impact.*
Response 69:	Please see Sections 4.4.3 (ETI 6 – Response) and 4.4.5 (SSMPA 5 – Response) of this document.
Commenter:	**Jeannie Plumb**
Comment 70:	*Raised concern regarding drainage. Stated that Devils Canyon would be negatively impacted by storm flows. Requested that the storm water should be pumped directly to a treatment facility.*
Response 70:	Please see Section 4.4.2 (CLPA 4 – Response) and Appendix I of this document.
Comment 71:	*Raised concern regarding the proposal to transfer the lily to the off site mitigation parcel.*
Response 71:	Please see Section 4.4.3 (ETI 1 – Response) of this document.
Commenter:	**Margo Miller**
Comment 72:	*Requested speed bumps.*
Response 72:	Please see Hearing Response 60 of this document.
Comment 73:	*Requested that construction vehicles not be used on Chatsworth Avenue.*
Response 73:	Please see Section 4.2.3, and Appendices D and E of this document.
Commenter:	**David Tweet**
Comment 74:	*Stated that two main streets. Chatsworth and De Soto, are failing currently and therefore the project will create negative impacts.*
Response 74:	The project is not required to mitigate an existing intersection, which is operating at poor LOS. Also, the project only represents a small percentage of existing and future traffic in the area and should not be responsible to add additional lanes on the said locations (i.e., Topanga Canyon Boulevard, De Soto Avenue). Also, in many cases, potential widening or lane additions are constraint by lack of public right-of-way. Note that all mitigation measures proposed in the traffic impact study were considered by all reviewing agencies including LACDPW, LADOT, and Caltrans as acceptable mitigation measures. Please see Sections 4.3.2, 4.3.6 and Appendix K of this document.
Comment 75:	*Complained about current traffic as well as traffic and school related impacts.*
Response 75:	As stated in the Draft EIR, impacts to traffic and schools would not be significant with implementation of recommended mitigation measures.

Comment 76: *Requested that the hearing be continued to allow the public more time to consider the project.*

Response 76: Please see Section 1.1 of this document regarding public hearings.

Commenter: Elizabeth Sellers

Comment 77: *Stated that she represented the community of rental condominiums to the west of the development. Stated that she had concern regarding traffic congestion. Stated that the traffic improvements were subject to the Caltrans approval process and therefore it was uncertain if the improvements would occur.*

Response 77: The commenter is referring to traffic mitigation measures 4.12-1 through 4.12-4, which is listed in Section 4.12 of the Draft EIR. The design and construction of the improvements within the state right-of-way will be processed through the standard Caltrans Encroachment Permit procedure. This was confirmed in the Caltrans correspondence dated February 15, 2002, included in Appendix A.2 of the Draft EIR. The letter stated that the recommended traffic improvements within the state right-of-way as described in the Draft EIR are acceptable for the project.

Please see Section 4.3.2 of this document.

Commenter: Mark Watters

Comment 78: *Lives in one of the three occupied homes north of the bridge through Devils Canyon. Stated that he is president of the Twin Lakes Property Owners Association. Requested a continuance to review documentation on the La Vina Development in Altadena. Raised concern regarding fulfillment of conditions relating to the La Vina Project.*

Response 78: Please see Section 1.1 of this document regarding additional hearings.

The fulfillment of conditions for the La Vina project is not within the scope of this EIR.

Comment 79: *Requested additional time to review the environmental impact report.*

Response 79: Please see Section 1.1 of this document.

Comment 80: *Requested that the Commission take a tour of the subject property.*

Response 80: Comment noted. The Planning Commissioners toured the proposed project site on April 6, 2002.

Commenter: Anna Cox

Comment 81: *Stated that wildlife exist in the area in addition to those discussed in the environmental report.*

Response 81: Please see Section 4.5.34 (England 4 – Response) of this document.

Comment 82: *Concerned regarding storm drains to the creek and the filtration system including the 80 percent clean estimate regarding cleaning up the subject creek. Stated that the storm drain pipe to the nearby treatment facility would be a more viable option.*

Response 82: Please see Sections 4.4.2 (CLPA 4 – Response) and 4.4.3 (ETI 7 – Response) and Appendix I of this document.

Comment 83:	*Raised issues regarding the wind and the potential implication of valley fever and the earthquakes.*
Response 83:	See Section 4.5.139 (Watters V-25 Response)
Comment 84:	*Stated that residents of La Vina expressed concern regarding the performance of the developer.*
Response 84:	The comment is not CEQA related. No response is required.
Commenter:	**Laura McCormick**
Comment 85:	*Raised concern regarding density and traffic impacts.*
Response 85:	Please see Section 4.4.1 (C ECHO 1 – Response) of this document regarding density. As stated in Section 4.12 of the Draft EIR, no significant impacts to traffic would occur with implementation of recommended mitigation measures.
Commenter:	**Kathy Weisman**
Comment 86:	*Raised concern about possible dynamiting during grading. Requested a written condition that no dynamiting would be allowed.*
Response 86:	Traditional grading techniques would be used during construction of the project. However, other methods may be required. All construction activities would be conducted according to requirements of the County of Los Angeles.
Commenter:	**Kathleen Misko**
Comment 87:	*Testified that the project area should remain undeveloped.*
Response 87:	The comment has been received and noted. No additional response is required.
Comment 88:	*Stated that during the earthquake, she saw landslides within the mountains.*
Response 88:	Please see Section 4.4.2 (CLPA 3 – Response) of this document.
Comment 89:	*Stated that the wind study was incorrect and that high wind areas such as this suffer severe damage.*
Response 89:	Please see Section 4.2.3 (Noise/Dust 2 – Response) of this document.
Comment 90:	*Stated that the project would have significant impacts and requested a decrease in density.*
Response 90:	Please see 4.4.1 (C ECHO 1 – Response) of this document.
Commenter:	**Greg Smith**
Comment 91:	*Requested that the lots should be of larger size with an equestrian-orientation.*
Response 91:	Please see Section 4.4.1 (C ECHO 1 – Response) of this document.
Comment 92:	*Requested more time for review of the environmental impact report.*
Response 92:	Please see Section 1.1 of this document.

Comment 93: *Requested limits on construction traffic.*

Response 93: Please see Section 4.2.6 (Topical Response) and Appendix E of this document regarding restrictions on construction activities.

Comment 94: *Requested information regarding who would repair city streets from construction impacts.*

Response 94: Construction equipment would be off-loaded directly onto the project site, and therefore, would not impact surrounding streets. The City of Los Angeles is responsible for all repairs to City streets.

Comment 95: *Questioned the aesthetic quality of the Porter Ranch project.*

Response 95: As this comment is not within the scope of the EIR, no response is required.

Comment 96: *Requested reduced density to alleviate the traffic.*

Response 96: Please see Hearing Response 51 of this document.

Commenter: Clara Wall

Comment 97: *Stated that the recreational activities in Browns Canyon and wildlife impact are significant. Worried about habitat destruction.*

Response 97: The project would not impact recreational activities in Browns Canyon. The impact on the environment and effect on animals is discussed in Section 4.3 of the Draft EIR. The discussion includes impacts upon sensitive species, nesting birds and raptors, and wildlife movement. As stated in the Draft EIR, impacts would not be significant with implementation of recommended mitigation measures.

Comment 98: *Stated that the safety on Canoga Avenue would be decreased. Stated that construction traffic would conflict with school children. Stated that the increased traffic would be a danger to the horse riders and their horses.*

Response 98: Please see Section 4.3.7 of this document regarding traffic impacts to schools.

Please see Section 4.5 (England 2 – Response) of this document regarding equestrian/traffic conflicts.

Comment 99: *Requested that lot sizes be increased.*

Response 99: Please see Section 4.4.1 (C ECHO 1 – Response) of this document.

Comment 100: *Stated that the project area is part of the proposed SEA.*

Response 100: Please see Section 4.4.1 (C ECHO 2 – Response) of this document.

Commenter: Michaell Augello

Comment 101: *Testified regarding access to the north as a property owner in the area. Stated that the development of access as proposed ignores the northern property owners. Stated that lack of access would affect brush clearance activities.*

Response 101: Please see Section 4.2.6 (Topical Response – Traffic) of this document.

Commenter:	**Adrian Gauthier**
Comment 102:	*Said that the project would decrease animal movement.*
Response 102:	Please see Sections 4.4.2 (CLPA 7 – Response) and 4.4.3 (ETI 6 – Response) of this document.
Comment 103:	*Stated that the Topanga Canyon off ramp at rush hour is extremely congested.*
Response 103:	The comment has been received and noted. Table 4.12.2 of the Draft EIR included a summary of existing conditions at the Topanga Canyon Boulevard off-ramps, which indicate congestion during the peak hours. However, with implementation of the recommended mitigation measures, the project would not result in significant impacts to area traffic.
Comment 104:	*Requested that the project lot sizes be increased.*
Response 104:	Please see Section 4.4.1 (C ECHO 1 – Response) of this document.
Commenter:	**Walter Prince**
Comment 105:	*Commented on the supplemental conditions as being illusory. Stated that the developers are requesting that certain improvements be made without a requirement that the developer complete these improvements.*
Response 105:	Please see Appendix E of this document.
Comment 106:	*Requested that the traffic access for equestrian crossings be improved from merely stop signs to mechanized control.*
Response 106:	Please see Section 4.5.34 (England 2 – Response) of this document.
Comment 107:	*Stated that the traffic conditions were subject to a future study rather than requiring completion.*
Response 107:	Additional studies and evaluations have been voluntarily commissioned by the project applicant prepared in response to questions raised by members of the community. The supplemental studies further validate the data, assumptions, analyses, conclusions and recommendations provided in the Draft EIR with respect to the analysis of project traffic impacts and mitigation measures. No additional traffic studies are required.
Comment 108:	*Requested more specificity regarding the pocket parks.*
Response 108:	Please see Section 2.0 of this document regarding the locations of park areas that are included as part of the revised project.
Comment 109:	*Stated that there were contradictions in the construction conditions proposed in the supplemental conditions and approvals.*
Response 109:	It is unclear as what conditions the commenter is referring. Please see Appendices D and E of this document regarding mitigation and conditions for the project.
Comment 110:	*Stated that larger lots are needed in the San Fernando Valley. Requested a half acre minimum lot size.*
Response 110:	Please see Section 4.4.1 (C ECHO 1 – Response) of this document.

Commenter: **Deidra Robles**

Comment 111: *Raised concern regarding police access, school overcrowding, and traffic. Raised concern regarding police response time.*

Response 111: As stated in Section 4.9 of the Draft EIR, no significant impacts to police services, schools or traffic would occur with implementation of mitigation measures.

Please see Sections 4.2.5, 4.3.7, 4.5.28, and Appendices J and K of this document.

5.3 SUMMARY OF HEARING TRANSCRIPTS – APRIL 10, 2002

The April 10, 2002 Regional Planning Commission hearing was held to receive additional testimony on the project.

Commenter: Mark Watters

Comment 112: *He thanked the Commission for the field trip. He stated that the new map was a step in the right direction, but that it was not enough.*

Response 112: The comment has been received and noted. No additional response is necessary.

Comment 113: *He stated that density needs to be further reduced.*

Response 113: Please see Section 2.0 of this document regarding the revised project.

Comment 114: *He stated that the developer was a good company and that they were ethical and sensible and listened to the community. He stated that he thinks they could get the density down significantly.*

Response 114: Comment noted. Please see Hearing Response 113.

Comment 115: *He stated that increasing density and use of the Topanga off-ramp that is already significantly crowded won't work and that increased left turn lanes will not mitigate impact of the Project.*

Response 115: Please see Section 4.2.6 and Appendix K regarding traffic issues.

Comment 116: *He requested a continuance of the public hearing to study reducing the density of the project.*

Response 116: Please see Section 1.1 of this document regarding the additional public hearings.

Commenter: Warren Stone

Comment 117: *He stated that the HOA has been in negotiation with the developer for over one year and indicated that the developer has demonstrated a willingness to help with existing problems within the community. He stated that the main infrastructure of the project will work for Twin Lakes.*

Response 117: Comment noted.

Comment 118: *He also stated that the applicant is going to give the HOA money to pave roads in the community.*

Response 118: Comment noted. Please see Appendix E of this document.

Comment 119: *He stated that he did not have the technical expertise to review the water quality study.*

Response 119: The comment has been received and noted.

Comment 120: *He stated that the development was too large and indicated that a decrease would help solve the problem. He also stated that if we work together a good plan can be developed that will be a credit to the community of Chatsworth.*

Response 120: Please Section 2.0 of this document regarding the revised project.

Commenter: Ana Cox

Comment 121: *She stated that the EIR is inadequate and does not respond to concerns raised at the last hearing.*

Response 121: The Draft EIR was prepared according to *CEQA Guidelines* and requirements. Concerns from the last hearing have been addressed in Section 5.2 of this document.

Comment 122: *She raised issues of wildlife, oak trees, water, storm drainage, and animals.*

Response 122: Please see Sections 4.2.1, and 4.2.2 of this document.

Comment 123: *She compared the project to Porter Ranch.*

Response 123: Comment does not provide specifics regarding the comparison to Porter Ranch. No additional response is needed.

Comment 124: *She stated that the density affects personal safety, wildlife, rock formations, and other issues.*

Response 124: As stated in the Draft EIR, impacts associated with the project would not be significant, with implementation of mitigation measures. Please see Section 2.0 of this document regarding the revised project.

Comment 125: *She raised the issue of emergency access.*

Response 125: Emergency access has been addressed in Sections 4.8 and 4.9 of the Draft EIR.

Comment 126: *She raised the issue of La Vina.*

Response 126: Comment does not provide specifics regarding the issue of La Vina. No additional response is required.

Comment 127: *She indicated concerns regarding the enforceability of the conditions.*

Response 127: Please see Hearing Response 1 of this document.

Commenter: Charles W. Smith

Comment 128: *He abuts the development for several hundred feet on the east. He stated that he is pleased that development will go forward, but he stated that he could not develop his property due to the frontage road installed as part of the Porter Ranch project.*

Response 128: Concerns regarding the Porter Ranch project are not relevant to this EIR. However, the comment is noted.

Comment 129: *He raised concern of access being cut off by the project and due to the Brown's Canyon watershed being inundated during a heavy rainstorm.*

Response 129: Please see Appendix M of this document.

Commenter: Gary Levitt

Comment 130: *He raised concern regarding affordable housing.*

Response 130: The comment has been received and noted. No additional response is necessary.

Comment 131: *He raised the issue that the project site is a proposed SEA.*

Response 131: Please see Sections 4.2.1 (Biology 1 – Response) and 4.4.1 (C ECHO 2 – Response), and Appendix F.4 of this document.

Comment 132: *He stated that low density housing should be considered.*

Response 132: Please see Section 2.1.2 of this document regarding density.

Comment 133: *He indicated that street closures already occur due increased traffic on Rinaldi.*

Response 133: It is unclear as to what the commenter is referring. Implementation of the project would not result in significant traffic impacts. Please see Sections 4.2.6, 4.3.2, 4.3.6, and Appendix K of this document.

Commenter: Dorian Keyser

Comment 134: *He stated that the current developer is not responsible for the lack of action at La Vina.*

Response 134: The comment has been received and noted. No additional response is necessary.

Comment 135: *He raised the issue of an abandoned school, which could be used if refurbished for approximately 2 million dollars.*

Response 135: The comment has been received and noted. No additional response is necessary. The comment will be forwarded on to the decision-makers.

Commenter: Marty Woll

Comment 136: *He raised the issue of school safety issues as a result of routing of construction traffic. He stated that construction access on Canoga will drive by the entrance to the school. He raised concern about enforceability of the construction access conditions.*

Response 136: Please see Section 4.2.6 (Topical Response) and Appendix E regarding construction traffic mitigation measures.

Comment 137: *He raised concern dust control measures during project grading.*

Response 137: Please see Section 4.2.3 of this document.

Comment 138: *He raised concern regarding Valley fever and impacts on school children.*

Response 138: Please see Hearing Response 83 and Section 4.5.136 (Watters V 24-Response).

Commenter: Jerry England

Comment 139: *He stated that he represents the Chatsworth ECHO. He stated that the County General Plan is being updated and that the biological resources assessment is being completed.*

Response 139: The comment has been received and noted. No additional response is needed.

Comment 140: *He suggested a dwelling unit density of 1 unit per 10 acres.*

Response 140: Please see Section 4.2.7 of this document regarding land use density for the project site.

Comment 141: *He stated that the City General Plan recommends low density development in the area.*

Response 141: The project is located within the County of Los Angeles. Please see Section 2.1.2 or this document regarding land use density for the project site.

Comment 142: *He stated that project development should wait until completion of the above-referenced plans. He suggested a moratorium on development until new studies have been completed.*

Response 142: The comment has been received and noted. No additional response is needed.

Commenter: Charlotte Brodie

Comment 143: *She stated that her trail organization supports some element of the proposal, but that some issues need clarification and others need additional study. She stated that she supports the network of trails. She requested additional clarification in numerous areas.*

Response 143: Comment does not provide specifications on what needed to be clarified and studied. The comment has been received and noted. No additional response is required.

Comment 144: *She also requested examination of schools, storm water, wildlife corridor, and Topanga and the 118 freeway connection.*

Response 144: Schools, storm water, wildlife corridor, and traffic were all adequately addressed in the Draft EIR. .

Comment 145: *She recognized that the equestrian benefits are very beneficial, but do not supercede the environmental impacts of the project.*

Response 145: The comment has been received and noted. No additional response is needed.

Commenter: Terri Cunningham

Comment 146: *She requested that all of the lots be equestrian size. She raised the regional need for the equestrian-sized lots. She supported the moratorium.*

Response 146: Please see Section 2.0 of this document regarding the revised project and the additional equestrian lots.

Commenter: Suzanne Foss

Comment 147: *She said the traffic on Canoga makes access to her property difficult. She raised concern regarding widening of Canoga and the impact on her property.*

Response 147: Traffic concerns were addressed in the Draft EIR and updated analysis can be found in Section 4.2.6 and Appendix K of this document.

Commenter: Greg Smith

Comment 148: *He thanked the Commission for its field trip. He raised concern regarding Canoga Avenue. He stated that problems exist on Canoga Avenue. He stated that traffic needed to be eliminated on Canoga Avenue.*

Response 148: Traffic concerns were addressed in the Draft EIR and updated analysis can be found in Section 4.2.6 and Appendix K of this document.

Comment 149: *He stated that Los Angeles did not abandon extension of DeSoto on the westerly side. He questioned the dollar amount stated by the applicant for the extension of DeSoto.*

Response 149: Traffic concerns were addressed in the Draft EIR and updated analysis can be found in Section 4.2.6 and Appendix K of this document.

Comment 150: *He stated that the traffic signal money will be used in the community.*

Response 150: Comment noted.

Comment 151: *He questioned the traffic study and stated that the City of Los Angeles will ask for more mitigation.*

Response 151: Updated traffic analysis can be found in Appendix K of this document. Mitigation measures are provided in Appendix D and E of this document.

Comment 152: *He stated that the project needed to be scaled differently and the traffic needs to be directed in different ways.*

Response 152: Comment does not provide specifications on how the project needed to be scaled differently and how to direct the traffic needs in different ways. The comment has been received and noted. No additional response is required.

Commenter: Chuck Chewian

Comment 153: *He stated that he served on the Board of Transportation Commissioners for the City. He stated that the density is unreasonable. He raised the issue of safety on Canoga and the need for reduced density.*

Response 153: As stated in the Draft EIR, impacts related to project traffic would not be significant. Updated traffic analysis can be found in Appendix K of this document. Mitigation measures are provided in Appendix D and E of this document.

Please see Section 4.2.7 of this document regarding allowable land use density.

Commenter: Greg Smith

Comment 154: *He raised the issue of density, aesthetic compatibility with the community, and future growth impacts.*

Response 154: The Draft EIR discussed land use compatibility (including allowable density) and aesthetic compatibility. No significant impacts would occur.

Comment 155: *He stated that the lot widths are too narrow.*

Response 155: Please see Section 2.0 of this document regarding the revised project.

Comment 156: *He raised the issue of access to the north.*

Response 156: Please see Appendix M of this document.

Commenter: Robert Harrington

Comment 157: *He spoke on behalf of the Clara Schweitzer Trust. He stated the Clara Schweitzer Trust owns 325 acres north of the project. He stated that in 1958 the Schweitzer property had 2 means of access on Saugus Road and Brown's Canyon Road. He stated that these sources of access have been utilized for 44 years. He stated that Saugus Road was on the original 1920 map as a dedicated street, not an easement. He stated that the project would eliminate legal access to Saugus Road. He stated the Saugus Road access must be retained for emergency purposes.*

Response 157: Please see Section 4.5.3 (Augello 1 and 2 – responses) of this document.

Comment 158: *He stated that 10 foot ownership by the Santa Monica Mountain Conservancy would cut out legal access. He stated that the SMMC 10 foot strip is unfair.*

Response 158: Please see Appendix M of this document.

Comment 159: *In response to question from Commissioner Helsley, Harrington indicated that there's an indication of access in a title report for the Schweitzer Property for Saugus Road.*

Response 159: The Preliminary Title Reports for properties to the north have been furnished to staff by the applicant's title company.

Commenter: Susan Eskander

Comment 160: *She stated that there was significant interest in equestrian residential properties.*

Response 160: The comment has been received and noted.

Comment 161: *She requested a response from the developer on the following issues: wildlife corridor, libraries, turn key school, flood control, building on the ridgeline, parks, Mello Roos, landslides, and ridgeline effects.*

Response 161: Please see Appendix F.5 of this document regarding wildlife corridors.

Impacts to area libraries were discussed in the Draft EIR (4.11) and no significant impacts would occur. Under County ordinance, the developer will pay approximately $275,000 to the County library system. In addition to the County fee, the developer to provide funds for the City of Los Angeles library system (i.e., approximately $138,000 directly to the Chatsworth Library) to help offset potential impacts on that facility.

Please see Sections 3.3 and 4.3.7 of this document regarding schools.

Please see Appendix H.1 of this document regarding flood control.

Please see Section 2.0 of this document regarding ridgeline development and parks.

At the June 19th RPC hearing, Commissioner Helsley stated that, given the extent of public improvements proposed by this project, he could see that the use of Mello-Roos funds may be appropriate. Also, the developer has filed an application with the County requesting that a Community Facilities District be formed covering only the project site so that eligible portions of the proposed public infrastructure could be financed under Mello-Roos. The County has a CFD Committee, consisting of representatives from 12 County departments, which has the responsibility of reviewing the developer's application and making recommendations to the Board of Supervisors. The Committee cannot complete its work until the final project has been approved by the County.

Please see Section 4.5 of the Draft EIR and Section 4.4.2 (CLPA 3 – Response) of this document regarding landslides.

Comment 162: *She stated that the EIR was insufficient with regard to animal control efforts.*

Response 162: Please see Section 4.4.2 (CLPA 11 – Response) of this document.

Commenter: Jeannie Plumb

Comment 163: *She raised issues regarding compatibility of the existing nonconforming horse keeping lots with a modern subdivision.*

Response 163: Please see Section 2.0 of this document regarding the revised project.

Comment 164: *She also commented on the Fero water quality report.*

Response 164: It is unclear as to the specifics of the comments on the Fero water quality report. The comment has been received and noted. The Fero water quality report is provided in Appendix I of this document.

Comment 165: *She requested that the sewage control effort result in 100% clean water.*

Response 165: Wastewater is discussed in Section 4.14 of the Draft EIR.

Comment 166: *She requested that storm water runoff be piped underground through a gravity feed through the concrete channel.*

Response 166: Please see Section 4.2.2 of this document and Section 4.6 of the Draft EIR.

Commenter: Ernie Perlick

Comment 167: *He stated that he owns tract map number2821-019-007. He stated that he owns the 40- acre parcel adjoining the north boundary of the property. He stated that he purchased his land in 1966. He stated that he used access through Deer Lake Highlands Road, a dedicated public road. He stated that the road for many years was maintained by the Los Angeles County Fire Department. In 1980, the Fire Department deemed the bridge across Devil's Canyon unsafe for their engines. He stated that he has used the road to access his property for 36 years. He requested continued access to his property. He stated that he no longer has the title policy and is unaware of whether he has a legal easement.*

Response 167: Please see Appendix M of this document.

Commenter: David Tweet

Comment 168: *He discussed the layout of the revised project. He suggested two gated communities.*

Response 168: Comment noted. Please see Section 2.0 of this document regarding the revised project.

Commenter: Janice Perlick

Comment 169: *She read minutes from the SMMC's regular meeting in December 1997 indicating that the approval of the agreement would limit inappropriate development north of the project. She stated that property owners to the north should not be denied access to their property.*

Response 169: Comment noted.

Commenter: Liz Ricci

Comment 170: *She stated that the developer has a poor record of keeping its promises. She stated that she has concerns regarding enforcement.*

Response 170: Please see Appendices D and E regarding implementation of mitigation measures and conditions of approval.

Commenter: Patrick Weir

Comment 171: *He stated that Canoga Avenue and Chatsworth Avenue will be overloaded by this development and later development.*

Response 171: Please see Sections 4.2.6 and Appendix K of this document for an updated traffic study.

Commenter: Michael Augello

Comment 172: *He stated that he owns vacant land north of the property. His land is located in the Deer Lake Highlands addition. He stated that 80 small lots of 8,000 square feet each are located in this area. He stated that in the original subdivision maps in 1927 legal access was intended for this area. He stated that the new maps cut off all access to this area. He stated that he spoke on behalf of 12 landowners including himself. He has proposed modifications to the maps to provide access to the north. He stated that the Saugus Avenue access should be maintained for emergency purposes.*

Response 172: Please see Appendix M of this document.

Commenter: Laura McCormick

Comment 173: *She raised traffic impact concerns on schools. She questioned the payment of mitigation fees to mitigate these impacts.*

Response 173: Requirements to construct offsite traffic improvements will be conditions which must be met prior to issuance of building permits and/or occupancy certificates for the project (see Appendix E of this document). In addition, all physical traffic improvements will require thedeveloper to post performance bonds to guarantee completion.

Comment 174: *She questioned the density calculation for the project based upon non-developable areas.*

Response 174: Please see Section 2.0 of this document.

Commenter: Jan Evanston

Comment 175: *She raised concern about impacts to sensitive areas.*

Response 175: It is unclear as to what sensitive areas are in question. The comment has been received and noted.

Comment 176: *She stated that the applicant was already grading the project roads.*

Response 176: No grading of roads has occurred on the project site. A variety of onsite roadways have existed for years.

Comment 177: *She stated that the lots sizes should be increased.*

Response 177: Please see Section 2.0 of this document regarding the revised project.

Comment 178: *She requested development be stopped pending the hearing.*

Response 178: The comment has been received and noted.

Commenter: Maria Miralles

Comment 179: *She stated that she's a member of the Friends of La Vina. She stated that she opposed the density of the La Vina project for 10 years. She stated that the La Vina project has significant opposition and that the community is still suffering from the effects of that development.*

Response 179: The comment has been received and noted. Several procedures have been proposed for implementation for this project which were not done for the La Vina project, including the following:

Detailed Conditions of Approval:

This project has significantly more detailed conditions of approval, including special community conditions, than the La Vina project to ensure that all performance requirements by the developer are clearly stated for future compliance monitoring and enforcement.

Enhanced Monitoring:

In addition to the inspections otherwise required, subdivider will pay for monthly, unannounced site inspections by a Department representative for the first twenty-four months of grading and construction activities. The subdivider will deposit an additional $2,400.00 with the Department of Regional Planning in advance to defray the costs associated with the unannounced monthly inspection in addition to the costs for the Department to monitor the mitigation measures.. If any inspection discloses that the project site is being used in violation of any one of the conditions

of the County subdivision, CUP or other approvals, the subdivider will be financially responsible and shall reimburse the Department of Regional Planning for all additional enforcement efforts necessary to bring the project site into compliance.

Enhanced Enforcement

The subdivider will provide a toll-free telephone number to the community to facilitate communication twenty-four hours each day regarding any issues arising from operation of the facility. This telephone number shall be conspicuously posted in conjunction with the requirements above.

The subdivider will post a sign at the entrance of the subject site in English and the predominant second language(s) in the area, displaying contact telephone numbers for the facility site manager, the Department of Regional Planning Zoning Enforcement Section and South Coast Air Quality Management District for reporting any problems, which may occur during construction.

Comment 180: *She raised concern regarding the enforceability of the conditions of approval. She stated that the community is still attempting to obtain compliance with the conditions.*

Response 180: Please see Hearing Response 179.

Commenter: Charles Lee

Comment 181: *He stated that he owns 180 acres in Brown's Canyon. These ownerships consist of 4 parcels. He raised concern regarding access to his property. He stated he has a 60-acre, an 80-acre, a 10-acre and a 30-acre parcel. He raised the issue of land-locking the other property owners as a result of development.*

Response 181: Please see Appendix M of this document.

Comment 182: *He raised concern regarding the developer's purchase of the conservancy property.*

Response 182: This is out of the scope of the EIR. No additional response is required.

5.4 SUMMARY OF HEARING TRANSCRIPTS – JUNE 19, 2002

The June 19, 2002 Regional Planning Commission hearing was held to receive additional testimony on the Deerlake Ranch project and the following comments pertain to this development.

Commenter: Warren Stone

Comment 183: *He questions the enforceability of the conditions, saying that sewers, sheriff's sub station, moneys for completion of infrastructure and cable are reasonable, if ever really happen.*

Response 183: Please see Hearing Response 1.

Comment 184: *Storm water should be diverted to opening of Browns Canyon.*

Response 184: Please see Section 4.2.2 (Topical Response – Urban Runoff) of this document.

Comment 185: *Less density is necessary to address impacts to traffic, schools and fire department.*

Response 185: Please see Section 2.0 of this document regarding the revised project.

Commenter: Teena Takata

Comment 186: *The community was not provided with the applicant's materials and staff is not giving them accurate information.*

Response 186: It is not clear as to what the "applicant's materials" refers to nor is it clear what the specifics to the accurate information in question are as stated in the comment.

Comment 187: *At the June 6th community meeting, she learned that the approved traffic study does not include Porter Ranch and that the proposed SEA will be segmented. She thinks all of the project site will be in proposed SEA. There is a discrepancy in numbers regarding Porter Ranch, and she is not sure what the numbers are based on. Traffic issues.*

Response 187: Please see Appendix O of this document regarding the community meetings. The c County has not adopted any changes to the General Plan SEA boundaries. Porter Ranch has been included in the updated traffic study.

Comment 188: *General plan is old and inadequate. Fewer homes and increased lot sizes are necessary.*

Response 188: This comment does not relate to the project. No response is required.

Commenter: Marty Woll

Comment 189: *Unanswered questions. The applicant promised to circulate white papers in the community. The applicant has only contacted a few neighbors, and only wanted one-on-one meetings. The applicant hired lobbyists, gave a telephone pitch disguised as survey, sent out a slick mailer.*

Response 189: Please see Appendix O of this document regarding community meetings.

Comment 190: *The project does not fit the neighborhood.*

Response 190: Please see Section 2.1.2 of this document regarding allowable land use and densities for the site.

Comment 191: *Cites Forester-Fire Warden as saying that no more than 150 homes could be built without providing secondary access, and doubts that the 600 home certificate of compliance build out could occur because individuals wouldn't have the resources.*

Response 191: Please see Section 4.2.4 of this document.

Commenter: Patrick Weir

Comment 192: *Price should not drive the development. Compatibility to the neighborhood is more important.*

Response 192: The comment has been received and noted. Please see Section 2.1.2 of this document regarding allowable land use densities for the project site.

Commenter: Dorian Keyser

Comment 193: *He is part of the Santa Susanna Mountain Parks Association, but is testifying as an individual.*

Response 193 The comment has been received and noted. No additional response is required.

Comment 194: *Developer needs reasonable profit. Afraid less friendly developer will take over.*

Response 194: The comment has been received and noted. No additional response is required.

Comment 195: *Complains about school district policies unrelated to the project.*

Response 195: Comment does not specify unrelated school district policies. Comment has been received and noted.

Commenter: Diana Dixon-Davis

Comment 196: *Both organizations passed a resolution stating that the fees for Deerlake Ranch should be spent in the affected community. She disputes the numbers in the EIR. Chatsworth elementary school has only one seat according to principle and the principle of Lawrence Middle School said the school is at capacity. The EIR is deficient. and should be corrected for district policies. For example, students enrolled can continue, there is some busing and special education classes have lower populations. We cannot ask special education students to leave.*

Response 196: Please see Sections 4.3.7, 4.5.28, and Appendix J of this document.

Comment 197: *She put together 5 different mitigation packages, including the following measures: (1) purchase 6.7 acres in Porter Ranch for school site, (2) rehabilitate Devonshire elementary school, (3) purchase lot near Chatsworth Park elementary for use as turnabout and parking lot (4) adjust attendance lines in the area-move some students to school further south.*

Response 197: Comment is noted and will be forwarded onto the decision makers. Please see Sections 4.3.7, 4.5.28, and Appendix J of this document.

Commenter: Robert Harrington

Comment 198: *He wants to know whether parcel number 282101907 has access to the north of the project. If it does has access, he would like to know where it is and how such access rights were determined. Staff explains that it performs title searches through the certificate of compliance process, and normally does not investigate access; however, staff has some information on these properties. County Counsel recommends that he speak with the applicant during the break.*

Response 198: Please see Appendix M of this document.

Commenter: Suzanne Foss

Comment 199: *She moved here because it was a country, quiet area, and has been horrified by the increase in traffic. Speed is a problem on Canoga. There was a terrible accident at intersection of Chatsworth and Canoga, and she has almost been hit by speeding car. To widen the street would open the floodgate and speeding would be worse.*

Response 199: As stated in the Draft EIR, impacts to traffic would not be significant with implementation of mitigation measures. Please see Sections 4.2.6, 4.3.6, and Appendix K of this document regarding the revised traffic report.

Comment 200: *$2 million expense to developer is less expense than the devaluing of the residents property value.*

Response 200: The comment is noted and will be forwarded onto the decision makers.

Comment 201: *She wants a study on Canoga Avenue, not just Chatsworth Avenue, which has a stoplight. Tulsa should have a speed hump.*

Response 201: Please see Sections 4.2.6, 4.3.6, and Appendix K of this document regarding the revised traffic report.

Commenter: Michael Augello

Comment 202: *He knows nothing about proposals for driveway width or the applicant's materials and wants clarification from the applicant.*

Response 202: Please see Appendix C.3 of this document.

Comment 203: *He has received no communication from the applicant and does not believe the applicant's claim that he has reached out. He received one form letter from the applicant in the last 45 days, but it was not in reference to anything he said in testimony and did not think it made much sense.*

Response 203: Four community meetings were held regarding the project, please see Appendix O of this document.

Comment 204: *He also says that the area is bridge dependent and the bridges could go out in an earthquake.*

Response 204: The bridge would be built to current building codes standards that include a margin of safety regarding seismic activity.

Comment 205: *He suggests that emergency access should be provided through the Ziegler property.*

Response 205: Comment noted. Please see Sections 4.8 and 4.9 of the Draft EIR regarding emergency access.

Commenter: Teresa Brown

Comment 206: *De Soto Avenue has become an extension of the freeway. Speed is a problem and there are no guardrails for horses. Bridle trail is on Canoga.*

Response 206: Please see Sections 2.0, 3.0, and 4.1 of this document.

Comment 207: *Widening Canoga will make it just like De Soto Avenue. The traffic impact will be phenomenal.*

Response 207: As stated in the Draft EIR, impacts related to traffic would be less than significant with implementation of mitigation measures. Please see Sections Appendices D and K of this document for updated mitigation measures.

Commenter: Susan Escandra

Comment 208: *$2.6 million to the developer is nothing compared to the drop in property values. Open space is not an open license to develop. She does not think that this decision should be driven by the threat that something worse will be developed in the alternative.*

Response 208: The comment has been received and noted.

Comment 209: *Fitting the community and mitigating impacts are the important factors. Cost should not drive the choice of mitigation measures.*

Response 209: The comment has been received and noted.

Commenter: Janet Evanson

Comment 210: *She compares the project to Ahmanson Ranch's "mega-project." This would have just as bad an impact on Chatsworth as Ahmanson Ranch has on Los Angeles. Traffic is a major problem. There will be a standstill on our roads. Please reduce density and make it contiguous to Chatsworth.*

Response 210: As stated in the Draft EIR, impacts related to traffic would be less than significant with implementation of mitigation measures. Please see Sections Appendices D and K of this document for updated mitigation measures.

Commenter: Jeannie Plum

Comment 211: *The gridlock on De Soto Avenue will not be affected by this project, but the homes in the project will be affected by it. A moratorium in the area is appropriate because there is no acceptable access to the community. We need planning. Can the Commission request such a moratorium?*

Response 211: As stated in the Draft EIR, impacts related to traffic would be less than significant with implementation of mitigation measures. Please see Sections Appendices D and K of this document for updated mitigation measures.

Comment 212: *Staff told them that no new storm water runoff materials had been submitted to the County, as requested, and no new drainage proposal has passed though the planning process. She is assuming that we are still looking at the applicant's unacceptable process. Development above this project would be subjected to the same process.*

Response 212: Please see Appendix H of this document.

Comment 213: *Vesting should be removed from the map because this is virgin territory and vesting will not protect future concerns.*

Response 213: Comment is noted, but not CEQA related..

Comment 214: *Clustering is not always the best method of development. It indicates smaller lots and viable horse-keeping lots need distancing. We need to see the product and practical designs before the Commission can make an informed decision.*

Response 214: Please see Section 2.0 of this document regarding the revised project.

Comment 215: *She hopes a continuance will allow the applicant to provide the Commission and the community with the information necessary to make such an informed decision.*

Response 215: The comment has been received and noted. No additional response is required.

Commenter: Allan Glaser

Comment 216: *County budget troubles mean we have already have problems with County services. Project has severe impacts on these services.*

Response 216: It is unclear as to what specific services are in question. The comment has been received and noted. No additional response is required.

Comment 217: *He believes that the developer is not working with community organizations, as promised*

Response 217: Four community meetings were held, please see Appendix O of this document.

Comment 218: *Traffic.*

Response 218: It is unclear as to what the commenter is specifically referring to with regard to traffic. No response is required.

Comment 219: *We need more time needed to get the answers.*

Response 219: Please see Section 1.1 of this document regarding the comment period..

Commenter: Jed Levy

Comment 220: *Access to his property has been cut off by the three-way agreement between the developer, the Conservancy and the County. The deal effectively created a mote to allow no one beyond them to have access. He is confused because Saugus Road was on some map, but there is no reference to it in the current plan. Was Saugus Road dedicated?*

Response 220: Please see Appendix M of this document.

Commenter: Charles Lee

Comment 221: *He is concerned about agreement that created this mote. Was there ever public hearings on this? Legal rights are not always recorded for easements. Legal access rights are prescriptive. He believes that Mr. Garlinghouse cannot determine whether northern property owners have legal rights. Common ownership is only one requirement. Prescriptive rights have been well established on Saugus Road, which are being extinguished by this process. The Commission cannot extinguish a road that someone has used for 26 years. First American title does not want to insure anything so they do not want to find anything. He will find the legal rights and he does not want to be limited by laws put in place by the Commission. A small driveway will not serve his 700 acres. There should be a condition of approval, requiring the developer to provide whatever access is necessary for whatever development is proposed. The Conservancy is not above easement law.*

Response 221: Please see Section 1.1 of this document regarding the public review process associated with the project and Appendix M of this document regarding northerly access.

Commenter: Unidentified woman

Comment 222: *She wants to know the language that would guarantee the building of the dotted line trails that will provide the needed connecting routes to existing and planned trails and to the park to the south.*

Response 222: Please see Figure 2.11 this document.

Comment 223: *If the mitigated storm water plans do not work, and there is destruction to Devil's Canyon, can anything be done to reverse the devastation? Porter Ranch destroyed three canyons.*

Response 223: All of the proposed storm water collection and discharge facilities would be constructed to County Department of Public Works standards and will be operated and maintained by LACFD. The project site would become part of that District and pay its fair share of tax revenues to the LACFD. It will be the LACFD's responsibility to ensure that the project's storm water facilities operate properly. Please see Section 4.2.2 of this document.

Commenter: Charles Smith

Comment 224: *He is concerned about traffic. There is no access to the property from the east, west or north.*

Response 224: As stated in the Draft EIR, impacts related to traffic would be less than significant with implementation of mitigation measures. Please see Sections Appendices D and K of this document for updated mitigation measures.

Please see Appendix M of this document regarding northerly access.

Comment 225: *Brown's Canyon Road has special significance because a 30 foot right-of-way was given to the County by the Federal Government.*

Response 225: It is unclear what the commenter is referring. No additional response is required.

Comment 226: *The County must involve the City.*

Response 226: Various City of Los Angeles departments have been involved with review of the project. Please see Sections 4.3.5, 4.3.6, and 4.3.7 of this document.

Comment 227: *The County has the obligation to maintain the road and is not doing it. Porter Ranch has gotten by with only north/south roads. This is repeating the same problem.*

Response 227: The future growth of Porter Ranch was assessed appropriately in the Draft EIR traffic study. LADOT stated at the June 26th community meeting that this project has analyzed all relevant intersections within the City and that no additional analysis is appropriate for this project. Community meeting minutes are included in Appendix O of this document.

Comment 228: *A dedicated road at least 64 feet wide is needed.*

Response 228: It is unclear as to what the commenter is referring. No additional response is required.

Commenter: Robert Harrington

Comment 229: *He checked with the applicant and read the applicant's materials. The applicant claims that his property has access through the Ziegler property. He believes that is the Sweitzer Trust property. There is no easement to the east and or the north of the Mirabele Perlic property going across the Sweitzer Trust property. It appears that the property would be landlocked. The Commission should condition the project on granting access to the Mirable Perlic property on its southern property line.*

Response 229: Please see Appendix M of this document.

Commenter: David Tweet

Comment 230: *He would still like the developer to consider a gated, guarded community.*

Response 230: The comment has been received and noted. No additional response is needed.

Comment 231: *The current project involves 11,000 trips down Canoga Avenue.*

Response 231: Please see Section 4.2.6 and Appendix H of this document regarding the revised traffic analysis.

Comment 232: *If the project density is reduced to 100 homes, this would allow for the development of all horse properties and it would still be a profit-making venture for the developer.*

Response 232: The comment suggests a lower number of 100 homes and Alternative 3 in Section 5.0 of the Draft EIR, a reduction to 171 homes (71 more homes than what was suggested in the comment) was not economically feasible. Alternative 3 of the Draft EIR and the suggested density of 100 homes would not meet the economic objective of the applicant to earn a reasonable return on investment. When this cost is factored with already-incurred land acquisition costs and market sales prices, this alternative becomes economically infeasible.

Comment 233: *The dust factor has him concerned. Particulate matter is bad and the community has a valley fever problem, even without grading.*

Response 233: Please see Hearing Response 83.

Comment 234: *He wants the project either downsized or eliminated. The site should be open space.*

Response 234: Please see Section 2.0 of this document regarding the revised project.

Commenter: Ernie Perlick

Comment 235: *He wants the access that he has had to his property for 26 years to continue for himself and for Mr. Harrington. Saugus road is 60 feet wide. Mr. Harrington and his family have been using it for years. Access to dedicated road should not be blocked by the development and Conservancy.*

Response 235: Please see Appendix M of this document.

Commenter: Jerry England

Comment 236: *This is the 3rd meeting and many unanswered questions remain. Instead, the community gets slick telemarketers and mass mailings.*

Response 236: Four community meetings were held, please see Appendix O of this document.

Comment 237: *The staff report says that the area below this project only has horses on 4% of the property. If the area is extended, there are much larger properties and more horses.*

Response 237: The comment has been received and noted. No additional response is needed.

Comment 238: *The SEA process is meant to protect habitat and wildlife corridors and we must pay attention to it.*

Response 238: Please see Section 4.2.1 and Appendix F.4 of this document regarding SEAs.

Comment 239: *Unbelievable that the applicant claims that he can pull building permits tomorrow and construct 600 homes pursuant to the certificates of compliance. The project site is clearly within the sphere of influence. This involves 12,800 acres and a bigger picture is involved here. It is lawful for planners to put moratoriums on projects until they can do it the right way.*

Response 239: The County approved unconditional certificates of compliance for 624 resulting parcels within the project site, which were created by merging the antiquated Record of Survey lots into larger, more appropriate parcels. These certificates are final, effective and recorded. The unconditional certificates of compliance that create 624 legal lots comply with state and County subdivision laws and ordinances. No public hearing is required or appropriate because they are not subject to any discretionary action under the law. Discretionary approval is required only if the applicant proposes to simultaneously build on two or more contiguous lots.

5.5 SUMMARY OF HEARING TRANSCRIPTS – SEPTEMBER 3, 2003

The September 3, 2003 Regional Planning Commission hearing was held to receive additional testimony on the project.

Commenter: Kobe King

Comment 240: *He spoke in support of the project, due to the improvement of antiquated subdivisions, the provision of housing at a variety of income levels and benefits to business. On a personal note, he supports the project for its open space preservation.*

Response 240: Comment noted. No additional response required.

Commenter: Brendan Huffman

Comment 241: *He spoke in support of the project because it provides housing, open space and trails.*

Response 241: Comment noted. No additional response required.

Commenter: Ruth Gerson

Comment 242: *She spoke in support of the project because it is a good role model for equestrian use and the provision of trails.*

Response 242: Comment noted. No additional response required.

Commenter: Irwin Boychenko

Comment 243: *He spoke in support of the project, stating that when he moved to Chatsworth he knew that the make up of the community was good neighbors and horses. When he saw the original proposal, he was surprised that it did not address either of these. Subsequently, he is amazed that the project has done as much as it has for trails and safety, and will correct so many faults of Canoga Avenue and Chatsworth.*

Response 243: Comment noted. No additional response required.

Commenter: Paul Edelman

Comment 244: *He testified that he has cooperated with the applicant and prior property owner in getting certainty on the land use in Deerlake Highlands and they have a binding agreement with the applicant regarding the project site and surrounding areas. The agreement defines the urban limit and it would be very difficult to have accomplished this amount of open space preservation and maintenance funding on an owner-by-owner, lot-by-lot basis. The project is the reason why so much open space will be preserved and trails connected.*

Response 244: Comment noted. No additional response required.

Comment 245: *The proposed active park at the base is the only outstanding issue, as SMMC would like to be involved in its design. SMMC continues to negotiate additional maintenance funds with the applicant. He asked the County Counsel, if the project is not conditioned to provide a landscape maintenance district, whether such a condition can be added later if the applicant voluntarily agrees to provide such funding.*

Response 245: The Project Applicant has agreed to work with the SMMC in regard to design of the "proposed active park at the base" of the project.

Regarding the issue of voluntary landscape maintenance funding, that is beyond the scope of this FEIR. All project landscaping maintenance within common areas, including areas within fuel modification zones, will be the responsibility of the Project's future HOA.

Commenter: Charlotte Brodie

Comment 246: *She is saddened to see the land developed, but understands that her organization does not own the land. The proposed trail system is adequate to meet the needs of the equestrian community and the equestrian park is an added benefit. The six-feet wide internal trails should be at least eight-feet wide. Safety for the trails and equestrian users must be a priority during construction.*

Response 246: The proposed 6-ft. trails are private trails, located at the rear of certain equestrian lots, which will serve only those lots to gain access to the public trails. Because of their limited use and separation from streets, the 6-ft. width is considered adequate.

Comment 247: *There are four outstanding trail issues that must be resolved: (1) Corral 54 has been promised that the fourteen-foot drop at the Canyon's edge on the trail going north from Mayan and Street "A" that crosses Devil Canyon will be worked out by the applicant and SMMC; (2) a dedicated trail needs to be established under the 118 Freeway to connect the Deerlake Trail with Stony Point Park and the developer has indicated that Caltrans has not been receptive to the idea even though similar access trails exist under the freeways (She has contacted State Assemblyman Tony Strickland to assist with this matter); (3) the trail on the west side of Deerlake Ranch crosses a portion of Pepperdine property (she has written to the University, requesting that they dedicate an easement to the Department of Parks and Recreation to provide a continuous trail); and (4) we need to know how the trail going north from Topanga Canyon Boulevard and Mayan Drive will be connected safely to Devil Canyon if the Topanga Canyon condominium project is not developed.*

Response 247: See Section 4.7.5 (SCI 3, 8, 10 & 11 – Responses) of this document.

Comment 248: *She supports the addition of more equestrian lots within the project, and would like to see even more added. She encourages the Commission to require that all signage and traffic improvements on Canoga, Rinaldi, Chatsworth, Topanga and Candace be required to be completed prior to construction to provide additional safety for pedestrians and equestrians as a result of increased construction and residential traffic.*

Response 248: See Section 4.3.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Please see Sections 3.3.5 and 4.2.6, and Appendices E and K of this document for additional discussion of traffic impacts and mitigation measures.

Comment 249: *Corral 54 would like to see written clarification from the Commission and the applicant on the following items: (1) can planting be required for oak tree mitigation rather than in-lieu payments; (2) can locations be selected for oak tree mitigation where there is no likelihood of future removal; (3) can a monitoring program be developed for oak tree mitigation for a three year period to assure proper watering and placement of unhealthy trees; (4) what conditions can be put on the project to rectify any damage that may occur if an increase volume and speed in stormwater runoff is not controlled by the plan measures to prevent erosion of Devil Canyon and SMMC parkland.*

Response 249: See Appendix E of this document regarding conditions of the proposed project pertaining to oak tree mitigation

Comment 250: *Overwhelming traffic and overwhelming schools are still an issue, but other residents are better able to address these issues.*

Response 250: As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5 and 4.2.6, and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

As stated in Section 4.10 of the Draft EIR, impacts to schools would not be significant with implementation of recommended mitigation measures. Please see

Sections 3.3.4, 4.3.7 and 4.5.28, and Appendix J of this document for additional discussion of this issue.

Commenter: Linda Corbridge

Comment 251: *Chatsworth resident and owner of 40 acres to the north of the project site, the proposed horse trails with easement rights go right up to her property. She rides horses on her property. There are very few private property owners left in the area as the SMMC has purchased most of the property in the area. Specifically, SMMC has purchased property north of her and she cannot get out of her property to Brown's Canyon Road. Mr. Garlinghouse informed her that her property cannot get access through the project site because of the ten-feet strip that was previously deeded to the SMMC. SMMC will not return her phone calls. She wants to know how such a band can get approved without regard to her property. She claims that she has prescriptive easement and easement by necessity rights. She wants to know why there was not there a public meeting held when the ten-foot strip was deeded, why she was not notified, and how she can get access to her property. She wants to build a home. There are roads and horse trails on maps that go into her property.*

Response 251: See Section 4.5.3 of this FEIR, Augello 1 – Response, and Appendix M of this FEIR.

Commenter: Michael Augello

Comment 252: *He thanked staff and the applicant for the provision of a tap street; however, it is now servicing parkland. The original idea was to allow access. He would like to move the tap street to the west to avoid having them grade and pave parkland.*

Response 252: See Section 4.5.3 of this FEIR, Augello 1 – Response, and Appendix M of this FEIR.

Commenter: Charles Lee

Comment 253: *He indicated that an easement war is coming. The SMMC is putting up gates to block their easement rights and their prescriptive rights. He claimed that he has found after a one-hour search a common ownership and thus proved their right of an easement by necessity. He promised a full report by September 8, 2003, showing that the property owners to the north have all the elements for easement rights by necessity. He wants the gates and rocks and other obstacles removed and he is in favor of moving the tap street to the west.*

Response 253: See Section 4.5.3 of this FEIR, Augello 1 – Response, and Appendix M of this FEIR.

Commenter: Laura McCormick

Comment 254: *She indicated that the project must be reduced to provide 150 to 200 homes, with lots at least 18,000 square feet. The experience of Indian Falls, where all large mansions on large lots sold quickly, shows that there is a market for such homes.*

Response 254: See Section 4.3.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Commenter: Jean Plumb

Comment 255: *The CDS system is based on the debris basins in Devil's Canyon being maintained. These debris basins are not being maintained at this time. The Supervisor of the Storm Drain Debris Clean Out Facility indicated to her, in the Supervisor's office, that there is no budget and no access to clean out the debris basins near the project site, and they have not been cleaned in recent years. The debris basins are at overflow, and the proposed CDS system will be clogged and will fail as a result. Dirty water will not be necessary if the project is connected to the existing Brown's Canyon flood control system. Cox, Castle & Nicholson LLP's June 2002 packet indicated that the applicant has designed and priced that system. The CDS system will not be up and ready by the rainy season if the project is built by separate builders at different times. She wonders whether the project will be grading during the rainy season. The CDS system shuts down during the rainy season. She is also concerned that the system will be built with a future tax assessment.*

Response 255: See Section 4.7.5 (SCI 2 – Response) of this document.

Commenter: Teena Takata

Comment 256: *She submitted materials. She discussed pedestrian and equestrian trails. She is a board member of the Santa Monica Mountains Park Preservation Association.*

She indicated that the hiking community needs viable access to all the open space areas. Hikers do not want tons of switchbacks and steep grades to access these areas. Hikers also need parking along Poema Place, with all day access ability. The Los Angeles County trail map depicts a dedicated trail over the Topanga Canyon condominium project site and she will be sorry to lose the flat access over that site.

Response 256: See Section 4.7.5 (SCI 3, through 5 – Responses) of this document.

Comment 257: *For equestrians, she is concerned about the 8-feet trails in the internal areas of the project. She is worried that the trail map says "project trails" and wants a condition that all "project trails" will be accessible by equestrians. It is inappropriate to put an 8-foot wide trail next to new Mayan Drive for safety reasons. The community had been told that the trail was going along new Mayan Drive and the map shows it on old Mayan Drive. There used to be trails shown under the westerly bridge, but now no trails are shown on map as it goes across the SMMC land. She wonders if there is adequate grade separation under the bridge or if the horses are supposed to kneel. She was surprised to hear that there is a problem with the 14-foot drop.*

Response 257: See Section 4.7.5 (SCI 8 – Response) of this document.

Comment 258: *She wants an accurate, detailed, topographic map, showing the elevations after the project is done. She wants bridge elevations to be shown.*

Response 258: The topography and elevations shown on the project's VTTM (see Appendix C.1 of this FEIR, reflects the most current available data, and has been made available to the public.

Comment 259: *The community has not seen what the applicant submitted again.*

Response 259: The Revised Project Description described the changes to the project and was widely distributed to the community for review. See Appendix Q of this document.

Comment 260: *She is worried about use of the Old Bridge in terms of using it as 8-foot project trail. The bridge is old and she is not sure the County will accept it. A proposed equestrian trail is shown on the east side of Topanga Canyon Boulevard as it goes under the 118 Freeway. That would be a great thing to do, and she wants assurances that it will really occur.*

Response 260: See Section 4.7.5 (SCI 9 and 11 – Responses) of this document.

Comment 261: *She recited numbers regarding lot sizes and indicated that there is something wrong with the numbers. She is worried that the houses might be small in proportion to the lot, and wants equestrian lots to be laid out so that they can actually be utilized as equestrian lots (i.e., the house should be to the side of the lot to provide adequate setbacks for horsekeeping). The applicant gave her a depiction of the equestrian lots one year ago. She would like a condition requiring the equestrian lots to be developed in accordance with those depictions (i.e., situated similarly and taking up a similar amount of space).*

Response 262: The development of all equestrian lots must comply with Section 22.52.320 of the County Zoning Ordinance, and applicable sections of the County health Code, pertaining to keeping of horses, prior to issuance of building permits

Commenter: Jerry England

Comment 263: *He discussed his material comparing the applicant's analysis of the equestrian neighborhood and his analysis. His general point is that the applicant ignored a large equestrian area and underestimated the number of horses within the boundary actually chosen, as many of the homes are zoned for horse keeping. He wants the applicant to reconsider meeting Supervisor Antonovich's request for all horse keeping lots. He accused the applicant of attempting to make the project attractive for builders and not to be compatible with the community.*

Response 263: See Section 4.7.5 (SCI 16 – Response) of this document.

Commenter: Allan Glazer

Commenter 264: *He participated in community meetings where the applicant stated that it was proud of the development and did not want to develop another Porter Ranch. In light of Supervisor Antonovich's statements that he would like to see estate lots on the property, he analyzed the tax roles for the area below the development (bounded by Topanga Canyon on the west, De Soto on the east, Devonshire on the south and the 188 Freeway on the north, where the average lots sizes are 15,999 square feet. Further west of Topanga and north of the 118 Freeway, the average lot sizes are even larger. The average lot size, according to the developer, is 12,492 square feet for Deerlake Ranch. This sounds like another Porter Ranch to him, especially when so many of the lots are 6,000 square feet. Luxury homes are selling and can be absorbed. He requests that all the properties be 15,000 square feet*

Response 264: See Section 4.7.5 (SCI 16 though 19 – Responses) of this document.

Commenter: Vanessa Watters

Comment 265: *SCI prepared a plan with specific suggestions to reduce the density by comparing the 388-unit plan with the 171-unit plan prepared by staff in the DEIR. SCI's plan does the following: (1) increases the lot sizes, as the current plan has too many lots under 15,000 square feet, as was requested by the Supervisor; (2) reduces the density of lots along the ridgelines; and (3) makes all lots adjacent to the equestrian trails capable of housing horses. She described SCI's alternative 300-unit plan.*

Response 265: See Section 4.7.5 (SCI 20 though 22 – Responses) of this document.

Commenter: Anna Cox

Comment 266: *The community is disappointed that the project's density was not further reduced. The applicant asked her if the community would support a density closer to 330 homes. She indicated that she cannot speak for the community. She disagrees with the applicant that Topanga Canyon Boulevard will be the primary access point because Canoga has additional amenities. She wants the ridgelines protected. The applicant has consistently disregarded these concerns, saying that the back ridgeline is the ridgeline for the project. Fire protection has never really been addressed. She understands that the helipad is a benefit, but there is only a one-truck fire station to service the entire area. She's also worried about traffic clogging Canoga Avenue in a fire.*

Response 266: See Section 4.7.5 (SCI 20 though 22 – Responses) of this document.

As stated in Section 4.8 of the Draft EIR, no significant impacts would occur to fire protection services with implementation of the project. See Section 4.2.4 (Fire 1 and 4 – Responses) and Appendix E of this document for additional discussion regarding this issue.

Commenter: Marty Woll

Comment 267: *Canoga Avenue will be the primary access. He participated in the community meetings. These meetings were an orchestrated attempt to create a feeling of consensus, just to slam the community at the end with a project density that is too high (hardly a reduction from the prior 424-unit project). The applicant would not budge on traffic improvements, or conditions with regards to a reasonable limit on the time frame for construction traffic, or a wind speed threshold for cessation of grading as the City already imposes. The applicant has repeatedly told the community that they cannot afford to reduce the density but other builders are doing what the community desires and the community should not be punished because the applicant has spent its way into a corner.*

Response 267: As shown on Table 4.12.5 of the Draft EIR, the intersections of Canoga Avenue/Rinaldi Street and Canoga Avenue/Chatsworth Street would operates at acceptable levels (LOS A) during the A.M. and P.M. peak hours with occupancy of the project. Also see Section 4.2.6 (Traffic 1 and 2 – Reponses) and Appendix K of this document for additional discussion of project traffic distribution to the local street system.

Please see Sections 4.2.3 (Noise/Dust 1 – Response) and 4.2.7 (Development Issues 8 – Response) of this document.

See Section 4.3.7 (Development Issue 10 – Response) and Appendix L of this document regarding land use density.

Commenter: Jan Miller

Comment 268: *The EIR discussion of wildlife corridor is misleading and omits important facts. Canoga Avenue is a viable corridor. The EIR does not admit that Stony Point Park acts as open space access to the Santa Monica Mountains. The EIR mentions debris basin blockage, but trails bypass that basin. This is a significant impact on wildlife and should be mitigated. He suggests some mitigation on a tunnel under Topanga Canyon Boulevard at Santa Susanna Pass Road and that the land to the west of Topanga Canyon Boulevard could extend open space to connect that tunnel.*

Response 268: See Section 4.2.1 (Topical Response) of this document regarding wildlife corridors.

5.5.1 Presidio Chatsworth Partners LLC, Inc. – Richard E. Garlinghouse

Garlinghouse – Comment 1

The hearing on September 3, 2003, is a result of the Commission's direction to the applicant, at the last hearing on September 11, 2002, to further address outstanding issues pertaining to the project. Previous hearing were held on January 23, 2002, April 10, 2002, June 19, 2002, and August 21, 2002.

At the hearing on August 21, 2002, the applicant presented a project for 428 residential units, which included 24 lots which were 15,000 square feet (s.f.), or larger, in size to accommodate horses under the County Zoning Code. After public testimony, the Commission directed the applicant re-position several of the 15,000-s.f. lots, and to increase their number.

Subsequently, at the continued hearing on September 11, 2002, the applicant was prepared to present a revise [sic] land use plan for 424 units, which showed an increase in the number of 15,000-s.f. lots to 32, and also reflected the re-positioning of these lots in accordance with the Commission's direction.

However, prior to that hearing, representatives from the 5th Supervisorial District had expressed publicly that the project should contain as many 15,000-s.f. lots as possible, consistent with topographical and other constraints. Therefore, the Commission directed the applicant to address the concerns of the 5th District, and to return to the Commission at an undetermined, future date.

Many important events have taken place since the September 11, 2002, hearing, which have resulted in significant modifications to the project design. The revised plan of 388 units reflects the comments from the 5th District, as well as further, extensive input from the community.

Following is a summary of these events and modifications. More detailed information and exhibits are contained under several "tabs" within this document.

Revised Project Description

- *The revised plan is a departure from the earlier plans for Deerlake Ranch because it breaks the project into four distinctive, smaller neighborhoods, and provides landscape demarcations and separations between neighborhoods, as well as a revised circulation system that provides grater neighborhood identity. These four-neighborhoods will provide features that will appeal to various segments of the market to broaden the appeal of the proposed community to potential homebuyers.*

- *A comprehensive "Community Character Statement" report has been prepared to serve as the guiding principle for the development of Deerlake Ranch. It will become an integral part of the project CUP to ensure conformance with its design character concepts.*
- *Of the 388 residential lots, 155 will be 15,000 s.f. or greater, with 55 of these specifically designated for horse-keeping. This constitutes an increase of 123 lots which are 15,000 s.f. or greater, and an overall decrease of 36 lots from the previous submittal.*
- *177 of the 388 lots, or 46%, are now "single-loaded" along various segments of the revised street layout, thereby creating significant stretches of streetscape which are more open and aesthetically pleasing.*
- *The proposed project "neighborhood" which is adjacent to the existing Twin Lakes community, including the access street, has been redesigned so that no future lots will abut existing Mayan Drive, thereby providing an extensive buffer area between Twin Lakes and Deerlake Ranch homes.*
- *An additional 2200± ft. of public equestrian trail have been added through the upper central portion of the project as a result of community requests. Also, over 2000 ft. of private trails have been added at the rear of the horse-keeping lots to provide them access to the project's public trail system.*
- *In addition, many of the trail segments have been redesigned so that they will traverse across more open space and landscaped areas instead of abutting the street rights-of-way.*
- *The project has been redesigned to preserve the upper reach of a tributary "draw" extending from Devil Canyon, thereby preserving four additional oak trees and other natural vegetation.*
- *Although the project has been further reduced by approximately 9 percent from the 424-unit proposal (and 20% from the original 484-unit proposal), the full extent of all mitigation measures originally identified for the 484-unit project, and subsequently the 424-unit project, will still be implemented. Therefore, the effectiveness of these mitigation measures will be significantly enhanced.*
- *In addition, the full extent of all community benefits identified for previous proposals, which are above and beyond required mitigation measures, will still be provided.*

Community Participation

- *Prior to starting any work on this revised plan, including the Community Character Statement, the applicant and the community agreed on the formation of a Citizens Advisory Committee (CAC) whose members would be representative of the various Chatsworth homeowners and equestrian organizations, as well as other residents having an interest in this project. As a result, representatives of 12 separate associations and groups formed the CAC. Over a period of 6 months, the applicant and the CAC held a total of 7 comprehensive planning sessions, including an additional site visit. All sessions were attended by representatives of the 5th Supervisorial District.*
- *In addition, the applicant has met on 4 separate occasions with representatives of the equestrian community to further address their specific requests.*
- *The applicant has also met with a sub-committee of the CAC for the specific purpose of coordinating the final, proposed community benefits provisions, as well as the final, proposed special project conditions which will be submitted to the Commission by staff for its consideration.*

- *The revised plan before the Commission, including the Community Character Statement, evolved over that period of 6 months as a result of these applicant-CAC sessions and other meetings.*

Remaining Issues

Although there may not be a total community consensus on these matters, it is the applicant's opinion that all project issues which remained to be resolved at the last hearing on September 11, 2002, have been addressed in a reasonable and balanced manner. They include the following:

- *Project Density: The project has been further reduced by 9 percent (20 percent from the original application), to the extent that further reductions would render the project not economically viable. The revised project results in a site density of approximately 1.6 units/acre, which is the same as the existing community south of the 118 Freeway, less than adjacent development on Porter Ranch to the east, and considerably less than the adjacent existing and proposed multi-family residential developments to the west.*
- *15,000 sq. ft. Lots: As stated previously, the revised project reflects an increase in the number of lots which are 15,000 sq. ft. or great from 34 to 155, with 92 of these comprising "Neighborhood 1". The remaining 63 of these lots are interspersed throughout the remaining three "neighborhoods", as topographical constraints permitted.*

In the opinion of the applicant, providing more than 155 lots of this size is precluded by the following:

- *Topographical constraints with "Neighborhoods 3 and 4" do not present reasonable opportunities for additional lots of 15,000 sq. ft. or greater without sacrificing the minimal land use alteration techniques which have been incorporated into the land plans for these two neighborhoods.*
- *An increase in the number of such lots within "Neighborhood 2" would reduce the distinct market and physical differences between that neighborhood and Neighborhoods 1 and 3.*
- *Notwithstanding the above two constraints, the addition of more 15,000 sq. ft. lots would lessen, or eliminate, a wide range of housing opportunities for home buyers from both an economic and a personal choice standpoint. The mix of housing styles, amenities, and pricing proposed under the four neighborhood concept provides those opportunities for a wide spectrum of the home-buying public.*

Project Environment Impacts

- *During the course of the previous public hearings before the Commission, comments were made concerning various potential impacts that this project may have on the environment. In addition, written comments were received on the project Draft EIR as part of the public review period.*
- *The applicant has responded to many of these comments during the public hearings before the Commission, as well as during numerous community meetings. In addition, staff will be presenting to you the Final EIR document for your review and consideration, which will include responses to all public comments.*
- *As you may recall, the project Draft EIR found that the project, which was based on 484 units at the time, generated no impacts which would not be mitigated to a less-than-significant level. Subsequently, the project has been reduced in density by 20% although all mitigation measures proposed for the 484-unit project will remain unchanged. Therefore, proposed project mitigation will be even more effective in reducing impacts to less than significant levels.*

The project team looks for ward to appearing before you to present the redesigned project and to answer any further questions that you may have.

Garlinghouse – Response 1

The comment has been prepared by the project applicant to further discuss the revised project. No additional response is required.

5.5.2 David Tweet

August 21, 2002

Tweet 1 - Comment

At the second Co. Commission Hearing I presented the idea of a gate guarded community at the bottom of the development (above Canoga) which would contain 50 homes and allows only those home access to Canoga (and to Topanga) making the impact of the traffic from the development into Canoga and the community below minimal –

The Commission (liking the idea) it was considered a major request for the developer to answer at the 3rd hearings –

They came back with the answer that they were still studying it.

What has happened -- concerning this idea.

Do you know anything – can you find something out.

Tweet 1 - Response

The comment has been received and is noted. The proposed project is not proposed as a gated community.

5.5.3 Chatsworth Homeowner

August 20, 2002

Chatsworth Homeowner 1 - Comment

I thought you may want to hear from someone other than a horseowner regarding the building of housing in my neighborhood. I like the idea. First of all – we who do not have a sacred cow (horse) look at horse owner as nuts. For those who cannot afford to have a vet in your back pocket for those of use [sic] who may have a dog, or a cat. For those of us who may like to drive a car – we look at horse owners who demand trails on the private property of others pushing things too far. Maybe there should be cat trails, or dog trails, or car trails. We have all these trails all over Chatsworth, but the horse owners don't use them anyway. I see horse manure on sidewalks, and streets all over. These people think they are doing use [sic] great favors by owning these fly machines.

I have walked along in the area where these homes are to be built. I cannot see that homes will hurt anything. Maybe having homes will discourage the paint ball people from coming in and spraying red and green paint all over rocks, and trees. Having home owners would discourage a lot of things. Maybe the homes will help buffer some of the wind in the area. I have lived in Chatsworth for 30 years. It is so disjointed – maybe new homes will centralize something for us. Maybe new homes will increase our property values.

Most of these horse people think we should stop building houses right now. If we had stopped building houses 20 or 30 years ago I wouldn't be here, and they wouldn't be here either.

I do not own land other than my house in Chatsworth, but if I did I would be very upset that some people who happen to have large pets would want me to change all my plans to accommodate their pet. Their pet would not by [sic] my priority. Their pet is their problem not mine.

Chatsworth Homeowner 1 - Response

The comment has been received and noted. No additional response is required.

5.5.4 Recreation & Equestrian Coalition – Ruth L. Gerson, President

August 20, 2002

Recreation & Equestrian Coalition 1 - Comment

I am writing to support and commend the efforts of ETI Corral 54 in crafting an agreement for significant equestrian improvements in the Presidio/Deerlake Ranch project in Chatsworth.

As much as any of us would like to see an end to the growth in this urban area, it is just not a realistic expectation. However, we can preserve important open space and provide expanded recreation opportunities if we are willing to cooperate and compromise with those who own private property.

ETI Corral 54 has crafted an agreement that will preserve the most significant riparian areas and will support constructing proper multi-use trails in an important equestrian area of this region. In addition, the developer has agreed to assist in off-site trail connections and has contributed funds for the acquisition of other property, which could be used for an equestrian staging area. Further, there will be 55 lots designed specifically to accommodate horse keeping; and there will be four neighborhoods designed to capture the character of Chatsworth. Although it has taken nearly a year and many, many meetings, all equestrians can be proud of the comprehensive set of improvements negotiated by the volunteers of ETI Corral 54.

I would hope that other developers will see this agreement as a model to be followed when working in areas throughout the County. The Recreation and Equestrian Coalition is proud of the thoughtful and precedent setting agreement reached by Presidio and ETI Corral 54. I hope the members of the Commission will support the hard work and efforts that have made this happen.

Recreation & Equestrian Coalition 1 - Response

The comment has been received and noted and will be forwarded to the decision makers. No additional response is required.

5.5.5 Equestrian Trails, Inc. – Charlotte Brodie, Trail Coordinator

July 16, 2002

Equestrian Trails, Inc. 1 - Comment

This property is very unique to Chatsworth and we are going to be saddened to see it developed. However, progress and the fact we do not own the land, requires us to do all we can to preserve as many trails and access points as possible. By working closely with the developers of Deerlake Ranch, this will hopefully assure that the equestrian lifestyle in Chatsworth area is maintained and expanded upon.

At this time, we find that the trail system being proposed will meet the needs of the equestrian community and allow continued access to existing trails around the perimeter of the project. We were pleasantly surprised that the developer also added an equestrian park near the north/western corner and will provide tie rails, tables, water and trees to the site.

We have been assured of continued access through the project to the existing trails around it's perimeter during development, on at times, temporary trails. Safety for equestrians and other trail users must always be considered of prime importance during construction.

Equestrian Trails, Inc. 1 - Response

The comment has been received and noted. No additional response is required.

Equestrian Trails, Inc. 2 - Comment

There are still three trail issues that are related to this project which we would like to see resolved for the safety of all trail users and continuity of the trail. I've included a map showing the following locations. #1 – The trail going north from Mayan and Street "A" that will cross Devil Canyon, has about a 14-foot drop at the canyons edge. We've been promised that this will be worked out between the

developer and the Santa Monica Mountains Conservancy (SMMC). #2 – A dedicated trail needs to be established under the 118 Freeway to connect the Deerlake trail with Stoney Point Park. The developer has said that Caltrans has not been very receptive to the idea, even though this same area under many freeways is used for public access routes (sidewalks). I have written to State Assemblymen Dr. Keith Richman and Tony Strickland asking for their assistance in this matter. #3 – The trail on the west side of Deerlake drops down into Devil Canyon and crosses a piece of property belonging to Pepperdine College. I've written to the college asking if they would grant an easement to the Department of Parks and Recreation across the eastern tip of this property in order to provide a continuous trail.

Equestrian Trails, Inc. 2 - Response

The comment has been received and noted and will be forwarded to the decision makers. No additional response is required.

Equestrian Trails, Inc. 3 - Comment

It has been very encouraging to see the developer include 55 equestrian size lots in the project. To see an additional 99, 15,000+ square foot lots is also commendable. Would we like to see more equestrian and large lots? Of course, if it would be at all possible.

Equestrian Trails, Inc. 3 - Response

The comment has been received and noted. No additional response is required.

Equestrian Trails, Inc. 4 - Comment

We encourage the Commission to require that whatever signage and traffic improvements on Canoga, Rinaldi, Chatsworth, Topanga Canyon and Candice Place are adopted, be completed prior to commencement of construction. This will provide an additional margin of safety for pedestrians and equestrians as a result of the increased construction and residential traffic.

Equestrian Trails, Inc. 4 - Response

The comment has been received and noted and will be forwarded to the decision makers. No additional response is required.

Equestrian Trails, Inc. 5 - Comment

ETI Corral 54 would like to seek written clarification from the developer and the Commission on the following items. OAK TREE MITIGATION Can planting be required rather than payment "in lieu." Can locations be selected where there is no future likelihood of removal? Can a monitoring program be developed to assure proper watering and replacement of unhealthy trees for a three-year period? STORM WATER – If the increased volume and speed of the runoff is not controlled by the planned measures to prevent erosion of Devil Canyon and the SMMC park lands, what can be done to rectify the damage that may occur?

Equestrian Trails, Inc. 5 - Response

The comment regarding oak tree mitigation has been received and noted. As stated in the Draft EIR, oak trees would be mitigated onsite at a minimum 2:1 replacement with 15-gallon trees. This standard is per the County of Los Angeles Zoning Code. Implementation of the mitigation measures included in the Draft EIR, as recommended by the County Forester, would reduce impacts to biological resources, including oak trees, to less than significant.

To ensure survivability of oak trees, trees and acorns will be planted within one year of the permitted oak tree removals. Additional mitigation trees shall be planted within one year of the death of any tree resulting from permitted encroachment. Mitigation trees will be planted either onsite or at an offsite location as approved by the County Forester. The developer will properly maintain each mitigation tree and shall replace any tree failing to survive. A three-year maintenance period shall begin upon receipt of a letter of the developer or consulting arborist to the Director of Planning and the County Forester

indicating that the mitigation trees have been planted. The maintenance period of the trees failing to survive two years will start anew with any replacement trees.

In addition subsequent to the distribution of the Draft EIR, the applicant has acquired property north of the project site to serve as mitigation for onsite biological resources (see Section 2.3 and Appendix D of this document). This will include the preservation of approximately 2.60 acres of oak woodland that will be preserved and further mitigate impacts to oak trees.

The comment regarding stormwater has been received and noted. Please see Section 4.2.2 (Urban Runoff 1 – Response) of this document.

5.5.6 Chatsworth Historical Society – Linda Van der Valk, Co-President

August 25, 2002

Chatsworth Historical Society 1 - Comment

The Chatsworth Historical Society is concerned with the potential damage to Devil's Canyon due to the Deerlake Ranch Project. Devil's Canyon is a popular hiking spot in the Chatsworth area and one that is rich in history. Devil's Canyon is a designated trail by the county of Los Angeles and one of the few trails that only elevates three hundred feet in a three mile hike. This fact makes it an easier hike for the elderly and school age children.

Chatsworth Historical Society 1 - Response

The comment has been received and noted. No development is proposed in Devil Canyon. No additional response is required.

Chatsworth Historical Society 2 - Comment

We are concerned about the run-off that will be entering the canyon because of the Deerlake Ranch project. It is our understanding that the clarifying system that the developer wants to use will only filter a certain portion of the run-off leaving the rest to go into the canyon. That run-off will endanger not only the wildlife in the area but the native plants to the area such as The Santa Susanna Tar Weed.

We understand that the developer could have the run-off diverted to the city flood control system that is already in place. We know that it would add approximately five million dollars to the project but with all the other negative impacts that this project has on the community, such as traffic, overcrowding local schools and just devastating our hills in general, we feel that at least making an attempt to save Devil's Canyon would be a small concession to the community.

We hope you will consider this alternative of the run-off for the community now and the community of the future.

Chatsworth Historical Society 2 - Response

The comment has been received and noted and will be forwarded to the decision makers. Please see Section 4.2.2 (Urban Runoff 1 – Response) of this document.

5.5.7 Chatsworth Historical Society – Linda Van der Valk, Co-President

August 28, 2002

Charles and Linda Jolloian 1 - Comment

This is to once again voice our huge opposition to the DeerLake Development Project. [Tract #52138]

As you know, Supervisor Antonovich has indicated he thinks this project is much too dense. We agree. We want to see under 200 homes.

We are also very concerned about the additional traffic and safety concerns on Canoga Ave. This is a residential community with two schools, many equestrians and many neighborhood children.

Please let my family's concerns be expressed. I will be unable to attend the hearing because of work commitments.

Charles and Linda Jolloian 1 - Response

The comment has been received and noted. The proposed project has been designed to reflect the rural character of the area. Please see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails and also see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements. In addition, stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

5.5.8 Chatsworth Community Coordinating Council – Linda Van der Valk, Board Member

August 25, 2002

Chatsworth Community Coordinating Council 1 - Comment

I am writing on behalf of the Chatsworth Community Coordinating Council and our concern for the development of the Deerlake Ranch project in Chatsworth. We realize that progress can not be stopped in areas such as Chatsworth but we are concerned about the environmental impact to Devil's Canyon. Devil's Canyon is a designated trail and one of the few trails that is easily accessible to the elderly as well as the school age children.

Our concern is with the clarifying system that is proposed for the development and the run off that will damage the creek and the canyon. From our understanding the clarifying system is only able to remove a portion of the run off so our canyon will be filled with anti freeze, oil, gasoline and all residue that is accumulated in a neighborhood on a normal basis. We understand that the developer could direct the run off to the concrete wash that is already there but the cost would be approximately five million dollars more to the project. We realize that five million dollars is a lot of money but the damage to the canyon and the creek would be permanent and the loss of the wildlife and fauna has no price.

Chatsworth is a community rich in history and unique in it's mountain formations. Our community is proud of it's heritage and the mountains surrounding us.

Please consider investigating more into the possibility of the run off going somewhere else besides Devil's Canyon.

Chatsworth Community Coordinating Council 1 - Response

The comment has been received and noted and will be forwarded to the decision makers. Please see Section 4.2.2 (Urban Runoff 1 – Response) of this document. Please see Section 4.3.5 (City Council 2 – Response) regarding trails.

5.5.9 Irene J. Draghi (sp?)

August 25, 2002

Irene J. Draghi 1 - Comment

Enclosed a sheet with "Thoughts for Postcards" it reflects our strong sentiments. We have lived in Chatsworth since July 1980. We did this because this area was emphasized as Horse Country with its trails and views and half 1/2 acre tracts were minimum. Traffic was reasonable. It isn't now and is getting worse with cars bumper to bumper now on Chatsworth St. from Topanga to DeSoto.

Most developers do not live in this area, many of them investing from foreign countries and out of states. Their only interests are profits and jamming as many houses as they can and turning the beautiful hills into shopping halls. Our opinion.

Irene J. Draghi 1 - Response

The comment has been received and noted. No additional response is required.

5.5.10 Santa Susana Mountain Park Association – Jan Miller, President

August 27, 2002

Santa Susana Mountain Park Association 1 - Comment

There is a serious inadequacy in the Draft Environmental Impact Report (E.I.R.), Volume 1, Section 4.3 page 4.3-12. In reference to wildlife corridors the E.I.R. fails to mention Canoga Avenue which presently offers a very good, albeit impacted, animal crossing route.

Crossing south under the 118 Freeway at Canoga Avenue there is a continuous open space connection (wildlife corridor) all the way to the Santa Monica Mountains. This under crossing is the most easterly of a handful of wildlife crossing points between the San Fernando and Simi Valleys.

The Deerlake Ranch project plans to use Canoga Avenue as one of its two access routes. This will have a tremendously adverse effect on the wildlife crossing.

In Volume II of the Draft E.I.R., Appendix G, Page 4-6, Paul Edelman's 1990 Wildlife Corridor study is referenced. The E.I.R. states, "No on-site regionally important wildlife movement corridors were identified in these studies." No corridors were identified because Deerlake Ranch was not a part of that study. Edelman's study purposely focused on corridors to the west of this project.

We recommend that a study be undertaken which focuses on the Canoga Avenue underpass and any other potential wildlife crossing points between Topanga Canyon Boulevard and De Soto Avenue.

Santa Susana Mountain Park Association 1 - Response

The comment has been received and noted. As stated in the Draft EIR, regional wildlife movement studies have been prepared for The Nature Conservancy and the Santa Monica Mountains Conservancy (SMMC) and include the vicinity of the project site. No onsite regionally important wildlife movement corridors were identified in these studies. Implementation of the revised project would not prevent the regional movement of wildlife. Although many common animals would be adversely affected by direct impact and/or habitat loss associated with the implementation of the project, impacts to local wildlife populations are considered to be below a level of significance. Local onsite wildlife movement would be affected by the revised project, although these species are expected to move to the open space areas located north, west, and east of the project site and the onsite portions of Devil and Browns Canyons. Wildlife would likely continue to utilize open space portions of the project site via Browns Canyon, upper Devil Canyon and the open space to the north, which provide habitat for a variety of species.

Preservation and dedication of the corridor of willow woodland associated with Devil Canyon, which in some areas exceeds 220 feet in width, provides an important resource for avian species for both local and regional movement. Large blocks of riparian habitat (even when surrounded by development) serve as islands, providing an archipelago effect, whereby migrating or dispersing birds can stop to forage, rest, or seek cover from predators as they move across the landscape. Regional and local wildlife movement for terrestrial species is constrained in the area by development, but the willow woodland is expected to continue to serve an important function for local and regional avian dispersal and migration.

In addition, the 14-acre Horner property located at the northeast corner of the intersection of Canoga Avenue and SR-118 has been purchased by the MRCA with funds provided by the applicant, the County of Los Angeles, and SMMC. This property would be maintained as permanent open space. This acquisition would allow the existing wildlife corridor through this property, between North Stoney Point and Devil and Brown Canyons to be preserved.

The existing Canoga Avenue underpass of SR-118 is approximately 160 feet in length, and ranges from approximately 80 feet wide at road grade, to 130 to 160 feet wide at the top of the buttress slopes under the freeway bridge. The height of the bridge above the road grade is approximately 25 feet. The existing 16-foot wide Canoga Avenue is paved, with bare earth on both sides and extending up onto the slopes under the freeway bridge. Vegetation is sparse on the slopes on the south side of the freeway bridge buttresses, and virtually non-existent in the shaded areas under the bridge. The area under the bridge is also frequently used for illegal dumping of refuse. Conditions for movement of wildlife through the underpass are presently tenuous, especially during daylight hours.

The revised project would require roadway improvements of Canoga Avenue under SR-118 to 36 feet of paved width, and improvement of a 12-foot wide equestrian trail that would extend along the eastern side of the road. These improvements would leave an area approximately 32 feet wide for a wildlife corridor through the underpass. With planting of appropriate vegetation and placement of other screening improvements to provide cover for wildlife (see Appendix F.5 of this document), the potential adverse impact to wildlife through the underpass connection between North Stoney Point and Devil Canyon would be mitigated to a less than significant level.

Santa Susana Mountain Park Association 2 - Comment

The Santa Susana Mountain Park Association (the Association) and the Foundation for Preservation of the Santa Susana Mountains (the Foundation) were formed in the early 1970's to protect and preserve the Santa Susana Mountains and the Simi Hills.

We have reviewed the current Deerlake Ranch project in light of the Significant Ecological Area Update dated November 2000. We especially noted the detailed narrative regarding the critical need to expand existing protected areas to preserve natural habitat. We note the recommendation in the report is to develop lands within Significant Ecological Areas (SEAs) at no more than one home per 10 acres (see page 30 of the Santa Susana Mountains/Simi Hills Significant Ecological Area Update Study). The Deerlake Ranch project is entirely within the proposed SEA boundaries.

The Association and the Foundation strongly recommend that development be curtailed to avoid housing density greater than one home per 10 acres, as recommended by the Los Angeles County SEA Study dated November, 2000.

Santa Susana Mountain Park Association 2 - Response

The comment has been received and noted. Please see Section 4.4.1 (C ECHO 2 – Response) of this document.

5.5.11 Liz Ricci/Richard Ricci

August 18, 2002

Ricci 1 - Comment

We live on Chatsworth Street south of the proposed development.

We bought our lot and built our home 18 years ago for the specific purpose of being "near the hills", and Devil and Brown's Canyons for riding and hiking. We do realize that the owner of the Deerlake Ranch property has the right to use it.

However, the developer could develop the property with 171 homes on larger estate/equestrian properties that would be much more in keeping with the developments already existing to the west. The developer could then make his profit without so completely destroying our community.

At the present time there are portions of the morning and evening when we literally cannot get in or out of our own driveway because of traffic backed up from the intersections on either side of us. Our local schools and other public facilities are already overloaded. Our recreational hiking and riding area will

be really destroyed with a huge number of homes on that hill behind the freeway. The runoff from large numbers of streets and roves and driveways will severly [sic] impact the 2 canyons on either side. The grading and mountain moving necessary for a large number of homes will be really devastating during the construction and in appearance afterwards.

Supervisor Antonovich has recommended a minimum of 15,000 sq ft lot sizes for this development. PLEASE STICK TO THIS SIZE. ENLARGING THE LOTS AND REDUCING THE NUMBER WILL "FIX" MOST OF THE PROBLEMS.

Thank-you for your consideration of our existing community.

Ricci 1 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures. Please see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements. Please see Section 4.2.2 (Topical Response and Urban Runoff 1 – Response) regarding runoff issues. In addition, please see Section 4.3.5 (City Council 2 – Response) regarding trails.

5.5.12 Save Chatsworth

September 18, 2003

Save Chatsworth – Comment 1

Members of Save Chatsworth, Inc. were extremely disappointed Wednesday, September 4, when the Los Angeles County Regional Planning tentatively approved the Deerlake Ranch Development Project. Save Chatsworth's supporters include members of the Twin Lakes Property Owners Association, Chatsworth E.C.H.O., the Chatsworth Neighborhood Council, the Chatsworth/Porter Ranch Chamber of Commerce and the Santa Susana Mountain Park Association, as well as many other community members.

The comment has been received and is noted. No additional response is required.

The community of Chatsworth has worked long and hard in offering suggestions for reducing the density of the proposed Presidio project. On August 10, 2002, the Daily News quoted your Deputy Patti Friedman, stating that you would like to see 15,000 minimum square foot estate/equestrian lots for this project, which pleased the community. She also stated that your Regional Planning Commission appointee and Presidio has been advised of your position. With the current plan of 388 homes less than half will be 15,000 square feet or more with far fewer than that being suitable for horses.

The comment has been received and is noted.

We were also disturbed that in addition to concerns raised in public testimony, the Commissioners themselves raised many questions that we believe are still unresolved. Very valid questions were raised regarding:

1) *the proposed storm drain system*
2) *trail access that would be equivalent to existing trails*
3) *alternate ingress/egress from De Soto Ave.*

The comment is received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6 (Traffic 1 & 2 - Responses), 4.3.5 (City Council 1 and 8 – Response), and Appendices E and K of this document for additions/revisions to the traffic analysis and mitigation measures. Please also see Appendix N of this document regarding alternate access to De Soto Avenue. Please see Section 4.2.2 (Urban Runoff 1 – Response) of this document. In addition, please see Section 4.3.5 (City Council 2 – Response) regarding trails.

Additionally, many community benefits have been offered as part of the conditional use permit, and the community remains concerned as to whether or not the wording of the conditions that govern those benefits will be enforceable by the County as promised. We are awaiting the completion of the Final EIR to see if the above concerns are addressed. Any help that your office can extend to us to further reduce the impacts of this project on Twin Lakes and the area south of the 118 freeway under the jurisdiction of the City of Los Angeles, will be greatly appreciated.

Save Chadsworth – Response 1

The comment is received and is noted.

5.5.13 Michael A. Augello

September 3, 2003

Augello – Comment 1

I am writing this letter on behalf of over a dozen small property owners located along the northern border of the tract map in question. As requested by the county and acknowledged in the staff analysis for the for the August 21, 2002 hearing, the applicant has shown a future "tap" street to provide access for the properties north of the site. This has put many minds at ease.

The comment has been received and is noted. No additional response is required.

What I am here today for is to request that the location of the "tap" street be moved approximately 1400 feet to the west. The original location served the largest single landowner (344 acres) first and then served the rest of the landowners who would access through this first property. During the past year the 344-acre parcel has been purchased for parkland.

The comment has been received and is noted and will be forwarded to the decision makers. No additional response is required.

Moving the location of the "tap" street 1400 feet to the west would avoid needlessly paving over parkland while also providing a more direct access route for the remaining property owners.

The comment has been received and is noted and will be forwarded to the decision makers. No additional response is required.

I thank you for your consideration.

Augellow – Response 1

The comment has been received and is noted. No additional response is required.

5.5.14 Teena Takata

September 3, 2003

Note: Information referred to in this comment letter is included in Appendix B.4 of this document.

Takata – Comment 1

Trails

As Regards Hiking Especially:

The hiking and equestrian community needs viable access, comparable to existing access which may be eliminated under the "Poema Condominium" project.

Takata – Response 1

The comment has been received and is noted. The issue regarding blocked trail access as a result of the Poema Condominium Project is not associated with this project, therefore no response is required.

Takata – Comment 2

The hiking community needs access without significant elevation ups and downs to optimize use of this unique area, where an almost flat trail exists along the canyon floor.

Takata – Response 2

The comment has been received and is noted and will be forwarded to the decision makers.

Takata – Comment 3

The hiking community needs parking available for 20 autos along the street. Dawn to dusk weekends, 7 hours weekdays (from 7am), extended hours upon request via permits to be issued from 5th District Supervisors office.

Takata – Response 3

The comment has been received and is noted and will be forwarded to the decision makers.

Takata – Comment 4

Devil Canyon is a riparian area, blue-line stream, part of major watershed and a feeder into Brown's Canyon. It is deserving of protection, as both the old SEA and the proposed SEA (which extends the boundaries to incorporate almost all undeveloped areas) state.

Takata – Response 4

The comment has been received and is noted. Please see Section 4.2.1 (Topical Response and Biology 1 – Response) regarding preservation issues. In addition, please see Section 4.4.1 (C ECHO 2 – Response) regarding SEA issues.

Takata – Comment 5

The Effect of the Poema Condominium Project

Although the Developer showed a switchback trail near the west side of their project near west side of the project [sic] (near the existing Mayan Drive TwinLakes Community Information Board) since the beginning, the community did not realize this trail, and this trailhead was to replace the existing access point from the Poema Condominium project, shown on the © 2001 "Los Angeles County Riding and Hiking Trails" map as a dedicated trail. If the trail head moves to this area, key issues are the same as above; parking availability, and minimal grade access.

Takata – Response 5

The comment has been received and is noted. The Poema Condominium project is not associated with the proposed project, therefore no response is required.

Takata – Comment 6

As Regards Equestrian Especially:

12 Foot Horse Trails vs. 8 Foot Project Trails

"Horse Trails" that are 12 feet wide are shown on the east, north, west boundaries. "Project Trails that are 8 feet wide are shown along the southerly perimeter and along interior areas of the project. The developer has represented 8 foot wide trails are equestrian. Please require a condition to a) provide 12 foot trails around the entire perimeter, and b) require County to accept 8 foot wide trails as "multi-use, including equestrian trails" to ensure Chatsworth does not further lose access in its prime equestrian trail access area. A major portion of the southern perimeter trail goes along new Mayan drive, which will have about 60% of the traffic per the developer's traffic study. Other areas are a key part of the perimeter trail, so should be the standard width to improve safety and maneuverability issues. The Developer said Parks and Recreation has considered this issue and accepted use of 8 foot wide trails for equestrian use, please ensure this is correct, and will survive the sale of all or a part of the project by clarifying the use. Additionally, no standards of construction/fencing for the 8 foot wide trails have been

specified. please specify standards for these trails, suitable for containment of horses and other expected users of these trails. Please provide draft conditions addressing these areas BEFORE any project approval is made; this is a key issue to the local area. Please note the equestrian community has no objection to designating the 12 foot wide trails as "multi-use, including equestrians", either.

Takata – Response 6

The comment has been received and is noted and will be forwarded to the decision makers. Please see Section 2.4.7 (Open Space Characteristics) and Section 4.3.5 (City Council 2 – Response) regarding trails.

Takata – Comment 7

The Old Bridge

An old bridge north of Canoga is to be used for trails. Please confirm in writing the bridge will be accepted for use as part of the trail, even though it is old, surely not earthquake-reinforced, etc.

Takata – Response 7

The comment has been received and is noted. As stated in the Draft EIR (Section 2.4.3 and Figure 2.11), the project includes recreational trails that would connect to existing trail systems.

Takata – Comment 8

Dead Ends in Trails at Conservancy Areas

The 8 foot trail (requested to be 12 foot) along the south side is interrupted by a "no trail" area across Devil Canyon. We first saw this in the new map. Please require grading of the Developer's parcels to match/tie into grade of the Conservancy land, so the equestrians and hikers can have a chance of linking the trail.

Takata – Response 8

The comment has been received and is noted and will be forwarded to the decision makers.

Takata – Comment 9

Equestrian/Multi-use Trail, East side of Topanga Canyon

Shown on Exhibit A3 "Equestrian/Hiking Trail" is a proposed equestrian trail along the east side of Topanga Canyon Blvd. This has not been part of the proposed street improvements to the Topanga Canyon/118 Freeway intersection. Let's get this implemented now, if it is not done as part of the major improvement project underway with this development, it will not be done, and equestrian access to the north will be further impaired.

Takata – Response 9

The comment has been received and is noted. Subsequent to distribution of the Draft EIR, the applicant agreed to various community commitments for the project, including additional trails and signage. Please see the VTTM in Appendix C.1 and Appendix E of this document.

Takata – Comment 10

Mutual Letters of Intent to Protect Trail Access

Doug Ring of the Poema Condominium project indicated there were Letters of Intent between Presidio and Sonderman/Ring to ensure the trail access was protected and available. We have not been able to obtain a copy of these documents to see if the representation was true, we were later told by Sonderman/Ring's representative he believed Public Works has them, but he didn't have a copy. Please require that these documents be provided to the community, if they are to be relied upon in any way in designing the trail access and trail.

Takata – Response 10

The comment has been received and is noted and will be forwarded to the decision makers.

Takata – Comment 11

Trail Grade after Completion

Presidio is making major changes to the elevation of their development envelope. We are concerned that a side effect may be to increase grade of various trails that link from the northwest property line down into Devil Canyon. Please condition trail links to adjacent lands to have elevation gains not more steep than is presently the case, and require the developer to match elevations of the off-site trials they link to as part of the grading process.

Takata – Response 11

The comment has been received and is noted and will be forwarded to the decision makers. Please see the VTTM in Appendix C.1 and Appendix E of this document regarding community commitments for the project.

Takata – Comment 12

Issues Affecting All Trail Users:

Rim of the Valley Access

This is one of the best areas for a hiker to access the Rim of the Valley trail system that has gained great support as recreational hiking opportunities have gained more widespread support. Retention of access points is a key component to having a usable system.

Takata – Response 12

The comment has been received and is noted. No additional response is required.

Takata – Comment 13

Global Trail Solution/Supervisors Office

Part of the complexity of the trail solution is that the Sonderman/Ring Poema Condominium Project is based on land that is to be acquired under an option, and is not owned by the proposed developer. Presidio owns the land they propose their project will be built on. We have been told for the last four weeks, a solution supervised by Mr. Antonovich's office is imminent, and a meeting of concerned community members will be happening to provide a solution to what will happen if either Ring goes forward, Presidio goes forward, or both projects are approved. Nothing has been shown to us yet, we ask that any approval be put off until the full effect of any modification of the "dedicated" trail is known, and reviewed by community members that are involved in the trail system in the area.

Takata – Response 13

The comment has been received and is noted and will be forwarded to the decision makers.

Takata – Comment 14

We are pleased to see the Staff Report acknowledges that one of the directives from the last hearing on this project was to work toward a project design that incorporates community requests.

Takata – Response 14

The comment has been received and is noted. No additional response is required.

Takata – Comment 15

When Presidio representatives began to meet with community representatives in December, 2002, they initially presented a "Community Character Statement" Preliminary Draft – December 17, 2002 to the Community Representatives who were allowed by the Supervisor's office to attend the meeting.

Takata – Response 15

The comment has been received and is noted.

Takata – Comment 16

At the second meeting of Presidio and the Community, the Community responded via document dated January 16, 2003, and requested the various items, including the following. Months later, the community was presented, without material discussion, a revised Community Character Statement, dated April 7, 2003. That Community Character Statement appears to have substantially the same text as the June, 2003 Community Character Statement dated June 2003, that is the only bit of new information Deerlake Ranch, County Supervisor Staff, or Planning Staff has provided to the community as part of this hearing. Commissioners may recall providing instructions to Presidio to provide information that they submit to the Commission to the community, but NONE has been provided this time at all, by anyone.

Community Requested (Page 1)	Presidio Response
...see more specifics on how the design will work into the existing topography...	Ignored
...sse... more detail on what features of the natural landscape will be retained...	Ignored
We are expecting a minimum of 15,000 square feet in lot size.	Somewhat improved
Use of CFD funds for community center, better trails, more stringent construction controls	Generally ignored
Consider City sphere of influence, 17,500 minimum lot size, horsekeeping	Generally ignored
Page 3	
15,000 square foot lots, retain natural flow of landscape/topography, reduce grading and removal of significant features	Generally ignored
Page 4	
Revised circulation system	Nothing provided
Change Street layout to minimize impacts on Canoga Avenue, an established residential street.	Ignored
Page 5	
Retention of existing major rocks, outcroppings, protection for Plummers Mariposa Lily areas	Ignored
Retention of more oaks	Most ignored
Provide true contour grading, build homes into existing site	Ignored
Do not build homes on ridgelines	Ignored
Page 6	
Place homes on lots to optimize equestrian uses	Ignored
Make one park an equestrian arena [very needed with small lot horsekeeping]	A rest stop was created, no exercise possible there
Page 7, 8, 10	
Retain rock outcroppiongs and significant hills and valleys	Ignored
Page 8 (and 10)	
Use landscaping of native plants	Ignored
Page 9	
Do not cover ridgelines visible from Conservancy property and other riparian areas (Brown's, Devils Canyon)	Ignored
Provide product type and acceptable colors of Roofing material – red tile is not compatible, need Neutral colors	Ignored
...Page 12	
Provide horsekeeping in Neighborhood 2	Ignored
Further Analysis not provide, we believe you will see the pattern here	Community was ignored

Takata – Response 16

The comment has been received and is noted. Please see Section 2.0 of this document regarding the revised project description based upon comments received from the public, regulatory agencies, and local government. Please see the VTTM in Appendix C.1 and Appendix E of this document regarding community commitments for the project. In addition please see Section 5.5.1 (Presidio Chatsworth Partners LLC, Inc -Comment Letter) of this document for further discussion of the revised project.

Takata – Comment 17

Surely Presidio will advise you they cannot make profit, and thereby "force" your hand to approve their project. Based on the recent Sonderman Ring case, TTM 53235, you don't ask for any details and you simply accept that representation as justification for a density that is over 2 to 3 times that allowed on adjacent projects.

We don't want that to happen here.

Takata – Response 17

The comment has been received and is noted. No additional response is required.

Takata – Comment 18

The draft EIR indicates there was a deal with the Conservancy and the County in 1997 that really got this project moving.

Please find attached the Median Sales Prices for homes in the San Fernando Valley from 1987 to 2003, per the Southland Regional Association of Realtors.

Takata – Response 18

The comment has been received and is noted. No additional response is required.

Takata – Comment 19

This table indicated that from 1991 to 1996. home prices dropped a cumulative amount of 35.1%. From 1997 through 2002, home process have increased 69.4%.

Takata – Response 19

The comment has been received and is noted. No additional response is required.

Takata – Comment 20

This trend continues in 2003 (not included above since it is a partial year), where median sales process were $395,000 for July 2003, as compared to December 2002 that was $332,000, an increase of over 18.9% for the seven months then ended.

Takata – Response 20

The comment has been received and is noted. No additional response is required.

Takata – Comment 21

Surely, with this type of historical background, a profit can be make, with even ½ the number of homes the developer initially proposed. The cumulative rise in home prices is unprecedented in recent years.

Takata – Response 21

The comment has been received and is noted and will be forwarded to the decision makers.

Takata – Comment 22

A significant question on the staff report –

"The density of the redesigned project is 1.6 units per acre, consistent with... the overall density of the residential development nearby". There are 155 lots 15,000 square feet or greater.

My math tells me if the data in the draft EIR is still correct, the developed lots comprise 61.71 acres. (Table 2.3 "Summary of Proposed Land Uses", Section 2.0, volume 1, Page 2-17).

Applying my calculator to this, 388 homes/61.71 acres is 6.287 homes per acre. Mathmatically [sic], there are 43,560 square feet in an acre. 43,560/6.287 homes per acre is an average lot size of 6928.6, or just under 7,000 square feet.

This is a LARGE difference from the 1.6 units per acres, per the staff report.

Takata – Response 22

The comment has been received and is noted. The proposed project has been revised from the project proposed in the Draft EIR. Please see Section 2.0 of this document regarding the revised project description based upon comments received from the public, regulatory agencies, and local government. In addition, please see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

Takata – Comment 23

Looking at these numbers in an alternative way, there are 155 lots of 15,000 square feet or more. 155 lots x 15,000 square feet is 2,325,000 square feet of development in over 15,000 square foot lots (this is the minimum square feet, based on 100% 15,000 square foot lot size for every lot). Divide that number of square feet by 43,560, the number of square feet in an acre, and the result is 53.375 acres used (minimum) for these 155 lots.

That leaves (388 lots – 155 lots) 233 residential lots with only (61.71 – 53.375 acres) 8.335 acres, an average lot size of (8.335 x 43,560 = 363,073 square feet/233 homes, or an average lot size of 1,558 square feet.

Takata – Response 23

The comment has been received and is noted. The proposed project has been revised from the project proposed in the Draft EIR. Please see Section 2.0 of this document regarding the revised project description based upon comments received from the public, regulatory agencies, and local government. In addition, please see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

Takata – Comment 24

The last County-approved project in this area was to the west, the Indian Falls and Indian Springs projects, where the homes are all built on one acre plus sites. Yes, Twin Lakes is immediately to the south of the site, but everyone was stuck with the old small lots there. Chatsworth, immediately to the south, in the City, is generally developed with 15,5000 square foot lots.

Takata – Response 24

The comment has been received and is noted. No additional response is required.

Takata – Comment 25

The data provided for the Presidio development needs improved for accuracy and lot sizes need to be compatibile [sic] with the surrounding community. I know in past situation where I had to access data, average sizes of the lots in the high and low ends of certain groups were used to look like they were average lot sizes (but they were merely the mid point of the arbitrary categories see attached).

Possibly another misleading table has been provided to staff. I don't know where the error is here, but it is significant.

Takata – Response 25

The comment has been received and is noted. The proposed project has been revised from the project proposed in the Draft EIR. The proposed project has been designed to reflect the rural character of the

project area. Please see Section 2.0 of this document regarding the revised project description based upon comments received from the public, regulatory agencies, and local government. In addition, please see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

Takata – Comment 26

In the Summer of 2002, Presidio representatives provided community members with the attached sheet, depicting "normal" or "proposed" layouts of homes on lots that allowed horsekeeping.

Takata – Response 26

The comment has been received and is noted. No additional response is required.

Takata – Comment 27

Although the community is pleased with this type of layout for horsekeeping purposes, we have concerns that it actually will be implemented, and we ask the County to condition the attached concept of home layout to the project's lots that allow horsekeeping.

Takata – Response 27

The comment has been received and is noted. Please see Section 2.0 of this document regarding the revised project description based upon comments received from the public, regulatory agencies, and local government. Please see the VTTM in Appendix C.1 and Appendix E of this document regarding community commitments for the project.

Takata – Comment 28

The community has noted two things about the homes depicted on the maps in the draft EIR. One, when these diagrams are measured at a larger scale, the homes appear to be five feet from the side lot line. Two, the homes shown in the original drat EIR appear to be similar in footprint to the mobile homes at the southwest corner of Topanga Canyon and the 118 freeway, which normally would be expected to occupy a much smaller footprint than a modern single family home.

Neither of the above concepts would provide horsekeeping on the 15,000 foot and higher lots. Home layout is a key issue to providing the ability to keep horses, and/or to provide other large-scale estate uses, such as tennis courts and large yards.

Takata – Response 28

The comment has been received and is noted. Please see Section 2.0 of this document regarding the revised project description based upon comments received from the public, regulatory agencies, and local government. Please see the VTTM in Appendix C.1 and Appendix E of this document regarding community commitments for the project.

Takata – Comment 29

We ask the Regional Planning Commission, and the County Planning staff, to incorporate the attached design, as a concept statement by Presidio as to the layout of all equestrian-type lots of 15,000 feet and larger.

Takata – Response 29

The comment has been received and is noted and will forwarded to the decision makers.

Takata – Comment 30

Design of equestrian homes should be consistent as to the amount of the lot covered by the home's footprint, the placement of the homes near one corner of the lots, and adjacent to neighboring homes.

Takata – Response 30

The comment has been received and is noted. No additional response is required.

5.5.15 Casimir A. Filek

September 8, 2003

Filek – Comment 1

For some reason or other, the Los Angeles County Planning group continues to sell out to developers. We are in a rural area and would like it to remain so. We live in two school areas, Sierra Canyon and Chatsworth Academy. Both of these schools bring an enormous amount of traffic into our area. Many of the drivers are inconsiderate of the families who live around the school. They either speed or go so slow while talking on the phone that they create potential problems. It is almost impossible for us to turn from Nashville onto Variel because of the traffic or people have parked up to and around the sidewalks. The traffic on Chatsworth St. is like a parking lot during the morning and evening hours. The development will only add to this congestion. The developers love the regional planning office because they always seem to get what they want. I can't imagine building two huge bridges over such beautiful canyons . . . only to satisfy the developers with more profit. Once they build, they move on to other lucrative areas and leave us with dealing with the mess that they have created. Hikers and horses are on the trails daily . . . the only open spaces left in this area. Why ruin it with more homes. Why should we suffer so that this developer can make more money. Three hundred and eighty eight homes are just too many.

Filek – Response 1

The comment has been received and is noted. No additional response is required.

Filek – Comment 1

This area must be preserved as open space. We do not want another Porter Ranch where they have desecrated the beautiful hills that made this area so attractive.

Filek – Response 1

The comment has been received and is noted. Please see Section 3.3.2 (Revision C) regarding open space conservation and dedications.

Filek – Comment 1

The development project must be designed so as to reflect and respect the nature of the existing community. The rural character of Chatsworth must be preserved and the equestrian lifestyle must be allowed to continue.

Filek – Response 1

The comment has been received and is noted. The proposed project has been designed to reflect the rural character of the community. Please see Sections 1.2 and 2.1.2 regarding land use and densities. In addition, please see Section 4.3.5 (City Council 2 – Response) regarding trails.

Filek – Comment 1

We in the Valley continue to get short changed by the politicians in Los Angeles and this is another example. Just today, I read in the paper where there were plans for this wonderful park between City Hall and the Music Center. It is time that the Valley got some of the money that we continue to ply into downtown.

Filek – Response 1

The comment has been received and is noted. No additional response is required.

5.5.16 Collette M. Bertrand

September 1, 2003

Bertrand – Comment 1

I am writing this letter to you to forward to each Commissioner regarding easy trail access to Devil Canyon, currently being proposed for re-routing as part of the Deerlake Ranch Project.

Bertrand – Response 1

The comment has been received and is noted. No additional response is required.

Devil Canyon, in my opinion, is probably one of the most beautiful canyons in the San Fernando Valley. Walking through this canyon is like walking through a forest most resident [sic] of the San Fernando Valley would think could only exist in Northern California. The beautiful oaks, sycamores and other trees in this canyon shelters the hiker from the Valley heat. Small streams follow the easy walking path one takes along the canyon. Some of the most beautiful flowers, shrubs and rock formations exist in this canyon and can be enjoyed by all levels of hikers. Unlike most of the other hiking trails and canyons in this area, Devil Canyon consists of only a small gain in elevation (I believe 300 feet) and many hikers, particularly inexperienced hikers and the elderly hikers, can complete this hike with little or no difficulty. I wish to particularly stress this point since over the years. I have seen many elderly hikers who have been forced to turn around and go back and not complete a hike in the Santa Susana Mountain area because the climb and the heat become too much for them. Devil Canyon is the only canyon in this area that elderly hikers have no difficulty in walking and are able to enjoy the beautiful scenery nature has provided. Walking through this forest-like canyon, wit the beautiful flowers, animals and streams make one feel that they are far away from the Valley and in a whole other world. It is truly an experience that leaves one feeling peaceful and happy. And to think it is only a few minutes away from home!!! I just recently took a hiking group to this canyon and the beauty and ease of this hiking trail is such an incredible surprise to Valley residents that many continue to come back. Devil Canyon is without a doubt the greatest surprise any Valley resident can encounter.

Bertrand – Response 1

The comment has been received and is noted. No additional response is required.

Current access to the canyon is a short and easy walk for all levels of hikers. However, the Deerlake Ranch Project is proposing to close the current access and re-route the entry to this canyon along the east end, requiring hikers to hike a much longer and more difficult road just to get to the entrance of the canyon. This would make the canyon basically inaccessible to many inexperienced and elderly hikes [sic]. Even experienced hikers would be affected by having to add another mile or so of a difficult trail just to gain entry into the canyon. Therefore, I am taking this time to write to the Commission to please be aware that the proposed access by the Deerlake Ranch Project is basically no access at all but to a few of the more hardy hikers. Just thinking that access to this beautiful canyon could be jeopardized is upsetting as many Valley resident [sic] would not have had the opportunity to see this canyon and many will never be able to walk along this canyon again. I strongly urge the Commission to consider this when making their decision, since this is not merely a proposal to move access from one side to another, but will be an extreme change in access to the canyon and many people would be effectively banned from this canyon.

Bertrand – Response 1

The comment has been received and is noted and will be forwarded to the decision makers. Please see Section 3.3.2 (Revision C) regarding open space conservation and dedications. In addition, please see Section 4.3.5 (City Council 2 – Response) regarding trails.

Parking is also critical to the hikers enjoyment. We need to have parking available from dawn to dusk and not restricted as proposed. This is particularly important to many of us who hold jobs during the day and can not start a hike until 5:00 pm. Limited parking would basically make this canyon unavailable to many working people who need to "get away from it all" after a hard days work and relax in the surrounding beauty of this canyon. Also, the current parking along Poema Street is not troublesome to any of the residents in the area and there is currently no conflict between the residents in the area (the Townhouse project to the West and Twin Lakes to the east) and hikers. I wish to stress that not only should the trial [sic] access be unchanged, but parking along Poema street, with no restrictions on public parking, is also critical to the enjoyment of this canyon and should remain unchanged.

Bertrand – Response 1

The comment has been received and is noted and will be forwarded to the decision makers. Please see Section 3.3.2 (Revision C) regarding open space conservation and dedications. In addition, please see Section 4.3.5 (City Council 2 – Response) regarding trails.

Thank you for consideration of these points in your next meeting and please, if you have time, come on down here and take a look at this beautiful canyon. You will be able to better appreciate the reasons many of us wish to keep the current access unchanged.

Bertrand – Response 1

The comment has been received and is noted. No additional response is required.

5.5.17 Dorian Keyser

August 27, 2003

Keyser – Comment 1

I will be unable to attend the September 3, 2003 hearing concerning the proposed Deerlake Ranch Development due to major surgery on September 2. Accordingly, I have submitted this letter and request that each commissioner and appropriate staff members be given a copy to review.

Keyser – Response 1

The comment has been received and is noted. No additional response is required.

Keyser – Comment 2

My comments are:

1. The property which the Presidio Group proposes to develop should be called the Deerlake Ranch since it is composed of parts of Twin Lakes as well as most of Deerlake Highlands. Deerlake Highlands was subdivided into 1923-25 foot by 60 foot lots in the mid-1920's. The Presidio Group claims to have the development rights to build more than 600 houses but it proposes to build 388 houses. The "Save Chatsworth" citizens group advocates that L.A. County permit 300 much larger houses. A survey by a member of this group concludes that the 300 houses would sell very rapidly. However, the developer has a different survey which refutes this contention. The developer points out that their development costs will include the costs of grading streets, sidewalks and flood control as well as water, natural gas, electrical, sewers, and telephone facilities and questions whether most of the property of the "Save Chatsworth" study already has most of their facilities which were built when cots were much lower (e.g. Indian Falls was subdivided well before 1990, but most of its lots remained vacant of houses until recently.

Keyser – Response 2

The comment has been received and is noted. No additional response is required.

Keyser – Comment 3

2. *Wildlife Corridors*

   a. *Studies by biologists have revealed that mountain lions require huge areas. This can be accomplished by connecting undeveloped areas via wildlife corridors/ habitat linkages. Thus, the Santa Monica Mountains are connected to the much larger Los Padres and Angeles National Forests via the Santa Susana Mountains and Simi Hills. Unfortunately, the 118, 110, and I-5 Freeways were constructed without considering how wildlife can safely get past these "choke points". The existing 118 Freeway overpass between the Runkle Ranch Park and the Santa Susana Pass Road is presently used by mountain lions, deer bobcats, raccoons, and other animals to safely get by this Freeway. This is the most important safe passage of the 118 Freeway for wildlife.*

   b. *The Canoga Ave. underpass of the 118 Freeway North of this Freeway wildlife reach Canoga Ave. via Browns Canyon Road and via Devil's Canyon which will remain undeveloped. They travel underneath Canoga North of Stoney Point Park. From here they must cross heavily traveled, unsafe Topanga Canyon Blvd., then the private, undeveloped De Young and Mineo properties followed by the S.M.M. Conservancy's owned "Garden of The Gods, then a dedicated trail to Chatsworth Park South; the Santa Susana Pass State Historic Park; and via the Santa Susana Pass Road to the main overpass.*

   c. *Gated and developed Indian Falls and Indian Springs.*

      1) Via Falls Creek in Indian Falls to Devil's Canyon to reach the Canoga Ave. 118 Freeway underpass (via land owned by the SMCC).

      2) "Via Iverson Road beneath the 118 Freeway, across the Santa Susana Pass Road to undeveloped Church property to Chatsworth Park South where it joins item 2-b."

      3) Rocky Peak Park to Corriganville. There is a 15 foot high by 12 foot wide rectangular cross section equestrian undercrossing of the 118 Freeway which is available for wildlife. While this tunnel is safe for mountain lions to use since they are the top predator, they make it unsafe to use by deer and smaller animals, and perhaps for mounted equestrians.

Keyser – Response 3

The comment has been received and is noted. Please see Section 4.2.1 (Topical Response – Biology) and Section 4.7.9 (Santa Susana Mountain Park Association 1 – Response) of this document regarding wildlife corridors.

Keyser – Comment 4

3. *Save Chatsworth*

Deerlake Ranch is North of the 118 Freeway and wholly in L.A. County whereas Chatsworth is south of the 118 Freeway and wholly in L.A. City. Chatsworth was subdivided with large lots and zoned as an equestrian community. However, recent actions of some L.A. City officials and of some Chatsworth Property owners appear to endanger this zoning. Thus, in my opinion, rezoning portions of Chatsworth to reduce the number of equestrian size lots are a grater threat to the equestrian nature of Chatsworth than does the subdividing the Deerlake Ranch to 388 lots some of which would be equestrian size. Likewise, the proposed equestrian trails on the Deerlake Ranch perimeter and insides help preserve the equestrian character of the development.

A few years ago, Mr. Stein, a developer, with the support of former City Councilman Hal Bernson, succeeded in having his horse properties in Chatsworth rezoned for condominiums, with a unanimous vote of the L.A. City Council. As a result, several other nearby property owners applied for rezoning their property. Lawsuits are in progress. Although "Save Chatsworth" is opposing these rezonings, they

need to greatly increase their efforts. I believe this is significantly more important than their efforts to downsize the Deerlake Ranch Development.

Keyser – Response 4

The comment has been received and is noted. No additional response is required.

Keyser – Comment 5

4. When evaluating any proposed development it is important to include regional factors and who have been major players. Unfortunately, the supporters of "Save Chatsworth" lack the vision to consider the Santa Susanas from Rocky Peak Park in Ventura County to Balboa Blvd. in L.A. County.

a. Developers and their supporters

1) Porter Ranch Developer has ambitions to extend his development west of Brown's Canyon Road and North.

2) Former L.A. City Councilman Hal Bernson was very instrumental in obtaining approvals of the Porter Ranch Development from the City of Los Angeles. Bernson also insisted that Sesnon Blvd., eventually be widened to four lanes and extended from Balboa Blvd. on the east to Brown's Canyon Road on the west. Presently Sesnon Blvd. has a 0.5 mile gap east of Porter Ranch and a 0.6 mile gap immediately prior to Browns Canyon Road. Some of it has not yet been widened. I strongly urge that this road be left in its present condition.

Keyser – Response 5

The comment has been received and is noted. No additional response is required.

Keyser – Comment 6

b. The Santa Monica Mountains Conservancy, with the help of L.A. County Supervisor Mike Antonovich and former state senator Ed Davis and private groups such as the Santa Susana Mountain Park Association and the Sierra Club, has been the primary reason why large sections of the Santa Susanas from the 118 Freeway to the 126 highway and from the 4369 acre Rocky Peak Park to Balboa Blvd. properties are now in public ownership.

1) 282.5 acres of 348 acre Indian Springs Phase II and two conservation easements will soon be deeded to the MRCA a joint powers agency of the SMMC and Rancho Conejo and Rancho Simi Recreation and Parks agencies).

2) 238 acre former Young Property now owned by the SMMC which they bought to prevent its use as a trash dump.

3) 170 acre SMMC owned Davidson Property.

4) 3500 acre Newhall Ranch Open Space which is/will be publicly owned. It connects the west border of the Santa Clarita Woodland to Highway 126.

5) 4000 acre SMMC owned Santa Clarity Woodlands Park.

6) 70 acre SMMC owned Devils Canyon open space which effectively prevents the extension of Topanga canyon blvd. into the Santa Susanas.

7) 16.5 and 14 acres deeded to the SMCC by the Deerlake Ranch developer.

8) 14 acre former Harry Horner Property north of the 118 Freeway on the east side of Canoga Ave. which is owned by the SMCC.

9) A 10 foot wide band entirely surrounding the Deerlake Ranch Development. This is owned by the SMCC. It prevents entry into the back country from the Deerlake Ranch.

10) 159 acres in Browns Canyon that the Deerlake Ranch Developers will deed to the SMMC for the planting of Plummers Mariposa Lillies from the Deerlake Ranch.

11) The 1734 acre Joughen Ranch purchased by the SMCC with funds supplied by three sources, including money from L.A. County Supervisor Mike Antonovich's L.A. County Proposition A funds.

12) A total of more than 400 acres of the Schweitzer and Webb Properties north of the Deerlake Ranch which are now owned by the SMCC.

13) L.A. city owns O'Melvany Park which connects to the southeast border of the Santa Clarita Woodlands Park.

14) 135 acres in Browns and Mormon Canyon (in three parcels) which were deeded to the SMCC from the Porter Ranch developer as required by the U.S. Army Corps of Engineers.

Keyser – Response 6

The comment has been received and is noted. No additional response is required.

Keyser – Comment 7

c. Recommended Properties to be acquired by the SMCC in the Santa Susanas.

1) 448 acre Southport Property between Young and Indian Springs Phase II which is owned by L.A. County for non-payment of property taxes.

2) 1556 acres Dale Poe Cockie Bull Ranch is directly north of Rocky Peak in Ventura County.

3) To be determined properties to complete the connection of the wildlife corridor to the Los Padres and Angeles National Forest.

Keyser – Response 7

The comment has been received and is noted. No additional response is required.

Keyser – Comment 8

d. Properties in the Simi Valley (in the Santa Susanas).

1) Marr Ranch Open Space (publicly owned).

2) Whiteface Open Space (publicly owned).

3) Happy Camp Regional Park (publicly owned).

4) Connection between d-1) and d-2) and between d-2) and d-3) which need to be acquired.

Keyser – Response 8

The comment has been received and is noted. No additional response is required.

5.5.18 Various Postcards

2002

Postcard 1 - Comment

We don't understand why an adequate "mitigation" to the Deerlake Ranch project would be to make our schools multi-track. Why do my children need to go to school on staggered schedules so a developer can make more profit?

Postcard 1 – Response

The comment has been received and is noted. As included in Section 3.0 of this document, subsequent to distribution of the Draft EIR, the project's anticipated student generation has been reduced by 20 percent, and additional enrollment information became available from LAUSD. However, this additional information did not change the conclusions included in the Draft EIR, that impacts to schools would be less than significant with mitigation. In addition, the applicant has indicated that they will enter into discussions with LAUSD and the Porter Ranch master developer to investigate the possibility of

accelerating the Porter Ranch elementary and middle school construction schedule. Please see Sections 2.0, 4.2.8, 4.5.28, and Appendix J of this document for additional information regarding schools.

Postcard 2 - Comment

The traffic studies make no sense. Although some intersection improvements are being made, Chatsworth Street, west of DeSoto Avenue, still will be a two lane street! Have you seen what it looks like between 8 and 8:30 am when school is in session? With a project of this size, nothing will "mitigate" the resulting traffic jam.

Postcard 2 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Postcard 3 - Comment

Alternative #3 (a 171 unit alternate project) makes the most sense, if development is to occur. Lots in this alternative plan would be slightly larger than the average lot size just south of the freeway, which makes sense, as this project is more in the outskirts of the City than elsewhere. Larger lot sizes are more compatible with the single-family homes already approved in Indian Falls and Indian Springs.

Postcard 3 - Response

The comment has been received and is noted. No additional response is required.

Postcard 4 - Comment

Our local streets are in terrible shape, traffic wise. We live in a world of F intersections. They will get worse with commuter traffic from Simi Valley, Newhall Ranch, Stevenson Ranch, etc., all large projects that will have many commuters to this area. It makes no sense to add to the traffic without a long-term plan for the future.

Postcard 4 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Postcard 5 - Comment

This area needs to be preserved as open space. Glendale, along with the Santa Monica Mountains Conservancy, has recently preserved Oakmont V; a similar-sized development. Can't that be done here? Why would you build two huge bridges over such beautiful canyons? The westerly area of the Santa Susana Mountains in Chatsworth makes a beautiful visual image, and should not be cut up by a ton of homes.

Postcard 5 - Response

The comment has been received and is noted. Please see Section 3.3.2 (Revision C) regarding open space conservation and dedications. The bridges are needed to provide safe and reliable internal traffic movement through the project area. Please see Section 2.4.3 regarding traffic improvements.

Postcard 6 - Comment

The developer is planning to make flatland of beautiful low-lying hills; please stop this! Existing development has largely been made so the homes lie with the land and retain the natural terrain. This will just look like another Porter Ranch.

Postcard 6 - Response

The commenter's objection to the project is noted and will be forwarded on to the decision makers.

Postcard 7 - Comment

The westerly area of the Santa Susana Mountains in Chatsworth makes a beautiful visual image, and should not be ruined by flat-graded lots in the low-lying hillsides.

Postcard 7 - Response

The comment has been received and is noted. Please see Section 3.3.2 (Revision C) regarding open space conservation and dedications.

Postcard 8 - Comment

Traffic impacts on Canoga have not been adequately considered. Based on the street design and traffic on Topanga Canyon, the Canoga Avenue traffic will be much more than projected.

Postcard 8 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

Postcard 9 - Comment

Other projects continue to impact the area. The trails on the west side of the project were fine until the Poema condominium project blocked access to Devil Canyon. This needs reviewed, and good access with reasonable elevations, and adequate parking needs to be provided for.

Postcard 9 - Response

The comment has been received and is noted. The issue regarding blocked trail access to Devil's Canyon as a result of the Poema Condominium Project is not associated with this project, therefore no response is required.

Postcard 10 - Comment

This development project must be designed so as to reflect and respect the nature of the existing community. The rural character of Chatsworth must be preserved, and the equestrian lifestyle must be allowed to continue.

Postcard 10 - Response

The comment has been received and is noted. The proposed project has been designed to reflect the rural character of the community. Please see Sections 1.2 and 2.1.2 regarding land use and densities. In addition, please see Section 4.3.5 (City Council 2 – Response) regarding trails.

Postcard 11 - Comment

People hike and ride the canyon and hills here every day – it's important to the quality of life. Ranch-style houses on more spacious lots would sell in this area.

Postcard 11 - Response

The comment has been received and is noted and will be forwarded to the decision makers. No additional response is required.

Postcard 12 - Comment

The developers claim they cannot make a profit if they reduce the number of homes in Deerlake Ranch. Our community should not suffer so that this developer can make more money. 388 homes is simply too many!

Postcard 12 - Response

The comment has been received and is noted and will be forwarded to the decision makers. No additional response is required.

Postcard 13 - Comment

Devil Canyon is a favorite recreation area enjoyed by many, many people throughout the year. The current plan for allowing a storm drain system that claims to filter only 90% or less, of all contaminants is unacceptable to our community. Please help us protect this natural treasure and insist that the storm drain run-off be diverted all the way to the city flood control system.

Postcard 13 - Response

The comment has been received and is noted. Please see Section 4.2.2 (Topical Response and Urban Runoff 1 – Response) regarding runoff issues.

Postcard 14 - Comment

8 foot wide trails make no sense, since 12 feet is required for an equestrian trail by the County. This is the last remaining major trail access point, we must preserve equestrian use of all trails in the area.

Postcard 14 - Response

The comment has been received and is noted. Please see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails.

5.5.19 Susan Condel

Postcard 15 - Comment

I have lived in Chatsworth over 6 yrs and the reason I moved here was due to the quaint rural, small town atmosphere. With the Deerlake Ranch project, as well as several other devlpmts [sic] pushing to develop in the area, getting to and from my home is going to be a chore. The area is hardly able to deal w/the number of people in the area now. With no upgrades/additions to the roads or new on ramps - we will not be able to deal w/the density of traffic. Please revisit the traffic plan.

Thank you.

Postcard 15 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

5.5.20 [Illegible name] – 20935 Francine Cn., Chatsworth

Postcard 16 - Comment

The storm drainage system will only filter less than 90% of contaminants - this is unacceptable.

Postcard 16 - Response

The comment has been received and is noted. Please see Section 4.2.2 (Urban Runoff 1 – Response) regarding runoff issues.

5.5.21 Christine Behling

Postcard 17 - Comment

Chatsworth is one of the few remaining rural communities left in the L.A. area. This project it seems would completely destroy the beauty and peacefulness of our community - which is why we all moved here. The project would cause huge traffic problems – none of which have been studied or addressed properly. We already have too much traffic on Variel, Canoga, and Chatsworth Streets at peak hours. This project would make it nearly impossible to navigate the streets at certain times of the day. Mere access to our community will bring more crime – and none of us want that! To allow a developer cause MEGA negative changes in our schools – all for the sake of PROFIT is ridiculous and unfair. It seems

every issue you look at has a negative impact this project produces - and all because a big developer wants to make a profit – that's SHAMEFUL! Tell him to go elsewhere!

Postcard 17 - Response

The commenter's objection to the project is noted and will be forwarded on to the decision makers.

5.5.22 Susan Jones

Postcard 18 - Comment

I can't believe you're allowing this to be done to the Wildlife and Streams in the area. I will be getting Sierra Club to look into the matter.

Thank you.

Horse Property not counted by the developers purposely overlooked and not counted.

There is horse property, over 17,500 sq ft south of Chatsworth St.

Postcard 18 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.23 Rosemarie White, Ph.D. – Chatsworth Nature Preserve, Sierra Club

Postcard 19 - Comment

I am a stakeholder in this area – 16 Chatsworth area. I am tremendously concerned about the traffic as well as other issue. But traffic on Canoga Park Blvd would e severely impacted by this development. I do not agree that this project should go forward as currently planned.

Postcard 19 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

5.5.24 Jan Miller

Postcard 20 - Comment

The only thing that makes sense. development wise, for Deerlake Ranch are small 10 acre mini horse ranch properties.

Postcard 20 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.25 Laura McCormick

Postcard 21 - Comment

We are opposed to the size of this project. Please make the developer reduce it to under 200 homes. The traffic impact to our neighborhood has not adequately been addressed. We do not want to see our rural specialness of Chatsworth turned into Porter Ranch. Please make this a beautiful addition not a negative.

Postcard 21 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 –

Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

5.5.26 Illegible Name

Postcard 22 - Comment

I am concerned of the impact on traffic from this project on the community. We need to look at this before approving massive projects like this and get community response not just "local" north of the 118.

Postcard 22 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

5.5.27 Carl & Janel Deierling

Postcard 23 - Comment

We are concerned residents of Chatsworth. The developer is planning to build 388 homes. The impact on our area would be extremely negative. Traffic on our local streets is presently problematic the additional cars will only exascerbate [sic] a serious situation. In addition the developer is planning to level the low lying hills changing the nature of our area.

Please consider these as well as the many other reasons to limit density.

Postcard 22 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures. In addition, please see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

5.5.28 B. Hahn

Postcard 24 - Comment

20% reduction in something completely inappropriate is still 80% inappropriate.

Postcard 24 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.29 unknown

Postcard 25 - Comment

Is the lower crime rate in equestrian community(s) less desirable to extra cash in the developers pockets?

Postcard 25 - Response

The commenter's question is not specific and cannot be answered. No additional response is required.

5.5.30 unknown

Postcard 26 - Comment

We already have a problem with coyotes who have lost their natural habitat coming into our neighborhoods and killing our domestic pets what provisions will be made for the displaced wildlife?

Postcard 26 - Response

The comment has been received and is noted. Please see Section 4.4.2 (CLPA 7 – Response) and also Section 4.2.1 of this document.

5.5.31 unknown

Postcard 27 - Comment

Please leave our hills. Growth is one thing, but destruction of the natural beauty of the land is unacceptable. People will buy homes in a natural setting without hesitation.

Postcard 27 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.32 unknown

Postcard 28 - Comment

Please do not allow developers to compromise quality for quantity, it has never been the better choice.

Postcard 28 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.33 unknown

Postcard 29 - Comment

Will all this development eventually lead to the end of the equestrian life style in the valley, despite the benefit to humanity and animal life? Please don't allow it!

Postcard 29 - Response

The comment has been received and is noted. The proposed project cannot foresee the outcome of future developments in the area. That decision will be made by the appropriate decision makers. The proposed project has been designed to reflect the rural character of the area. Please see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails and also see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

5.5.34 unknown

Postcard 30 - Comment

The developers need to preserve the character of the existing community and the equestrian life style. Larger lots, respect for the terrain must be a priority.

Postcard 30 - Response

The comment has been received and is noted. The proposed project has been designed to reflect the rural character of the area. Please see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails and also see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

5.5.35 unknown

Postcard 31 - Comment

Considering the decline of the Los Angeles school system already facing the community, what sense does it make to add pupils to the overcrowded conditions already faced by local campuses?

Postcard 31 - Response

The comment has been received and is noted. As included in Section 3.0 of this document, subsequent to distribution of the Draft EIR, the project's anticipated student generation has been reduced by 20 percent, and additional enrollment information became available from LAUSD. However, this additional information did not change the conclusions included in the Draft EIR, that impacts to schools would be less than significant with mitigation. In addition, the applicant has indicated that they will enter into discussions with LAUSD and the Porter Ranch master developer to investigate the possibility of accelerating the Porter Ranch elementary and middle school construction schedule. Please see Sections 2.0, 4.2.8, 4.5.28, and Appendix J of this document for additional information regarding schools.

5.5.36 Linda Van der Valk

Postcard 32 - Comment

Chatsworth is a rural area and that is why people move here.

Development should be done with that in mind. Ranch homes in this area are more conducive to Chatsworth life style.

Soon people in these developments will be complaining about the wildlife encroaching into their neighborhoods, but the wildlife was here first.

Please consider approving a plan with less homes than 388.

Postcard 32 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. The proposed project has been designed to reflect the rural character of the area. Please see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails and also see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements. Please also see Section 4.5.11 (Brady 2 – Response).

5.5.37 Allen Welbourn

Postcard 33 - Comment

My family and I feel the proposed project is much too large and dense. It is in a rural equestrian area and should be developed accordingly. Hiking and bridal trails need to be retained and stormwater should go to concrete channel, not a natural creek. The impacts on traffic do not address the fact that each household could have 3 separate trucks for solid waste (trash, green waste, and recyclables). The unincorporated area trash service is free market, so each household chooses their own company.

Thank you.

Postcard 33 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. The proposed project has been designed to reflect the rural character of the area. Please see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails and also see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements. Traffic studies do not need to address trash removal operations.

5.5.38 Maureen L. Leuitt

Postcard 34 - Comment

Devil's Canyon is a favorite recreation area enjoyed by many people all year. The current plan for allowing a storm drain system that claims to filter, at best, 90% or less of all contaminants is unacceptable to our community.

Please protect this natural treasure and insist that the storm drain run-off be diverted all the way to the city flood control system.

The city flood control system is the proper place for all storm drain run-off.

Thank you for your attention in this important matter.

Postcard 34 - Response

The comment has been received and is noted. Please see Section 4.2.2 (Topical Response and Urban Runoff 1 – Response) regarding runoff issues.

5.5.39 unknown

Postcard 35 - Comment

Have you tried to drive a child to school here? Our neighborhood streets are at capacity. Topanga and DeSoto are main thruways and they too are at capacity.

Postcard 35 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.40 unknown

Postcard 36 - Comment

Even with extra traffic lanes, and left-hand turn lanes, and extra stop signs and traffic signals, the traffic congestion will destroy the Chatsworth way of life!

Postcard 36 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.41 unknown

Postcard 37 - Comment

The developers say they cannot "make a profit" unless they build a lot of homes on small lots. Is their profit more important than a whole communities way of life?

Please restrict the density of this development.

Postcard 37 - Response

The commenter's question is not specific and cannot be answered. Please see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

5.5.42 Patricia A. Miller

Postcard 38 - Comment

Roads, schools, library, public services and public safety will all be adversely impacted by this irresponsible, expansive development. The Chatsworth area is already straining to maintain a healthful quality of life for its residents.

Postcard 38 - Response

The comment has been received and is noted. Please see Section 4.3.5 (City Council 1 – Response) of this document.

5.5.43 Jan Miller

Postcard 39 - Comment

Just what we need, another completely inappropriate modern development.

Postcard 39 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.44 Patricia A. Miller

Postcard 40 - Comment

A development company's "vision" and drive for profit should not determine the fate of a whole community. Please protect the people of Chatsworth and environs from this short sighted expansion plan.

Postcard 40 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.45 H. Wang

Postcard 41 - Comment

Traffic impacts on Canoga have not been adequately considered.

Postcard 41 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

5.5.46 Mae & Ed Jung

Postcard 42 - Comment

I live on Canoga Ave. and I feel the traffic impact on Canoga Ave. have not been adequately considered. Based on the street design & traffic on Topanga Cyn, the Canoga Ave. traffic will be much more than projected.

Postcard 42 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response) and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

5.5.47 Roberta Phillips

Postcard 43 - Comment

I am very concerned about the density on the Deerlake project. I brought [sic] the properly I live on because of the horse property and the feeling of being out of the city. 400 homes going up on the other side of the street (fiwy) and not giving consideration to traffic is not acceptable. Pls relook the density issue.

Postcard 43 - Response

The comment has been received and is noted. Please see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

5.5.48 Patricia A. Miller

Postcard 44 - Comment

Please stop the Deerlake Ranch developer's plan to demolish the beautiful hills of Chatsworth. These hills are an integral part of the heritage of all the residents of the north west valley. They define the character of the town of Chatsworth. Don't let a few people destroy them.

Postcard 44 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.49 Ray Vincent

Postcard 45 - Comment

Please ensure equestrian trails on the east side of Topanga when the intersection is improved. Also, please do not dump storm water into Devil's Canon. We need to keep Chatsworth an equestrian community.

Postcard 45 - Response

The comment has been received and is noted. Please see Section 4.2.2 (Topical Response and Urban Runoff 1 – Response) regarding runoff issues and also see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails.

5.5.50 unknown

Postcard 46 - Comment

Isn't it just as profitable to build one large home on 20.000 sq. ft. as two smaller homes on 10.000 sq ft each?!

Please limit the number of houses allowed on that development!

Postcard 46 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. Please see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

5.5.51 John Loew

Postcard 47 - Comment

It is very distressing to contemplate thousands of trips of semi trucks passing on Canoga Ave. all day delivering supplies.

Postcard 47 - Response

The comment has been received and noted. No additional response is required.

5.5.52 Patricia A. Miller

Postcard 48 - Comment

The developers of Deerlake Ranch claim they can't make a profit if they reduce the # of homes in their development. Why should our whole community suffer so that a small handful of people can make more money! 388 homes are far too many.

Postcard 48 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.53 unknown

Postcard 49 - Comment

Can't you re-route traffic from Canoga Ave. to De Soto Ave.? All that traffic and dust is so unhealthy for our children!!

Postcard 49 - Response

The comment has been received and is noted. Please see Section 4.2.7 (Development Issues 8 – Response) in this document

5.5.54 Rosemarie S. White

Postcard 50 - Comment

I am a stakeholder in the area of this development. I believe this development is much too large and requires, as planned, an unnecessary amount of grading and destruction to the natural environment. I suggest the developer work with the Chatsworth Neighborhood Council to come to an acceptable modification of this design.

Postcard 50 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.55 Rosemarie S. White, Ph.D.

Postcard 51 - Comment

I am a stakeholder in the area of the development. I disagree with the development as planned because of increased traffic congestion, unnecessary grading and destruction of the natural environment and the taking of open space areas which have been enjoyed for years as recreation areas in the form of trails. There are wild life corridors nearby which are important.

Postcard 51 - Response

The comment has been received and is noted. No additional response is required.

5.5.56 Caren Bromhall

Postcard 52 - Comment

I live on Chatsworth St. west of DeSoto. I have a conditional use COZ permit to board 21 horses. My problem with this project is the density. 388 homes will impact my stable with over use of the street to get horses up into the hills. I keep this stable to service the community. Stop by and see it please – 21119 Chatsworth St. You then will see what the problem will be. Thank you.

Postcard 52 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.57 unknown

Postcard 53 - Comment

Please approve the density proposal made by Mark Watters. It will fit the community, and keep the rural and equestrian nature of Chatsworth.

Postcard 53 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. The proposed project has been designed to reflect the rural character of the area. Please see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails and also see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

5.5.58 Z. Schutz

Postcard 54 - Comment

I would like to express concern over the storm draining issue surrounding the Deerlake project. Please do not allow the storm runoff to enter into our live creek, when conventional methods of storm draining is available and feasible. There is a concreted riverbed already built in Chatsworth for this purpose. Thank you for your consideration.

Postcard 54 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. Please see Section 4.2.2 (Topical Response and Urban Runoff I – Response) of this document.

5.5.59 Diane Embree

Postcard 55 - Comment

There are a myriad of reasons to halt the Deerlake Ranch project, but not much room on this postcard. Traffic is already a major problem and building more houses will make it unbearable. The traffic studies are a scam. Live here to know the truth.

Postcard 55 - Response

Please refer to Topical Response – Traffic – Section 4.2.6 of this document.

5.5.60 Z. Schultz

Postcard 56 - Comment

The landscape of this area is unique and should be preserved as open space. The developer will flatten and destroy the hills and deprive our citizens of one of the last places with unobstructed access to hiking and equestrian trails and dramatic scenery. Porter Ranch is an eyesore and Deerlake will make Chatsorth [sic] just as ugly. Wildlife will suffer and people will suffer. Just so a handful of people can make more money. Please, please, please save one of the last unspoiled places of beauty in our area. Doesn't nature count for something?

Postcard 56 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.61 Z. Schultz

Postcard 57 - Comment

I would like to express concern over preserving the lifestyle of Chatsworth. Our community is a predominantly horse-keeping community with large lots. Chatsworth population is low density with lots of open spaces. Please do not allow the same level of urbanization here as can be seen in Northridge. Your consideration is very much appreciated.

Postcard 57 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.62 unknown

Postcard 58 - Comment

While I understand that one cannot stop a city from growing, I hope you can understand the concern of a small community whole people are about to face a dramatic change in their landscape. We, in Twin Lakes, have been living in the shadows of a hillside, which, I fear, will be completely uncovered or

reshaped. Is it possible to minimize the grading of our hillside, and preserve as much of what's there as possible?

Postcard 58 - Response

The comment has been received and is noted. Please see Section 4.2.1 (Topical Response and Biology 1 – Response) regarding preservation issues.

5.5.63 unknown

Postcard 59 - Comment

I am opposed to this development at any size. Chatsworth deserves to have the option of preserving its equestrian and rural nature what's left of it. Porter Ranch is ruinous enough.

Postcard 59 - Response

The comment has been received and is noted. No additional response is required.

5.5.64 unknown

Postcard 60 - Comment

This is not a simple matter of property rights. This is a commercial venture. A business, and I believe that residents should have the power to veto.

Postcard 60 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.65 unknown

Postcard 61 - Comment

I believe trails to enjoy an expensive love or hoby [sic] of riding horse back with a young family should be wide enough to side by side ride for a great outing with conversation with the young. or old. Thank you.

Postcard 61 - Response

The comment has been received and is noted. No additional response is required.

5.5.66 unknown

Postcard 62 - Comment

The traffic from the 118 Freeway off of Topanga and DeSoto can be so stressful to commuters now, that I can forsee [sic] more road rage among those traveling our road systems. Canoga Ave. between Rinaldi and Chatsworth St. can be very jammed at the rush hour times, these roads are also used for hiking, horseback riding, jogging, and walking – a tragedy can occur who will be responsible. Thank you.

Postcard 62 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.67 unknown

Postcard 63 - Comment

I will be paying close attention to the decisions being made and my future voting will reflect my observations. Who are our elected officials serving?

Postcard 63 - Response

The commenter's question is not specific to the project and cannot be answered.

5.5.68 unknown

Postcard 64 - Comment

There is no excuse in this day and age, to propose any system that allows for 10% pollution. The technology is available to avoid any pollution whatsoever and if the developer can't afford it, they should abandon the project.

Postcard 64 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. Please see Section 4.2.2 (Topical Response and Urban Runoff 1 – Response) of this document.

5.5.69 Dorothey Fernigham

Postcard 65 - Comment

A 171 unit project makes the most sense. Larger average lot sizes are more compatible with single family homes in this area.

Postcard 65 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.70 Eric Zentner

Postcard 66 - Comment

Regarding the Deerlake Ranch Tentative Tract, this is a request for the preservation of the hiking trails and open spaces. With the valley becoming ever more congested and built up, it is necessary to have access to nature in order for the residents to maintain a sense of well being. This area is one of the few remaining wild areas. Please limit the development there for the sake of all current and future generations.

Postcard 66 - Response

The comment has been received and is noted. Please see Section 4.2.1 (Biology 1 – Response) regarding preservation issues.

5.5.71 unknown

Postcard 67 - Comment

It is ludicrous to require residents and their children to accept multi-track schools in order to increase profits to a business that isn't wanted here to begin with.

Postcard 67 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.72 unknown

Postcard 68 - Comment

More development without adequate planning for the future. We are heading for disaster.

Postcard 68 - Response

The comment has been received and is noted. No additional response is required.

5.5.73 Dori Daniels

Postcard 69 - Comment

I am a student at Chatsworth High School. Just this past year the school was so crowded that I had to sit on the floor of my classrooms. I wouldn't even want to imagine what the schools will be like when you've finished your development.

Postcard 69 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. As included in Section 3.0 of this document, subsequent to distribution of the Draft EIR, the project's anticipated student generation has been reduced by 20 percent, and additional enrollment information became available from LAUSD. However, this additional information did not change the conclusions included in the Draft EIR, that impacts to schools would be less than significant with mitigation. In addition, the applicant has indicated that they will enter into discussions with LAUSD and the Porter Ranch master developer to investigate the possibility of accelerating the Porter Ranch elementary and middle school construction schedule. Please see Sections 2.0, 4.2.8, 4.5.28, and Appendix J of this document for additional information regarding schools.

5.5.74 Susan Cordell

Postcard 70 - Comment

Alternative #3 (a 171 unit alternate project) will make the most sense if this development is to occur. Not 388 homes larger lot sizes are more compatible w/ the homes already approved in the Indian Hills and Indian Springs areas as larger lots are predominant in this area and there is no reason to crowed in hundreds of people to make $ w/ smaller lots.

Postcard 70 - Response

The comment has been received and is noted and will be forwarded on to the decision makers.

5.5.75 James Ferningham

Postcard 71 - Comment

Devil Canyon is a favorite recreation area enjoyed by many residents of the northwest SFV. The proposed storm drainage system has not been tested in a project this size.

Postcard 71 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. Please see Section 4.2.2 (Urban Runoff 1 – Response) of this document.

5.5.76 Judy Lucas

Postcard 72 - Comment

The developers claim they cannot make a profit if they reduce the number of homes. 388 is too much. The community should not suffer so the developer can profit.

Postcard 72 - Response

The comment has been received and is noted and will be forwarded to the decision makers. No additional response is required.

5.5.77 unknown

Postcard 73 - Comment

Deerlake Ranch is only one of the many developments slated for the Chatsworth area. These projected developments would bring tax revenue into the city but at what cost to the residents already living there. We understand that there is no plan to add to the resources already in place to handle the 600-1000 more people who will be coming into the area. The residents of Chatsworth will have to deal with the traffic gridlock, overcrowded schools and lack of adequate sheriff/fire/police coverage. The density of the area will affect the wildlife we now enjoy and access to several of the trails the community has been enjoying for many years. We ask that the city work with the residents to allow them to preserve the rural character of Chatsworth and allow the equestrian lifestyle to continue.

Postcard 73 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. The proposed project has been designed to reflect the rural character of the area. Please see Section 4.3.5 (City Council 2 – Response) regarding equestrian trails and also see Section 4.7.5 (SC16 and SC19 – Response) of this document regarding land use and density requirements.

5.5.78 Mark Watters

Postcard 74 - Comment

Devil's Canyon is a beautiful and popular recreation area. The current plan that will allow the storm drain runoff to filter into the canyon could potentially ruin this natural haven. Please insist that the developer be forced to build a system that will divert the storm drain runoff all the way to the city flood control system.

Postcard 74 - Response

The comment has been received and is noted and will be forwarded on to the decision makers. Please see Section 4.2.2 (Topical Response and Urban Runoff 1 – Response) of this document.

5.5.79 Mark Watters

Postcard 75 - Comment

The developers (Presidio) claims it cannot make a profit unless it builds upwards to 388 homes. The community should not suffer so that this company can prosper. 388 is simply too many homes.

Postcard 75 - Response

The comment has been received and is noted and will be forwarded to the decision makers. No additional response is required.

5.5.80 Hollie Meyer and Jerry Weiss

Postcard 80 - Comment

With all of the extra houses being considered, this will become another Porter Ranch and destroy the rural character of Chatsworth and the equestrian lifestyle must be allowed to continue.

Postcard 80 - Response

The comment has been received and is noted. No additional response is required.

5.5.81 J. Weiss and H. Meyer

Postcard 81 - Comment

388 homes in the Devils Canyon Area is too many. They should have no problem selling more expensive houses on larger lots. 91311 is a well-respected zip in the valley area.

Postcard 81 - Response

The comment has been received and is noted. No additional response is required.

5.5.82 Jerry Weiss and Hollie Meyer

Postcard 82 - Comment

Traffic impacts on Canoga and Topanga have not been adequately considered. Have you seen the traffic coming off the 118 in the morning and going back in the afternoon. An extra bunch of homes will make the traffic intolerable on both Topanga and Canoga.

Postcard 82 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response), and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

5.5.83 Don Devore

Postcard 83 - Comment

The traffic is a problem for people who have already spent big money for homes on half acre lots south of 188 freeway on Canoga Ave. Where traffic from 2 growing schools have already made a big difference since Larwin cut the groves down and built these homes. Half of 388 would still make profit.

Postcard 83 - Response

The comment has been received and is noted. As stated in Section 4.12 of the Draft EIR, traffic impacts would not be significant with implementation of recommended mitigation measures. Please see Sections 2.4.3, 3.3.5, 4.2.6, 4.3.5 (City Council 1 and 8 – Response), and Appendix K of this document for additional discussion of traffic impacts and mitigation measures.

APPENDIX A

NOP/COMMENTS

APPENDIX A.1

NOTICE OF PREPARATION/INITIAL STUDY

Notice of Completion

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95814 916/445-0613

See NOTE below

SCH # _____

Project Title: *Chatsworth Ridge - Conditional Use Permit/Oak Tree Permit 99239, Tentative Tract Map 53138*
Lead Agency: *L. A. County Department of Regional Planning* Contact Person: *Tabitha Lam*
Street Address: *320 W. Temple Street* Phone: *(213) 974 6461*
City: *Los Angeles* *CA* Zip: *90012* County: *Los Angeles*

Project Location
County: *Los Angeles* City/Nearest Community: *Chatsworth*
Cross Streets: *north of State Route 118, between Topanga Canyon Rd. and Canoga Ave.* Total Acres: *222*
Assessor's Parcel No. _____ Section: _____ Twp. ____ Range: _____ Base: _____
Within 2 Miles: State Hwy #: _____ Waterways: _____
Airports: _____ Railways: _____ Schools: _____

Document Type
CEQA: ☑ NOP ☐ Supplement/Subsequent
☐ Early Cons ☐ EIR (Prior SCH No.) _____
☐ Neg Dec ☐ Other _____
☐ Draft EIR

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other _____

Local Action Type
☐ General Plan Update
☐ General Plan Amendment
☐ General Plan Element
☐ Community Plan
☐ Specific Plan
☐ Master Plan
☐ Planned Unit Development
☐ Site Plan
☐ Rezone
☐ Prezone
☑ Use Permit
☑ Land Division (Subdivision, Parcel Map, Tract Map, etc.)
☐ Annexation
☐ Redevelopment
☐ Coastal Permit
☑ Oak Tree Permit

Development Type
☑ Residential: *Units* 450 *Acres* 222
☐ Office: *Sq.ft.* _____ *Acres* _____ *Employees* ____
☐ Commercial: *Sq.ft.* _____ *Acres* _____ *Employees* ____
☐ Industrial: *Sq.ft.* _____ *Acres* _____ *Employees* ____
☐ Educational _____
☐ Recreational _____

☐ Water Facilities: *Type* _____ *MGD* _____
☐ Transportation: *Type* _____
☐ Mining: *Mineral* _____
☐ Power: *Type* _____ *Watts* _____
☐ Waste Treatment: *Type* _____
☐ Hazardous Waste: *Type* _____
☐ Other: _____

Project Issues Discussed In Document
☑ Aesthetic/Visual
☐ Agricultural Land
☑ Air Quality
☑ Archeological/Historical
☐ Coastal Zone
☑ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☑ Flood Plain/Flooding
☑ Forest Land/Fire Hazard
☑ Geologic/Seismic
☐ Minerals
☑ Noise
☐ Population/Housing Balance
☑ Public Services/Facilities
☐ Recreation/Parks
☑ Schools/Universities
☐ Septic Systems
☑ Sewer Capacity
☑ Soil Erosion/Comp./Grading
☑ Solid Waste
☐ Toxic/Hazardous
☑ Traffic/Circulation
☑ Vegetation
☑ Water Quality
☑ Water Supply/Groundwater
☑ Wetland/Riparian
☑ Wildlife
☐ Growth Inducing
☐ Land Use
☑ Cumulative Effects
☐ Other _____

Present Land Use/Zoning/General Plan Use
Five single family residences/A-1-1 (Light Agriculture - one acre minimum lot size), R-1-6000 (Single Family Residence - 6000 s.f. minimum lot size).

Project Description
The proposed project is a request for a tentative tract map, Oak Tree Permit and Conditional Use Permit to authorize the development of 150 single family residential lots on a 96 acre site. The CUP is needed for density controlled development and hillside management. The Oak Tree Permit is required for the removal of 16 oaks. The environmental assessment for this project will also include evaluation of potential impacts for the future development of 300 single family residential units on an additional 126 acre site adjacent to the northerly boundary of the project.

NOTE: Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g., from a Notice of Preparation or previous draft document), please fill it in.

Revised October 1989

Reviewing Agencies Checklist

KEY
S = Document sent by lead agenc
X = Document sent by SCH
✓ = Suggested distribution

Resources Agency

_____ Boating & Waterways
_____ Coastal Commission
_____ Coastal Conservancy
_____ Colorado River Board
✓ Conservation
S Fish & Game
✓ Forestry
✓ Office of Historic Preservation
_____ Parks & Recreation
_____ Reclamation
_____ S.F. Bay Conservation & Development Commission
_____ Water Resources (DWR)

Business, Transportation & Housing

_____ Aeronautics
_____ California Highway Patrol
S CALTRANS District # 7
_____ Department of Transportation Planning (headquarters)
_____ Housing & Community Development
_____ Food & Agriculture

Health & Welfare

_____ Health Services

State & Consumer Services

_____ General Services
_____ OLA (Schools)

Environmental Affairs

_____ Air Resources Board
S APCD/AQMD
_____ California Waste Management Board
_____ SWRCB: Clean Water Grants
_____ SWRCB: Delta Unit
_____ SWRCB: Water Quality
_____ SWRCB: Water Rights
S Regional WQCB # _____ (*Los Angeles*)

Youth & Adult Corrections

_____ Corrections

Independent Commissions & Offices

_____ Energy Commission
_____ Native American Heritage Commission
_____ Public Utilities Commission
_____ Santa Monica Mountains Conservancy
_____ State Lands Commission
_____ Tahoe Regional Planning Agency

_____ Other

Public Review Period (to be filled in by lead agency)

Starting Date *June 5, 2000*

Ending Date *July 5, 2000*

Signature

Date *May 30, 2000*

Lead Agency (Complete if applicable):

Consulting Firm:
Address:
City/State/Zip:
Contact:
Phone:( )

Applicant: *Presidio Chatsworth Partners, LLC.*
Address: *595 Market St., Ste. 2400*
City/State/Zip: *San Francisco, CA 94105*
Phone: *(415) 356.7725*

For SCH Use Only:

Date Received at SCH
Date Review Starts
Date to Agencies
Date to SCH
Clearance Date
Notes:

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_____ Other

Public Review Period (to be filled in by lead agency)

Starting Date *June 5, 2000*

Ending Date *July 5, 2000*

Signature

Date *May 30, 2000*

Lead Agency (Complete if applicable):

Consulting Firm:
Address:
City/State/Zip:
Contact:
Phone:( )

Applicant: *Presidio Chatsworth Partners, LLC.*
Address: *595 Market St., Ste. 2400*
City/State/Zip: *San Francisco, CA 94105*
Phone: *(415) 356.7725*

For SCH Use Only:

Date Received at SCH
Date Review Starts
Date to Agencies
Date to SCH
Clearance Date
Notes:

CHATSWORTH RIDGE
PROJECT DESCRIPTION
LOS ANGELES COUNTY CASE NUMBER 99 – 239 (5)

A. Existing Site

The site, which is the subject of this environmental assessment, consists of 222± acres of mostly undeveloped land in the unincorporated area of Chatsworth, more commonly referred to as Twin Lakes and Deerlake Highlands. Of the total area, 163± acres were previously divided by means of several Licensed Surveyor's (L.S.) Maps in 1927 and 1928 into over 2,500 lots. The remaining 59± acres consist of vacant undivided land (see Exhibit A).

The L.S. lots were platted with a series of easements for access and utility purposes to insure that each lot had a legal means of access to a public road. Five existing single family residences and the foundations of several previous homes are located over the site.

The project site is located in the south-facing foothills of Santa Susana Mountains. It is on an uplifted plateau at an average elevation of approximately 1,325 above sea level. The plateau is generally flat with rolling hills, and is bordered on the north by west trending hills that are steep and rugged and reach elevations in excess of 1,770 feet. The hills are cut by south draining canyons. The plateau is bordered to the west and south by Devil Canyon, and to the east by Browns Canyon. The bases of the canyons are at elevations of approximately 1,150 feet. Canyon sidewalls are generally steep with natural slope gradients between 2:1 to 0.5:1 (horizontal to vertical). Devil Canyon has intermittent concrete groins or debris dams to control siltation and prevent erosion. The mouth of Devil Canyon has a concrete rock dam with a culvert.

Plant communities within the project area include chaparral, coastal sage scrub, riparian woodland, eucalyptus, and oak woodland. Biological surveys performed during 1998 and 1999 identified no occurrences of federally- or state-listed plant or animal species. One sensitive plant species, Plummer's mariposa lily, (Calochortus plummerae) has been identified over some of the southwesterly portion of the site.

Common large mammal species that are expected to occur on the project site include mule deer, coyote, common grey fox, and bobcat. Other common mammals expected to occur include common raccoon, opossum, striped skunk, California ground squirrel, and desert cottontail. Small mammals expected to occur included pocket gopher, California mouse, and dusky-footed woodrat. Common reptile species expect to occur include rattlesnake, western skink, southern alligator lizard, California kingsnake, and San Diego gopher snake. Habitat

variation on the project site provides nesting, roosting and foraging opportunities for numerous resident and migratory bird species.

Devil Canyon bisects the southern portion of the site and Browns Canyon runs near the eastern border. Lands to the north and immediate east of the site are undeveloped and similar in topography and biological resources. Lands to the south have been developed into single family and multi-family neighborhoods. State Route 118 is located immediately south of the site.

B. Existing Land Use and Zoning Designations

The Los Angeles County General Plan specifies two separate land use designations for the subject site: (1) Non-Urban Hillside Development (NU) and (2), Rural Community (RC). The underlying zoning designation for NU is A-1-1 (light agriculture, one unit per acre). The zoning designation for the RC land use is R-1-6,000, with the exception of two parcels on the southern portion of the site, which are zoned A-1-1 within the RC designation. The project is not subject to an Area Plan..

C. Project Description

As stated, the environmental assessment for this project will address a 222± acre site which is commonly referred to as Twin Lakes (the southerly portion) and Deerlake Highlands (the northerly portion). The actual project application for a Tentative Tract Map (TTM), a Hillside Conditional Use Permit (HCUP), and an Oak Tree Permit (OTP) will be restricted to the Twin Lakes area at this time, with future TTM, HCUP & OTP applications for one or more phases of Deerlake Highlands expected to follow. However, since future development of the Deerlake Highlands area is dependent on future extension of roads and other infrastructure proposed for the Twin Lakes project, and that the future development of Deerlake Highlands will have potential impacts on the proposed Twin Lakes project, the environmental assessment will be made for both areas on a cumulative basis.

In order to assess the potential environmental impacts which would be generated by the future development of the 126-acre Deerlake Highlands area, several factors have been considered:

- Los Angeles County General Plan Land Use designations and constraints
- Los Angeles County Zoning Ordinance designations and constraints
- Geotechnical, biotic, archaeological, and other environmental constraints
- Topographical and other physical constraints
- Constraints on available infrastructure (i.e., water service elevation limitation)

- Access, circulation and fire protection constraints

It is anticipated that the 2000± existing lots within the Deerlake Highlands area, which were created under Licensed Surveyors Maps, can be developed into approximately 325 single-family residential lots (see Exhibit B). These lots, and corresponding infrastructure, can be developed consistent with the above designations and constraints. This will be the basis for evaluating potential, cumulative impacts from future Deerlake Highlands development in preparing the environmental documentation for the Twin Lakes project.

The proposed 96± acre Twin Lakes project will be divided into 150 single family residential lots and 11 open space lots under Tentative Tract # 53138 and Conditional Use Permit # 99-239 (see Exhibit C). This project will be consistent with the County General Plan Land Use Policy and the existing zoning for this area.

Access to the project will be via extension of Canoga Avenue and connection to Topanga Canyon Boulevard. Two proposed bridges across Devil Canyon will be constructed so as to avoid impact on the jurisdictional portion of this watercourse.

Water will be provided by the Las Virgenes Municipal Water District's (LVMWD's) existing Twin Lakes Reservoir and distribution system. Although this system currently serves the southerly portion of the site, the project will be required to reconstruct portions of the existing distribution mains from the reservoir to Topanga Canyon Boulevard. A Preliminary Water Design Report, to be prepared by LVMWD, will provide specific design parameters for this parallel system.

Sanitary sewer system will be provided to the project by connecting to the existing County of Los Angeles sewer line in Topanga Canyon Boulevard at Poema Way and to the City of Los Angeles sewer line in Canoga Avenue. Small portions of the City's existing sewer mains within Canoga Avenue will require reconstruction to provide additional capacity for the project. The LVMWD has a service agreement with the City to accept sewage for conveyance, treatment, and disposal from LVMWD's Chatsworth service area, which includes this project site.

Approximately 0.41 acres of jurisdictional water courses would be impacted by both the Twin Lakes and Deerlake Highlands projects, and 1.21 acres of jurisdictional water courses would be avoided. The Twin Lakes project will avoid

all jurisdictional water courses. The entire project avoids impact on both the Brown and Devil Canyons. There are 294 coast live oak trees on the total site, of which 272 qualify as regulated trees under the County of Los Angeles Oak Tree Ordinance. Of the 272 regulated oak trees, 216 would be preserved for both the Twin Lakes and Deerlake Highlands projects. Of that total, the Twin Lakes project has 40 regulated oak trees, with 24 being preserved.

D. Actions Required

Since the total project site currently is divided into over 2,500 Licensed Surveyor's lots and 7 other legal parcels, the eventual subdivision of the property, consistent with the General Plan and existing zoning, will be accomplished by Final Subdivision Maps as provided for by the State Subdivision Map Act and the Los Angeles County Subdivision Ordinance. In addition, the project is subject to a Hillside Conditional Use Permit and a Density Control Development Permit, as provided for by the County Zoning Ordinance. No General Plan amendment or zone change will be required. Also, the project will require an Oak Tree Permit. Along with review under the California Environmental Quality Act (CEQA), the above actions will be the primary discretionary procedures for this project.

In addition to the above-described County and CEQA actions, the project may also require applicable permits from the U.S Army Corps of Engineers, the U.S. Fish & Wildlife Service, the State of California Department of Fish & Game, and the State Regional Water Quality Control Board.

E. Project Phasing

It is anticipated that the total project will be developed in phases. Phase I, the Twin Lakes area (Tentative Tract # 53138 & CUP # 99-239), will consist of 150 single family residential units and will construct the initial infrastructure systems. The remaining phases, within in the Deerlake Highlands area, will consist of approximately 325 single family residential units and will extend the infrastructure from Phase I. The CEQA review, however, will assess the potential impacts for the entire project.

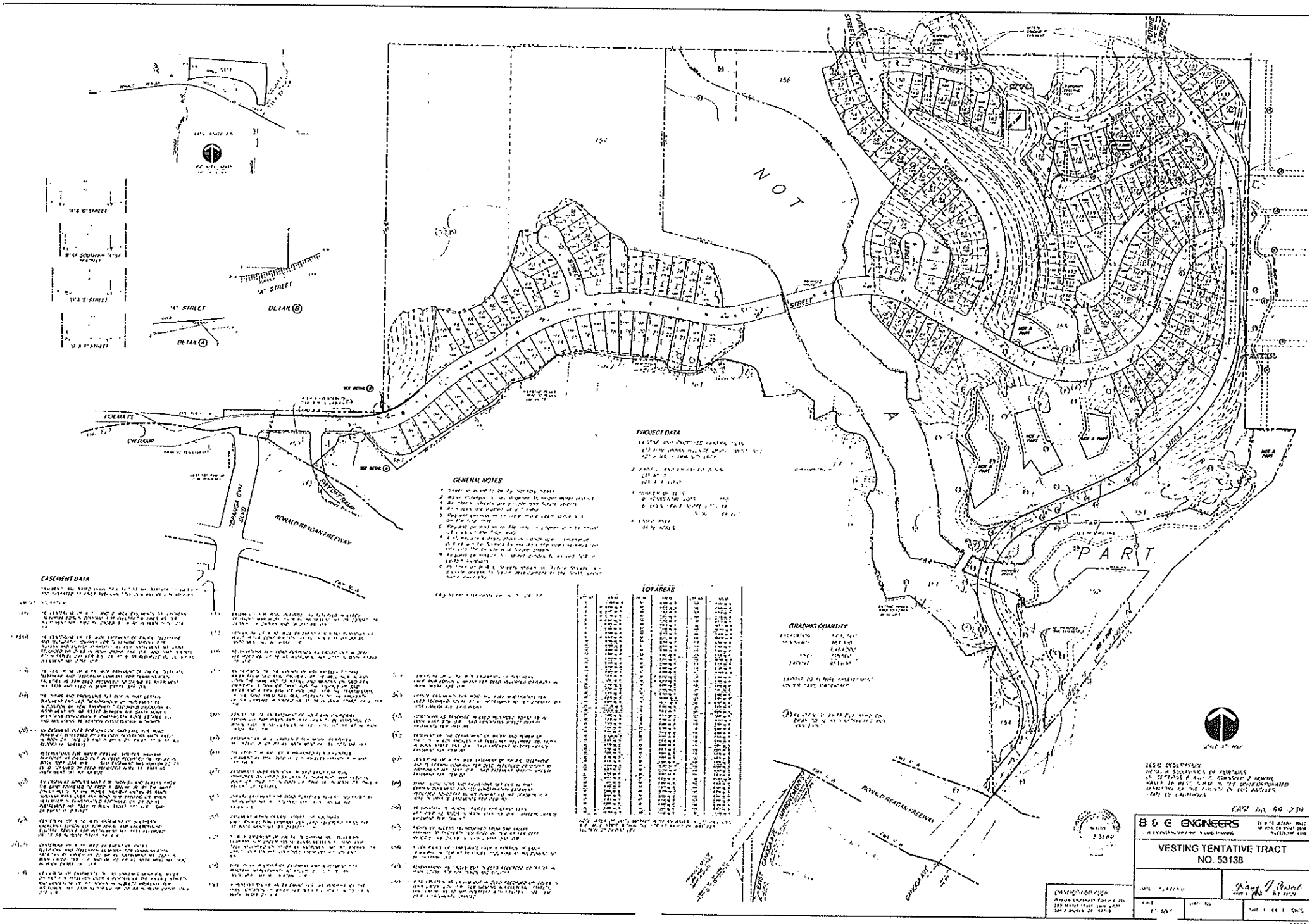
F. Environmental Review

The Los Angeles County Department of Regional Planning has prepared an Initial Study to identify the environmental elements capable of being significantly impacted by the proposed project. Based on the results of the Initial Study, County staff determined that an Environmental Impact Report (EIR) will be preapred to assess the potential impacts of the project on the local and regional

environment. The environmental topics that will be addressed in the EIR are as follows:

- Geotechnical and Soil Resources
- Flood
- Water Quality
- Biota
- Visual Qualities
- Traffic/Access
- Noise
- Air Quality
- Cultural/Paleontological Resources
- Wastewater Disposal
- Solid Waste Disposal
- Education
- Police Services
- Fire Hazards and Services
- Libraries
- Parks, Recreation and Trails

The EIR will also identify alternatives to the proposed project that would be capable of reducing or eliminating one or more of the significant environmental effects of the proposed project.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POEMA PL
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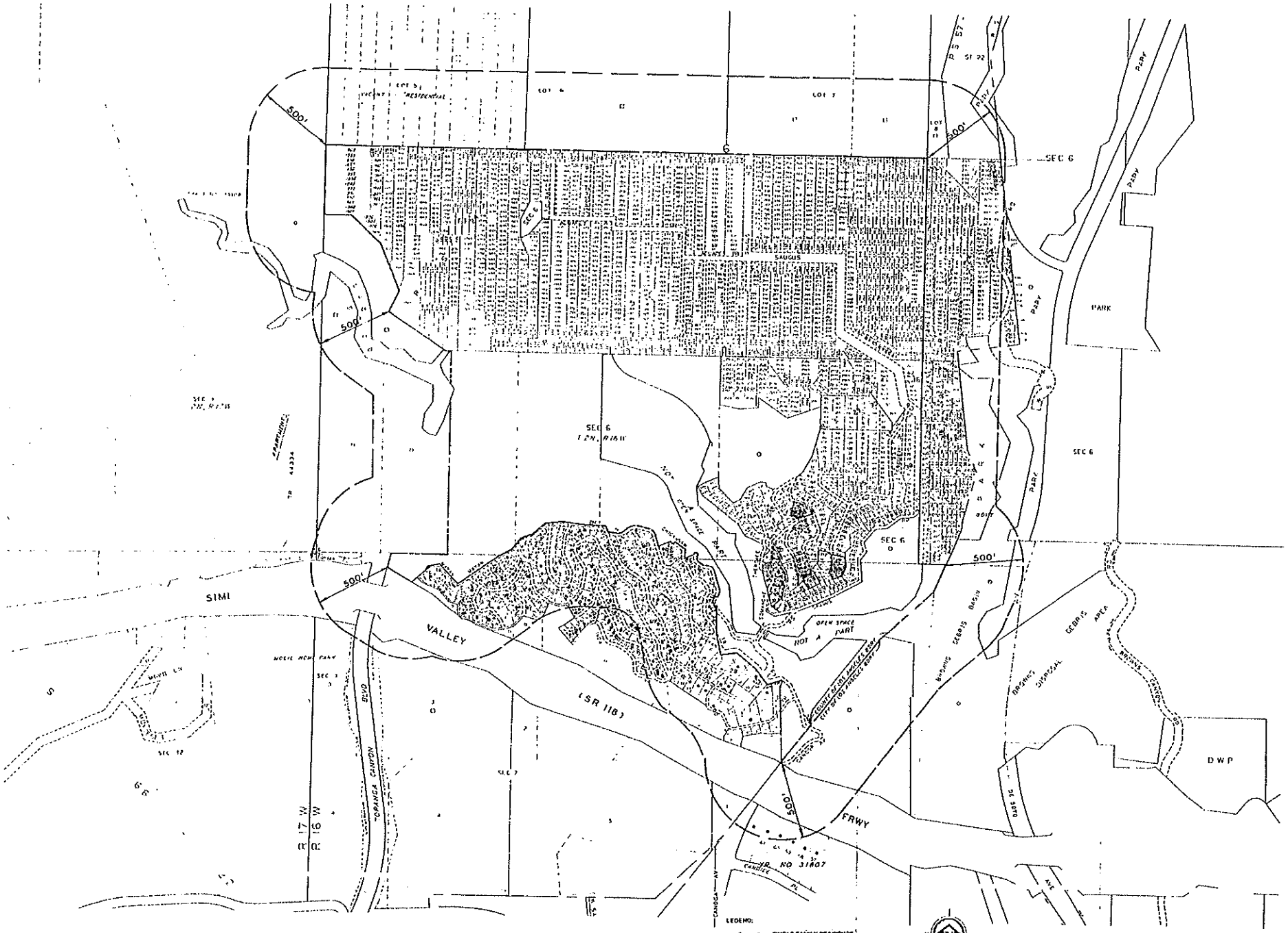
RONALD REAGAN FREEWAY
CANOGA AVE
GENERAL NOTES
PROJECT DATA
EASEMENT DATA
LOT AREAS
GRADING QUANTITY
LEGAL DESCRIPTION
B & E ENGINEERS
VESTING TENTATIVE TRACT
NO. 53138
CASE No. 99-230



500' RADIUS MAP
LAND USE

CASE NO 99-239
EXHIBIT "A"

B & E ENGINEERS

STAFF USE ONLY

PROJECT NUMBER: *99239*

CASES: *CUP, OT*

TR 53138

*** * * * INITIAL STUDY * * * ***

COUNTY OF LOS ANGELES
DEPARTMENT OF REGIONAL PLANNING

GENERAL INFORMATION

I.A. Map Date: *11/29/99* Staff Member: *Tabitha Lam*

Thomas Guide: *500 A1, B1* USGS Quad: *Oat Mountain*

Location: *north of State Route 118, between Topanga Canyon Blvd. & Canoga Ave., Chatsworth*

Description of Project: *The proposed project is a request for a Conditional Use Permit,Oak Tree Permit, and tract map to authorize the development of 150 single family residential lots on a 96 acre site. The CUP is needed for density controlled development and hillside management. The Oak Tree Permit is required for the removal of 16 oaks. The environmental assessment for this project will also include evaluation of potential impacts for the future development of 300 single family residential units on an additional 126 acre site adjacent to the northerly boundary of the project.* Gross Area: *222 acres*

Environmental Setting: *The project site currently contains five single family residences and undeveloped land. Elevation on the site ranges from 1200 to 1718 feet above sea level. Plant communities within the project area include chaparral, coastal sage scrub, riparian woodland, eucalyptus, and oak woodland. Plummer's mariposa lily has been identified over some of the northern portion of the site. The Devil Canyon drainage adjoins the southern portion of the site. Additionally, archaeological and historic resources have been located onsite as well.*

Zoning: *A-1-1 (Light Agric. - one acre lot size), R-1-6000 (Single Family Resid. - 6,000 s.f. lot size)*

General Plan: *Non-Urban*

Community/Areawide Plan: *n/a*

Major projects in area:

Project Number	Description & Status

NOTE: For EIRs, above projects are not sufficient for cumulative analysis.

REVIEWING AGENCIES

esponsible Agencies

-] None
-] Regional Water Quality Control Board
  - ☑ Los Angeles Region
  - ☐ Lahontan Region
-] Coastal Commission
-] Army Corps of Engineers
-] *Caltrans* _____

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☑ *Las Virgenes Water District*
- ☑ *School Districts*
- ☑ *Library* _____

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☑ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns Area

ustee Agencies

- None
- State Fish and Game
- State Parks
- *U.S. Fish & Wildlife* _____
- _____

County Reviewing Agencies

- ☐ Subdivision Committee
- ☑ Public Works _____
- ☑ *Health, Sanitation District*
- ☑ *Fire, Sheriff* _____
- ☑ *City of LA* _____

IMPACT ANALYSIS MATRIX

CATEGORY	FACTOR	Pg	Less than Significant Impact/No Impact	Less than Significant Impact with Project Mitigatic	Potentially Significant Impact	Potential Concern
HAZARDS	1. Geotechnical	5			x	*Northridge Hills Fault, landslide, grading*
	2. Flood	6			x	*ephemeral drainage, mudflow, erosion*
	3. Fire	7			x	*Fire Zone 4, water & pressure for fire flow*
	4. Noise	8			x	*State Route 118*
RESOURCES	1. Water Quality	9			x	*groundwater & stormwater degradation*
	2. Air Quality	10			x	*exceeds AQMD threshold*
	3. Biota	11			x	*oaks, coastal sage scrub, wetland*
	4. Cultural Resources	12			x	*resources have been identified onsite*
	5. Mineral Resources	13	x			
	6. Agriculture Resources	14	x			
	7. Visual Qualities	15			x	*1st priority scenic route, trails*
SERVICES	1. Traffic/Access	16			x	*exceeds CMP threshold, increased traffic*
	2. Sewage Disposal	17			x	*capacity problems*
	3. Education	18			x	*capacity problems at schools, library impaci*
	4. Fire/Sheriff	19			x	*staffing & equipment problems*
	5. Utilities	20			x	*solid waste*
OTHER	1. General	21	x			
	2. Environmental Safety	22	x			
	3. Land Use	23	x			
	4. Pop./Hous./Emp./Rec.	24	x			
	Mandatory Findings	25			x	*biota, cultural, air & water quality, cumulativ*

DEVELOPMENT MONITORING SYSTEM (DMS)

As required by the Los Angeles County General Plan, DMS* shall be employed in the Initial Study phase of th environmental review procedure as prescribed by state law.

1. Development Policy Map Designation: _____

2. ☐ Yes ☑ No Is the project located in the Antelope Valley, East San Gabriel Valley, Malibu/Santa Monic Mountains or Santa Clarita Valley planning area?

3. ☐ Yes ☑ No Is the project at urban density and located within, or proposes a plan amendment to, a urban expansion designation?

If both of the above questions are answered "yes", the project is subject to a County DMS analysis.

☐ Check if DMS printout generated (attached)

Date of printout: _____

☐ Check if DMS overview worksheet completed (attached)

EIRs and/or staff reports shall utilize the most current DMS information available.

Environmental Finding:

FINAL DETERMINATION: On the basis of this Initial Study, the Department of Regional Planning finds that this project qualifies for the following environmental document:

☐ NEGATIVE DECLARATION, inasmuch as the proposed project will not have a significant effect on the environment.

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was determined that this project will not exceed the established threshold criteria for any environmental/service factor and as a result, will not have a significant effect on the physical environment.

☐ MITIGATED NEGATIVE DECLARATION, inasmuch as the changes required for the project will reduce impacts to insignificant levels (see attached discussion and/or conditions).

An Initial Study was prepared on this project in compliance with the State CEQA Guidelines and the environmental reporting procedures of the County of Los Angeles. It was originally determined that the proposed project may exceed established threshold criteria. The applicant has agreed to modification of the project so that it can now be determined that the project will not have a significant effect on the physical environment. The modification to mitigate this impact(s) is identified on the Project Changes/Conditions Form included as part of this Initial Study.

☑ ENVIRONMENTAL IMPACT REPORT*, inasmuch as there is substantial evidence that the project may have a significant impact due to factors listed above as "significant".

☐ At least one factor has been adequately analyzed in an earlier document pursuant to legal standards, and has been addressed by mitigation measures based on the earlier analysis as described on the attached sheets (see attached Form DRP/IA 101). The EIR is required to analyze only the factors not previously addressed.

Reviewed by: _____ Date: 12/7/99

Approved by: _____ Date: 12/8/99

☐ Determination appealed — see attached sheet.

NOTE: Findings for Environmental Impact Reports will be prepared as a separate document following the public hearing on the project.

HAZARDS - 1. Geotechnical

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☑	Is the project site located in an active or potentially active fault zone, Seismic Hazards Zone, or Alquist-Priolo Earthquake Fault Zone? *Main trace of northwest-southeast trending Northridge Hills Fault*
b.	☐	☐	☑	Is the project site located in an area containing a major landslide(s)? *Large bedrock landslide at east margin of site*
c.	☐	☐	☑	Is the project site located in an area having high slope instability?
d.	☐	☐	☑	Is the project site subject to high subsidence, high groundwater level, liquefaction, or hydrocompaction? *High groundwater, liquefaction*
e.	☐	☑	☐	Is the proposed project considered a sensitive use (school, hospital, public assembly site) located in close proximity to a significant geotechnical hazard?
f.	☑	☐	☐	Will the project entail substantial grading and/or alteration of topography including slopes of over 25%? *Approximately 2 million cubic yards to be balanced onsite*
g.	☐	☐	☑	Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?
h.	☐	☑	☐	Other factors?

STANDARD MITIGATION MEASURES

☐ Building Ordinance No. 2225 — Sections 308B, 309, 310 and 311 and Chapters 29 and 70.

OTHER CONSIDERATIONS/MITIGATIONS

☐ Lot Size ☐ Project Design ☐ Approval of Geotechnical Report by DPW

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **geotechnical** factors?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impac

HAZARDS - 2. Flood

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☑	☐	☐	Is a major drainage course, as identified on USGS quad sheets by a dashed line, located on the project site? *Ephemeral drainage*
b.	☐	☐	☑	Is the project site located within or does it contain a floodway, floodplain, or designated flood hazard zone?
c.	☐	☐	☑	Is the project site located in or subject to high mudflow conditions?
d.	☐	☐	☑	Could the project contribute or be subject to high erosion and debris deposition from run-off?
e.	☐	☐	☑	Would the project substantially alter the existing drainage pattern of the site or area?
f.	☐	☑	☐	Other factors (e.g., dam failure)?

STANDARD MITIGATION MEASURES

☐ Building Ordinance No. 2225 — Section 308A ☐ Ordinance No. 12,114 (Floodways)

☐ Approval of Drainage Concept by DPW

OTHER CONSIDERATIONS/MITIGATIONS

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **flood (hydrological)** factors?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impa

HAZARDS - 3. Fire

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☑	☐	☐	Is the project site located in a high fire hazard area (Fire Zone 4)?
b.	☐	☐	☑	Is the project site in a high fire hazard area and served by inadequate access due to lengths, widths, surface materials, turnarounds or grade?
c.	☐	☐	☑	Does the project site have more than 75 dwelling units on a single access in a high fire hazard area?
d.	☐	☐	☑	Is the project site located in an area having inadequate water and pressure to meet fire flow standards?
e.	☐	☑	☐	Is the project site located in close proximity to potential dangerous fire hazard conditions/uses (such as refineries, flammables, explosives manufacturing)?
f.	☐	☑	☐	Does the proposed use constitute a potentially dangerous fire hazard?
g.	☐	☑	☐	Other factors?

STANDARD MITIGATION MEASURES

☐ Water Ordinance No. 7834 ☐ Fire Ordinance No. 2947 ☐ Fire Prevention Guide No. 46

OTHER CONSIDERATIONS/MITIGATIONS

☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by **fire hazard** factors?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impa

HAZARDS - 4. Noise

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☑	☐	☐	Is the project site located near a high noise source (airports, railroads, freeways, industry)? *State Route 118*
b.	☐	☑	☐	Is the proposed use considered sensitive (school, hospital, senior citizen facility) or are there other sensitive uses in close proximity?
c.	☐	☑	☐	Could the project substantially increase ambient noise levels including those associated with special equipment (such as amplified sound systems) or parking areas associated with the project?
d.	☐	☐	☑	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels without the project?
e.	☐	☑	☐	Other factors?

STANDARD MITIGATION MEASURES

☐ Noise Ordinance No. 11,778 ☐ Building Ordinance No. 2225--Chapter 35

OTHER CONSIDERATIONS/MITIGATIONS

☐ Lot Size ☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be adversely impacted by **noise**?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impac

RESOURCES - 1. Water Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Is the project site located in an area having known water quality problems and proposing the use of individual water wells?
b.	☐	☑	☐	Will the proposed project require the use of a private sewage disposal system?
	☐	☑	☐	If the answer is yes, is the project site located in an area having known septic tank limitations due to high groundwater or other geotechnical limitations *or* is the project proposing on-site systems located in close proximity to a drainage course?
c.	☐	☐	☑	Could the project's associated construction activities significantly impact the quality of groundwater and/or stormwater runoff to the stormwater conveyance system and/or receiving water bodies?
d.	☐	☐	☑	Could the project's post-development activities potentially degrade the quality of stormwater runoff and/or could post-development non-stormwater discharges contribute potential pollutants to the stormwater conveyance system and/or receiving bodies?
e.	☐	☑	☐	Other factors?

STANDARD MITIGATION MEASURES

☐ Industrial Waste Permit

☐ Health Code — Ordinance No. 7583, Chapter 5

☐ Plumbing Code — Ordinance No. 2269

☐ NPDES Permit CAS614001 Compliance (DPW)

OTHER CONSIDERATIONS/MITIGATIONS

☐ Lot Size

☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on, or be impacted by, **water quality** problems?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impa

RESOURCES - 2. Air Quality

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Will the proposed project exceed the State's criteria for regional significanc (generally (a) 500 dwelling units for residential uses or (b) 40 gross acre 650,000 square feet of floor area or 1,000 employees for non-residential uses)
b.	☐	☑	☐	Is the proposal considered a sensitive use (schools, hospitals, parks) and locate near a freeway or heavy industrial use?
c.	☑	☐	☐	Will the project increase local emissions to a significant extent due to increase traffic congestion or use of a parking structure or exceed AQMD thresholds potential significance per Screening Tables of the CEQA Air Quality Handbook *Exceeds AQMD threshold*
d.	☐	☑	☐	Will the project generate or is the site in close proximity to sources which creat obnoxious odors, dust, and/or hazardous emissions?
e.	☐	☑	☐	Would the project conflict with or obstruct implementation of the applicabl air quality plan?
f.	☐	☐	☑	Would the project violate any air quality standard or contribute substantiall to an existing or projected air quality violation?
g.	☐	☐	☑	Would the project result in a cumulatively considerable net increase of an criteria pollutant for which the project region is non-attainment under a applicable federal or state ambient air quality standard (including releasin emissions which exceed quantitative thresholds for ozone precursors)?
h.	☐	☑	☐	Other factors:

STANDARD MITIGATION MEASURES

☐ Health and Safety Code — Section 40506

OTHER CONSIDERATIONS/MITIGATIONS

☐ Project Design ☑ Air Quality Report

CONCLUSION

Considering the above information, could the project have a significant impact (individually c cumulatively) on, or be impacted by, **air quality**?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impac

RESOURCES - 3. Biota

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Is the project site located within a Significant Ecological Area (SEA), SEA Buffer, or coastal Sensitive Environmental Resource (ESHA, etc.), or is the site relatively undisturbed and natural?
b.	☐	☐	☑	Will grading, fire clearance, or flood related improvements remove substantial natural habitat areas?
c.	☑	☐	☐	Is a major drainage course, as identified on USGS quad sheets by a blue, dashed line, located on the project site?
d.	☑	☐	☐	Does the project site contain a major riparian or other sensitive habitat (e.g., coastal sage scrub, oak woodland, sycamore riparian woodland, wetland, etc.)? *Willow woodland, oak woodland, coastal sage scrub, wetland*
e.	☑	☐	☐	Does the project site contain oak or other unique native trees (specify kinds of trees)? *Coast live oaks*
f.	☑	☐	☐	Is the project site habitat for any known sensitive species (federal or state listed endangered, etc.)? *Plummer's mariposa lily, Santa Susana Mountains tarweed*
g.	☑	☐	☐	Other factors (e.g., wildlife corridor, adjacent open space linkage)? *Cooper's Hawk, Ashy Rufous-crowned sparrow*

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design ☐ Oak Tree Permit ☐ ERB/SEATAC Review

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on **biotic resources**?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impa

RESOURCES - 4. Archaeological/Historical/Palaeontological

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☑	☐	☐	Is the project site in or near an area containing known archaeological resources or containing features (drainage course, spring, knoll, rock out-croppings, or oak trees) which indicate potential archaeological sensitivity? *Drainage, oaks*
b.	☐	☑	☐	Does the project site contain rock formations indicating potential palaeontological resources?
c.	☑	☐	☐	Does the project site contain known historic structures or sites? *Cultural resources have been identified onsite*
d.	☐	☐	☑	Would the project cause a substantial adverse change in the significance of a historical or archaeological resource as defined in 15064.5?
e.	☐	☑	☐	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
f.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design ☐ Archaeology Report

CONCLUSION

Considering the, above information, could the project leave a significant impact (individually or cumulatively) on **archaeological, historical**, or **palaeontological** resources?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impa

RESOURCES - 5.Mineral Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
b.	☐	☑	☐	Would the project result in the loss of availability of a locally-important mineral resource discovery site delineated on a local general plan, specific plan or other land use plan?
c.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the, above information, could the project leave a significant impact (individually or cumulatively) on **mineral** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☑ Less than significant/No impa

RESOURCES - 6. Agriculture Resources

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
b.	☐	☑	☐	Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?
c.	☐	☑	☐	Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?
d.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the, above information, could the project leave a significant impact (individually or cumulatively) on **agriculture** resources?

☐ Potentially significant ☐ Less than significant with project mitigation ☑ Less than significant/No impa

RESOURCES - 7. Visual Qualities

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☑	☐	☐	Is the project site substantially visible from or will it obstruct views along a scenic highway (as shown on the Scenic Highway Element), or is it located within a scenic corridor or will it otherwise impact the viewshed? *Topanga Cyn. Blvd. & Simi-San Fernando Valley Fwy are 1st priority scenic routes*
b.	☐	☐	☑	Is the project substantially visible from or will it obstruct views from a regional riding or hiking trail? *Rim of the Valley & Santa Susana Mountains trails*
c.	☐	☑	☐	Is the project site located in an undeveloped or undisturbed area which contains unique aesthetic features?
d.	☐	☑	☐	Is the proposed use out-of-character in comparison to adjacent uses because of height, bulk, or other features?
e.	☐	☑	☐	Is the project likely to obstruct unique views from surrounding residential uses?
f.	☐	☑	☐	Is the project likely to create substantial sun shadow, light or glare problems?
g.	☑	☐	☐	Other factors (e.g., grading or landform alteration): *substantial grading*

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Lot Size ☐ Project Design ☐ Visual Report ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on **scenic** qualities?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impa

SERVICES - 1. Traffic/Access

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☑	Does the project contain 25 dwelling units, or more and is it located in an area with known congestion problems (mid-block or intersections)?
b.	☐	☑	☐	Will the project result in any hazardous traffic conditions?
c.	☐	☑	☐	Will the project result in parking problems with a subsequent impact on traffic conditions?
d.	☐	☐	☑	Will inadequate access during an emergency (other than fire hazards) result in problems for emergency vehicles or residents/employees in the area?
e.	☑	☐	☐	Will the congestion management program (CMP) Transportation Impact Analysis thresholds of 50 peak hour vehicles added by project traffic to a CMP highway system intersection or 150 peak hour trips added by project traffic to a mainline freeway link be exceeded? *Exceeds CMP threshold*
f.	☐	☑	☐	Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?
g.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Project Design ☐ Traffic Report ☐ Consultation with Traffic & Lighting Division

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **traffic/access** factors?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impac

SERVICES - 2. Sewage Disposal

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☑	If served by a community sewage system, could the project create capacity problems at the treatment plant?
b.	☐	☐	☑	Could the project create capacity problems in the sewer lines serving the project site?
c.	☐	☑	☐	Other factors?

STANDARD MITIGATION MEASURES

☐ Sanitary Sewers and Industrial Waste — Ordinance No. 6130

☐ Plumbing Code — Ordinance No. 2269

OTHER CONSIDERATIONS/MITIGATIONS

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **sewage disposal** facilities?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impa

SERVICES - 3. Education

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☑	☐	☐	Could the project create capacity problems at the district level?
b.	☑	☐	☐	Could the project create capacity problems at individual schools which will serve the project site?
c.	☐	☐	☑	Could the project create student transportation problems?
d.	☑	☐	☐	Could the project create substantial library impacts due to increased population and demand?
e.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Site Dedication ☐ Government Code Section 65995 ☐ Library Facilities Mitigation Fee

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **educational** facilities/services?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impac

SERVICES - 4. Fire/Sheriff Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☐	☑	Could the project create staffing or response time problems at the fire station or sheriff's substation serving the project site?
				Additional manpower and equipment may be needed
b.	☐	☐	☑	Are there any special fire or law enforcement problems associated with the project or the general area?
				Area has a history of inadequate water & pressure to meet fire flow standards
c.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Fire Mitigation Fees

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **fire/sheriff** services?

☑ Potentially significant Less than significant with project mitigation ☐ Less than significant/No impact

SERVICES - 5. Utilities/Other Services

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Is the project site in an area known to have an inadequate public water supply to meet domestic needs or to have an inadequate ground water supply and proposes water wells?
b.	☐	☑	☐	Is the project site in an area known to have an inadequate water supply and/or pressure to meet fire fighting needs?
c.	☐	☑	☐	Could the project create problems with providing utility services, such as electricity, gas, or propane?
d.	☑	☐	☐	Are there any other known service problem areas (e.g., solid waste)? *Solid waste*
e.	☐	☑	☐	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services or facilities (e.g., fire protection, police protection, schools, parks, roads)?
f.	☐	☑	☐	Other factors?

STANDARD MITIGATION MEASURES

☐ Plumbing Code — Ordinance No. 2269 ☐ Water Code — Ordinance No. 7834

OTHER CONSIDERATIONS/MITIGATIONS

☐ Lot Size ☐ Project Design

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) relative to **utilities/services**?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impac

OTHER FACTORS - 1. General

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Will the project result in an inefficient use of energy resources?
b.	☐	☑	☐	Will the project result in a major change in the patterns, scale, or character of the general area or community?
c.	☐	☑	☐	Will the project result in a significant reduction in the amount of agricultural land?
d.	☐	☑	☐	Other factors?

STANDARD MITIGATION MEASURES

☐ State Administrative Code, Title 24, Part 5, T-20 (Energy Conservation)

OTHER CONSIDERATIONS/MITIGATIONS

☐ Lot size ☐ Project Design ☐ Compatible Use

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to any of the above factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☑ Less than significant/No impac

OTHER FACTORS - 2. Environmental Safety

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Are any hazardous materials used, transported, produced, handled, or stored o site?
b.	☐	☑	☐	Are any pressurized tanks to be used or any hazardous wastes stored on-site
c.	☐	☑	☐	Are any residential units, schools, or hospitals located within 500 feet ar potentially adversely affected?
d.	☐	☑	☐	Have there been previous uses which indicate residual soil toxicity of the site'
e.	☐	☑	☐	Would the project create a significant hazard to the public or the environmer involving the accidental release of hazardous materials into the environment?
f.	☐	☑	☐	Would the project emit hazardous emissions or handle hazardous materials substances, or waste within one-quarter mile of an existing or proposed school
g.	☐	☑	☐	Would the project be located on a site which is included on a list of hazardou materials sites compiled pursuant to Government Code Section 65962.5 and, a a result, would create a significant hazard to the public or environment?
h.	☐	☑	☐	Would the project result in a safety hazard for people in a project area locatec within an airport land use plan, within two miles of a public or public use airport or within the vicinity of a private airstrip?
I.	☐	☑	☐	Would the project impair implementation of or physically interfere with an adoptec emergency response plan or emergency evacuation plan?
j.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

☐ Toxic Clean-up Plan

CONCLUSION

Considering the above information, could the project have a significant impact relative to **public safet**

☐ Potentially significant ☐ Less than significant with project mitigation ☑ Less than significant/No impac.

OTHER FACTORS - 3. Land Use

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Can the project be found to be inconsistent with the plan designation(s) of the subject property?
b.	☐	☑	☐	Can the project be found to be inconsistent with the zoning designation of the subject property?
c.				Can the project be found to be inconsistent with the following applicable land use criteria:
	☐	☑	☐	Hillside Management Criteria?
	☐	☑	☐	SEA Conformance Criteria?
	☐	☑	☐	Other?
d.	☐	☑	☐	Would the project physically divide an established community?
e.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **land use** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☑ Less than significant/No impa

OTHER FACTORS - 4. Population/Housing/Employment/Recreation

SETTING/IMPACTS

	Yes	No	Maybe	
a.	☐	☑	☐	Could the project cumulatively exceed official regional or local population projections?
b.	☐	☑	☐	Could the project induce substantial direct or indirect growth in an area (e.g., through projects in an undeveloped area or extension of major infrastructure)?
c.	☐	☑	☐	Could the project displace existing housing, especially affordable housing?
d.	☐	☑	☐	Could the project result in substantial job/housing imbalance or substantial increase in Vehicle Miles Traveled (VMT)?
e.	☐	☑	☐	Could the project require new or expanded recreational facilities for future residents?
f.	☐	☑	☐	Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?
g.	☐	☑	☐	Other factors?

MITIGATION MEASURES/OTHER CONSIDERATIONS

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the physical environment due to **population, housing, employment**, or **recreational** factors?

☐ Potentially significant ☐ Less than significant with project mitigation ☑ Less than significant/No impa

MANDATORY FINDINGS OF SIGNIFICANCE

Based on this Initial Study, the following findings are made:

	Yes	No	Maybe	
a.	☑	☐	☐	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? *Biota, cultural, air & water quality impacts*
b.	☑	☐	☐	Does the project have possible environmental effects which are individually limited but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. *Resources & public services impacts*
c.	☐	☑	☐	Will the environmental effects of the project cause substantial adverse effects on human beings, either directly or indirectly?

CONCLUSION

Considering the above information, could the project have a significant impact (individually or cumulatively) on the environment?

☑ Potentially significant ☐ Less than significant with project mitigation ☐ Less than significant/No impac

APPENDIX A.2

COMMENTS ON NOP/INITIAL STUDY

STATE OF CALIFORNIA Gray Davis, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

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L.A. COUNTY

June 26, 2000

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320 West Temple Street
Los Angeles, CA 90012

RE: SCH # 2000061049– Chatsworth Ridge—Conditional Use Permit/Oak Tree Permit 99239, Tentative Tract Map 53138

Dear Ms. Lam:

The Native American Heritage Commission has reviewed the above mentioned NOP. To adequately assess the project-related impact on archaeological resources, the Commission reccomends the following action be required:

1. Contact the appropriate Information Center for a records search. The record search will determine:
   - Whether a part or all of the project area has been previously surveyed for cultural resources.
   - Whether any known cultural resources have already been recorded on or adjacent to the project area.
   - Whether the probability is low, moderate, or high that cultural resources are located within the project area.
   - Whether a survey is required to determine whether previously unrecorded cultural resources are present.

2. The final stage of the archaeological inventory survey is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
   - Required the report containing site significance and mitigation be submitted immediately to the planning department.
   - Required site forms and final written report be submitted within 3 months after work has been completed to the Information Center.

3. Contact the Native American Heritage Commission for:
   - A Sacred Lands File Check.
   - A list of appropriate Native American Contacts for consultation concerning the project site and assist in the mitigation measures.

Lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should include provisions for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA) §15064.5 (f). Health and Safety Code §7050.5 and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents. If you have any questions, please contact me at (916) 653-4038.

Sincerely,

Debbie Pilas-Treadway
Associate Governmental Program Analyst

CC: State Clearinghouse

STATE OF CALIFORNIA-THE RESOURCES AGENCY GRAY DAVIS, *Governor*
DEPARTMENT OF FISH AND GAME
South Coast Region
4949 Viewridge Avenue
San Diego, California 92123
(858) 467-4201
FAX (858) 467-4239

RECEIVED
JUL. 5 2000
REGIONAL PLANNING
L.A. COUNTY

June 27, 2000

Ms. Tabitha Lam
Los Angeles County
Department of Regional Planning
320 West Temple
Los Angeles, California 90012

Dear Ms. Lam:

Notice of Preparation of a Environmental Impact Report for Chatsworth Ridge Residential Development SCH # 2000061049, County of Los Angles

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project, relative to impacts to biological resources. The 222 acre undeveloped site referred to as the Twin Lakes and Deerlake Highland sites is proposed for the eventual construction of 525 single family residences and associated infrastructure. The proposed site is located within the foothills of the Santa Susanna Mountains on the western edge of Los Angeles County above Devil's Canyon and Brown Canyon, tributaries to the Los Angeles River, and north of the 118 Freeway and the terminus of Topanga Canyon Boulevard.

According to the initial study, Plummer's Mariposa Lily (*Calochortus Plummerace*), a California listed rare plant species exist on portions of the site and the site also provides habitat for the California listed rare Santa Susana tarplant *(Hemizonia minthornii)*.

To enable Department staff to adequately review and comment on the proposed environmental document, we recommend the following information, be evaluated and included in the document:

1. A complete, **recent** assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.

   a. A thorough **recent** assessment of rare plants and rare natural communities, following the Department's May 1984 Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities (Attachment 1).

   b. A complete **recent** assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be

addressed. Recent, focused, species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and U.S. Fish and Wildlife Service.

c. **Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, § 15380).** For example, a Coast Horned lizard, a California Species of Special Concern, was observed on June 16, 2000 by Department staff near the project site. In addition an abundance of frog and/or toad larva were also observed within the waters of Devils's canyon. Adverse impacts to these species and associated water quality may be considered significant under CEQA. The EIR should address avoidance and mitigation measures to reduce significant direct and indirect adverse project impacts to sensitive species.

d. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitats, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. Also, any Significant Ecological Areas (SEAs) or environmentally Sensitive Habitat Area (ESHAs) that have been identified by the County of Los Angeles or any areas that are considered sensitive by the local jurisdiction that are located in or adjacent to the project area must be addressed.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

a. CEQA Guidelines, § 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

b. Project impacts should also be analyzed relative to their effects on off-site habitats and populations. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. **Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.**

c. A cumulative effects analysis should be developed as described under CEQA Guidelines, § 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

d. All migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act(MBTA) of 1918(50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA).

1. Proposed project activities (including disturbances to vegetation) should take place outside of the breeding bird season (March 1- Aug 31) to avoid take (including disturbances which would cause abandonment of active nests containing eggs and/or young). If project activities cannot avoid the breeding bird season, active nests shall be avoided and provided with a minimum buffer as determined by a biological monitor (the Department recommends a minimum 500 foot buffer for all active raptor nests.)

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources including wetlands/ riparian habitats, alluvial scrub, coastal sage scrub, native woodlands, etc. should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Compensation for unavoidable impacts through acquisition and protection of high quality habitat elsewhere should be addressed.

b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).

c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful. Please contact Ms. Mary Mier, Plant Ecologist at (805) 640-8019 to discuss project related impacts to sensitive plant species.

d. The Department requires all mitigation areas to be excluded from County or City required Fuel Modification Zones (FMZ). Acreage intended to satisfy either habitat buffer or mitigation requirements will not be considered to have value if included in a FMZ or planted with species consistent with FMZ requirements,

rather than habitat restoration requirements.

4. A California Endangered Species Act (CESA) Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the following information is requested:

   a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.

   b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic habitat values and maintain their value to on-site and off-site wildlife populations.

   a. The Department requires a streambed agreement, pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant prior to any direct or indirect impact of a lake or stream bed, bank or channel or associated riparian resources.

      The Department's issuance of a stream bed alteration agreement is considered a project that is subject to CEQA. To facilitate our issuance of the agreement, the Department as a responsible agency under CEQA may consider the local jurisdiction's (lead agency) document for the project. To minimize additional requirements by the Department under CEQA the document should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the agreement. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources. Please contact Ms. Betty Courtney, Environmental Specialists III, at (661) 263-8306 to discuss this further.

Thank you for this opportunity to provide comment. Questions regarding this letter and further coordination on these issues should be directed to Mr. Scott Harris, Associate Wildlife Biologist at (818) 360-8140.

Sincerely,

Ms. Morgan Wehtje
Environmental Scientist IV

Attachments

cc: Mr. Scott Harris
Ms. Morgan Wehtje
Ms. Mary Meyer
Ms. Betty Courtney
Department of Fish and Game

Mr Paul Edelman
Santa Monica Mountains Conservancy

Mr. Ray Bransfield
U.S. Fish and Wildlife Service
Ventura, California

Mr. Aaron Allen
U.S. Army Corps of Engineers
Los Angles, California

Regional Water Quality Control Board
Los Angles, California

State Clearinghouse
Sacramento, California

State of California • The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Gray Davis, *Governor*
Rusty Areias, *Director*

Angeles District
1925 Las Virgenes Road
Calabasas, CA 91302

July 19, 2000

Tabitha Lam
Los Angeles County
Department of Regional Planning
320 West Temple Street
Los Angeles CA 90012

Re: Chatsworth Ridge Residential Project, SCH #2000061049

Dear Ms. Lam:

Thank you for the opportunity to comment on the Notice of Preparation for the Chatsworth Ridge Residential Project, SCH # 2000061049. The Angeles District of the California State Parks would like the following concerns addressed in the Environmental Impact Report.

Resources – 1. Water Quality

How will the post-development runoff from the subject property differ from predevelopment runoff with respect to quality, quantity and rate? How will increased runoff be mitigated to prevent accelerated erosion, loss of topsoil and increased sedimentation? How will changes in these parameters affect the downstream habitat of Devil Canyon Creek and Brown Canyon Creek? What measures will be taken to contain petroleum products, detergents and pesticides on the project site?

Resources – 2. Biota

Wildlife corridor

What will be the impacts be on the overall biological diversity from disturbing and degrading the regional habitat linkage connecting the Los Padres National Forest with the Santa Susana Mountains, with the Simi Hills and the Santa Monica Mountains. Does the subject property play a role in this habitat linkage? Will invasive, non-native landscaping be able to escape from this project site into natural areas? If yes, what impacts will this have on biotic resources? How will the project affect Santa Susanna State Historic Park, which connects north and south to other core habitat areas in the Simi Hills?

How will brush clearance affect vegetation density in the area? How will the overall survival of the ecosystem be protected if required fuel modification eliminates cover, food sources and disrupt the normal animal foraging activities associated with the area? What will be the long-term affect on the habitats of the remaining wildlife species in the area?

How will the open space adjacent to the development area be impacted by edge effects, including lights, smell, sounds, domestic pets, horse corrals and other human-generated activities? What measures will be taken to reduce these impacts to the open space areas and prevent further intrusion upon habitat linkages?

How will these edge effects affect the habitat linkage for large predators in the Santa Susanna Mountains and the Simi Hills? What measures will be taken to percent a restructuring of the faunal community to one dominated by herbivores, particularly rodents?

Resources – 7. Visual

Is the project site substantially visible form public parkland? Is the project site substantially visible from regional hiking trails? Is the project visible from major travel routes? How will the altered views from the Ronald Reagan Freeway affect visitors' perception of the Santa Susana Mountains and the Simi Hills? How will the extension of Topanga Canyon Road reduce impacts to the habitat linkages?

Thank you for considering our comments.

Sincerely,

For:
Russell G. Guiney
District Superintendent

Russ Dingman
District Planner

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF ADVANCE PLANNING
DISTRICT 7, IGR OFFICE 1-10C
120 SOUTH SPRING STREET
LOS ANGELES, CA 90012
TEL: (213) 897-6696 ATSS: 8-647-6696
FAX: (213) 897-8906

RECEIVED
JUN 21 2000
REGIONAL PLANNING
L.A. COUNTY

June 19, 2000

Ms. Tabitha Lam
Department of Regional Planning
County of Los Angeles
320 W. Temple Street
Los Angeles, CA 90012

RE: IGR/CEQA No. 000625/NG
NOP, Chatsworth Ridge-conditional use Permit
County of Los Angeles
Vic. LA / 118 / 1.80

Dear Ms. Lam:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for a tentative tract map, Oak Tree Permit and Conditional Use Permit to authorize the development of 150 single family residential lots on a 96 acre site. This project will also include evaluation of potential impacts for the future development of 375 single-family residential units on an additional 126-acre site adjacent to the northerly boundary of the project.

To assist us in our efforts to evaluate the impacts of this project on State transportation facilities, a traffic study in advance of the DEIR, should be prepared to analyze the following information.

1. Assumptions and methods used to develop trip generation/distribution, percentages and assignments.
2. An analysis of ADT, AM, and PM peak-hour volumes for both the existing and future (year 2020) conditions. This should include State Route 118 and affected ramps, streets, crossroads, and controlling intersections.
3. This analysis should include project traffic, cumulative traffic generated for all approved developments in the area, Interchange utilization (I.C.U.) and Level of Service (LOS) of affected freeway ramp intersections on the State Highway indicating existing project plus other projects' LOS (existing and future).
4. Discussion of mitigation measures appropriate to alleviate anticipated traffic impacts. These mitigation discussions should include, but not be limited to, the following:
    - Financing
    - Scheduling considerations

- Implementation responsibilities
- Monitoring plan

5. Developer's percent share of the cost, as well as, a plan of realistic mitigation measures under the control of the developer should be addressed. Any assessment fees for mitigation should be of such proportion as to cover mainline highway deficiencies that occur as a result of the additional traffic generated by the project.

In all instances where the proposed work falls within or affects the State right-of-way such as constructions, grading, changes to hydraulic run-off, etc., a Caltrans encroachment permit will be needed. Please have the applicant submit six (6) complete sets of engineering plans, showing exact location of State right-of-way and grading contours, to Caltrans for our review.

Residential construction next to freeways is an incompatible land use and local jurisdictions need to require soundwalls. To insure compliance with established noise standards and guidelines, and to protect future occupants from potential adverse effects associated with traffic noise levels exceeding these standards, soundwalls need to be implemented in the zoning, architectural design, and construction of units. Otherwise, future traffic noise controversy can be expected.

Caltrans policy does not legally entitle owners of property who are building adjacent to or near freeways to any noise mitigation program funded by the State. We request that prospective owners/occupants be made aware of Caltrans policy, and that the County exercise its powers and responsibility to minimize the impacts of freeway vehicle noise.

We look forward to reviewing the DEIR. We expect to receive a copy from the State Clearinghouse; however, to expedite the review process, you may send two copies in advance to the undersigned at the following address:

Stephen Buswell
IGR/CEQA Program Manager
Transportation Planning Office 1-10C
120 S. Spring Street, Los Angeles, CA 90012

If you have any questions regarding this response, you can reach me at (213) 897-4429 and refer to IGR/CEQA No. 000625 EA.

Sincerely,

STEPHEN J. BUSWELL
IGR/CEQA Program Manager
Transportation Planning
Caltrans, District 7

STATE OF CALIFORNIA—THE RESOURCES AGENCY GRAY DAVIS, Governor

SANTA MONICA MOUNTAINS CONSERVANCY
SOOKY GOLDMAN NATURE CENTER
2600 FRANKLIN CANYON DRIVE
BEVERLY HILLS, CALIFORNIA 90210
PHONE (310) 858-7272
FAX (310) 858-7212

July 26, 2000

Ms. Tabitha Lam
Impact Analysis Section
Los Angeles County Department of Regional Planning
320 West Temple Street
Los Angeles, California 90012

Chatsworth Ridge Notice of Preparation Comments
Tentative Tract No. 53138 - PN 99-239

Dear Ms. Lam:

The Santa Monica Mountains Conservancy (Conservancy) offers the following comments on the proposed Chatsworth Ridge development encompassing both the Twin Lakes and Deerlake Highlands areas. In 1998, the Conservancy and its joint powers authority, the Mountains Recreation and Conservation Authority (MRCA), entered into a complex agreement with Chatsworth Ridge Estates, the former majority owner of the subject property. This agreement is still binding with the current owner and applicant, Presidio Chatsworth Partners, LLC.

The agreement provided the MRCA with fee title ownership of several parkland areas within and surrounding the proposed development. The MRCA now manages this collection of park areas with funding generated by the applicant via the above referenced agreement.

The attached map shows all known parkland in the immediate project vicinity. The Draft Environmental Impact Report (DEIR) should include a detailed exhibit showing the relationship of the project to all surrounding public lands. This map shows a 70-acre block of parkland in Devil Canyon that abuts the western boundary of the Deerlake Highlands portion of the proposed project. The Conservancy does not have title to this property yet, but our agency is the named party on an offer to dedicate the land.

This collection of public lands shown in the DEIR must also include all lands owned by the Los Angeles County Department of Public Works, all other County departments, and the City of Los Angeles. In particular the exhibit must show the mosaic of County-owned lands located directly north of the Deerlake Highlands subdivision. Finally the DEIR must also

show the MRCA's conservation easement on the Horner property located on the northeastcorner of Canoga Avenue and the 118 Freeway. The Vesting Tentative Tract Map submitted with the Notice of Preparation documents shows the basic outline of this easement referenced as item No. 80.

The following mitigation measures should be required for any project phase on either the Twin Lakes or Deerlake Highlands portions of the proposed project.

1. Conservation easements granted in favor of both Los Angeles County and the Mountains Recreation and Conservation Authority over all of Lots 151 and 153-156.

2. Only permit planting of irrigated native plants in Lots 151 and 153-156.

3. Dedicate Lots 152 and 157 in fee to the MRCA and grant a conservation easement in favor of the County.

4. Require no street lighting whatsoever within 200 feet of the centerline of Devil Creek, particularly on the two proposed bridges.

5. Require both the detailed depiction, and implementation, of a landscape and lighting plan to facilitate wildlife movement from the southern tip of the project area in Twin Lakes under the Canoga Avenue freeway undercrossing to City of Los Angeles-owned North Stoney Point Park. The plan should encompass all land (including easements) under the applicant's control from a distance of 300 feet north of the Caltrans right-of-way on the north side of the freeway. The plan should also include the subject area within the Caltrans right-of-way even if the applicant currently does not have the permission of Caltrans to implement it.

6. All manufactured slopes (housing pads obviously excepted) shall only be planted with indigenous native plants--such as coast live oak, California bay laurel, coffee berry, toyon, giant wildrye, Fremont's cottonwood, yucca, twinberry, and virgin's bower. All of these species can tolerate substantive summer irrigation, and each is not particularly conducive to fire hazard when irrigated.

7. Require, where physically possible, all debris and catchment basins to include permanent pockets of wetland vegetation both to provide habitat and to filter runoff.

8. To mitigate light and noise spill, as well as habitat loss, plant a staggered line of irrigated coast live oak trees along: 1) the entire northern boundary of the Deerlake Highlands portion of the project adjacent to the 10-foot-wide strip owned by the MRCA and 2) the entire western boundary of the Deerlake Highlands portion of the project.

The aesthetics or visual impacts section must include extensive analysis on how fire brushing would affect views from public lands.

The DEIR must address and make final conclusions on whether a water tank will be needed to implement the Deerlake Highlands phase of the project. If such a tank is needed, its location and access should reflect the limitations in the Conservancy's binding agreement with landowner.

In general, as of the past few years, all large scale mountain development projects in the Santa Monica Mountains and Rim of the Valley Trail Corridor zones have provided no less than a fee title dedication of 50 percent of the project area. The proposed Twin Lakes phase (VTT Map No. 53138) appears to be below this ratio. For the purposes of submitting these NOP comments, because of the absence of a proposed project area, one is best to assume that the grading footprint for the Deerlake Highlands phase will encompass the whole area.

To address this inadequate ratio of proposed public open space and Deerlake Highlands project description, we recommend that the DEIR include the following project alternatives.

1) An alternative that includes at least 20 acres of permanently protected, ungraded, undisturbed open space in the Deerlake Highlands phase of the project. Offsite land acquisition could be an option to reach this number of protected (Phase 2) acres.

2) An alternative that configures the Deerlake Highlands pads such that no offsite brush clearance (including on MRCA land) is required.

3) An alternative that entirely eliminates grading in the area occupied by lots 25-31 and 37-50 and the right-of-way for "A" Street as shown from lot 2 to 25. The alignment of "A" street and the newly configured pads should be distributed in the remaining allowable grading areas. This project modification is critical to maintain the

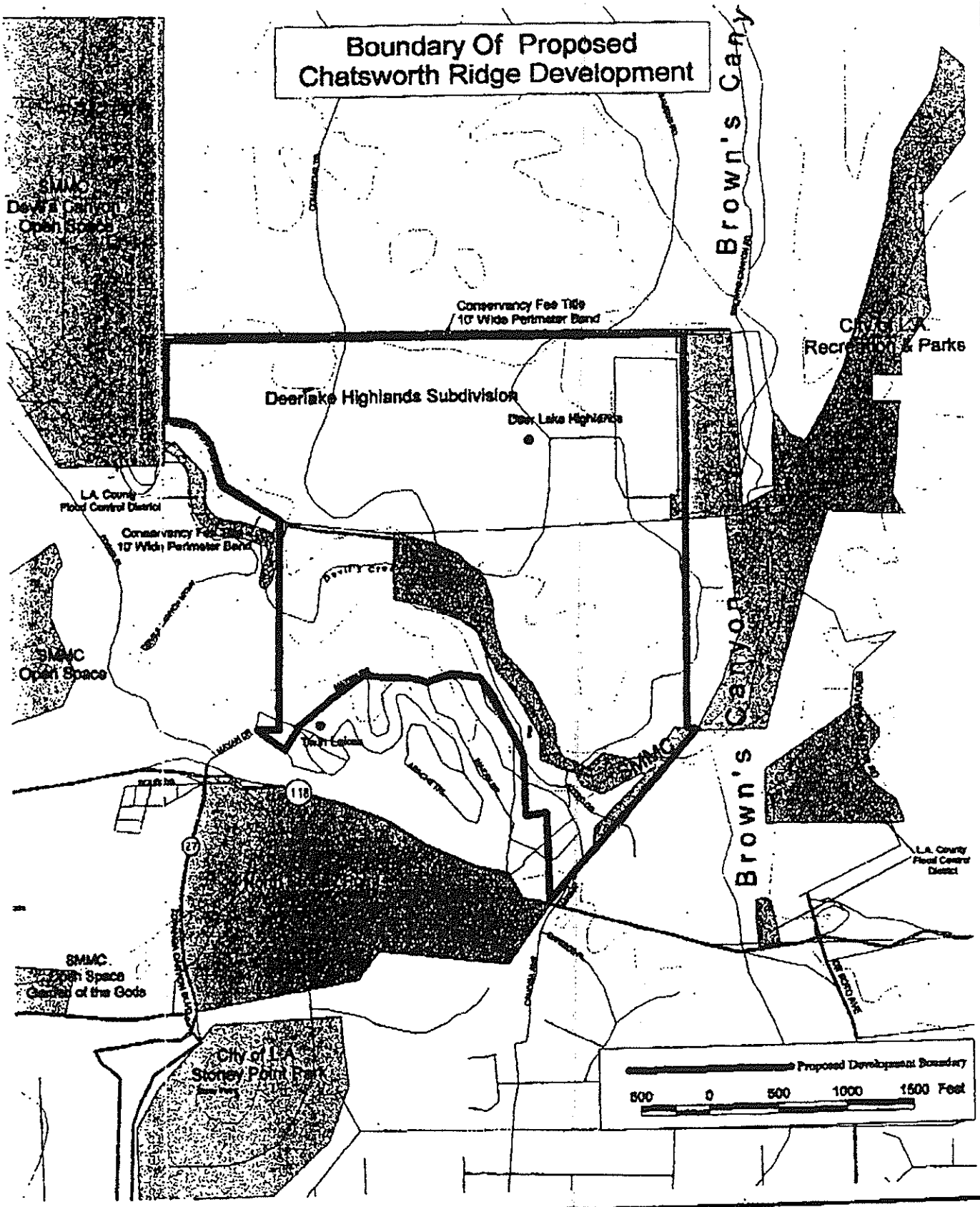
viewshed integrity of Devil Creek and to adequately minimize fuel modification along the rim and upper slopes of the subject reach of the creek. In addition, State-listed Santa Susana tarplant has previously occurred in the area between the proposed freeway offramp alignment and lot 6.

Please contact Paul Edelman of our staff at (310) 589-3200 ext. 128 with any questions.

Sincerely

Elizabeth A. Cheadle

ELIZABETH A. CHEADLE
Chairperson



Agenda Item #14
7/26/00

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

CHARLES W. CARRY
Chief Engineer and General Manager

June 27, 2000

File No: 31-900.13.10J

RECEIVED
JUN 28 2000
REGIONAL PLANNING
L.A. COUNTY

Ms. Tabitha Lam
Los Angeles County
Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012

Dear Ms. Lam:

Tentative Tract Map No. 53138, Conditional Use Permit/Oak Tree Permit 99239, Chatsworth Ridge

The County Sanitation Districts of Los Angeles County (Districts) received a Notice of Preparation of a Draft Environmental Impact Report for the subject project on June 8, 2000. We offer the following comment regarding sewerage service:

- The Districts do not maintain any facilities within the project area(s).

If you have any questions, please contact the undersigned at (562) 699-7411, extension 2717.

Very truly yours,

Charles W. Carry

Ruth I. Frazen

Ruth I. Frazen
Engineering Technician
Planning & Property Management Section

RIF:eg

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SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

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818 West Seventh Street
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Orange County: Charles Smith, Orange County • Ron Bates, Los Alamitos • Ralph Bauer, Huntington Beach • Art Brown, Buena Park • Elizabeth Cowan, Costa Mesa • Jim Dalton, Newport Beach • Cathy DeYoung, Laguna Niguel • Richard Dixon, Lake Forest • Alta Duke, La Palma • Shirley McCracken, Anaheim • Jim Perry, Brea

Riverside County: James Venable, Riverside County • Ron Loveridge, Riverside • Greg Pettis, Cathedral City • Andrea Puga, Corona • Pat Roberts, Temecula • Charles White, Moreno Valley

San Bernardino County: Kathy Davis, San Bernardino County • Bill Alexander, Rancho Cucamonga • Jim Bagley, Twentynine Palms • David Eshelman, Ontario • Lee Ann Garcia, Grand Terrace • Joe Nicholas-Perry, Chino Hills • Judith Valles, Barstow

Ventura County: Judy Mikels, Ventura County • Glenn De Paola, San Buenaventura • Glen Becerra, Simi Valley • Don Young, Port Hueneme

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Bill Davis, Simi Valley

Printed on Recycled Paper

June 13, 2000

RECEIVED
JUN 15 2000
REGIONAL PLANNING
L.A. COUNTY

Ms. Tabitha Lam
Planner
Los Angeles County
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

RE: **Comments on the Notice of Preparation for a Draft Environmental Impact Report for the Chatsworth Ridge Project - SCAG No. I 20000300**

Dear Ms. Lam:

Thank you for submitting the **Notice of Preparation for a Draft Environmental Impact Report for the Chatsworth Ridge Project** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG assists cities, counties and other agencies in reviewing projects and plans for consistency with regional plans.

In addition, The California Environmental Quality Act requires that EIRs discuss any inconsistencies between the proposed project and the applicable general plans and **regional plans (Section 15125 [d])**. If there are inconsistencies, an explanation and rationalization for such inconsistencies should be provided.

Policies of SCAG's Regional Comprehensive Plan and Guide and Regional Transportation Plan, which may be applicable to your project, are outlined in the attachment. **We expect the DEIR to specifically cite the appropriate SCAG policies and address the manner in which the Project is consistent with applicable core policies or supportive of applicable ancillary policies. Please use our policy numbers to refer to them in your DEIR. Also, we would encourage you to use a side-by-side comparison of SCAG policies with a discussion of the consistency or support of the policy with the Proposed Project.**

Please provide a minimum of 45 days for SCAG to review the DEIR when this document is available. If you have any questions regarding the attached comments, please contact Jeffrey Smith, Senior Planner at (213) 236-1867. Thank you.

Sincerely,

J. DAVID STEIN
Manager, Performance Assessment and Implementation

COMMENTS ON THE PROPOSAL TO DEVELOP A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE CHATSWORTH RIDGE PROJECT SCAG NO. I 20000300

PROJECT DESCRIPTION

The proposed Project considers a request for a tentative tract map, oak tree permit and conditional use permit to authorize the development of 150 single-family residential lots on a 96-acre site. The conditional use permit is needed for density-controlled development and hillside management. The oak tree permit is required for the removal of 16 oak trees. In addition, the environmental assessment for this project will also include evaluation of potential impacts for the future development of 375 single-family homes on an additional site adjacent to the northerly boundary of the project site.

CONSISTENCY WITH REGIONAL COMPREHENSIVE PLAN AND GUIDE POLICIES

The **Growth Management Chapter (GMC)** of the Regional Comprehensive Plan and Guide (RCPG) contains the following policies that are particularly applicable and should be addressed in the Draft EIR for the Project.

3.01 *The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.*

Regional Growth Forecasts

The Draft EIR should reflect the most current SCAG forecasts which are the 1998 RTP (April 1998) Population, Household and Employment forecasts for Los Angeles City Unincorporated County area. These forecasts follow:

Unincorp. LA City County Forecasts	**2000**	**2005**	**2010**	**2015**	**2020**
Population	12,900	17,000	22,000	26,900	32,400
Households	3,600	4,500	6,200	7,600	9,900
Employment	13,900	16,100	17,900	19,600	21,400

3.03 The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.

The **Regional Transportation Plan (RTP)** also has goals, objectives, policies and actions pertinent to this proposed project. This RTP links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. Among the relevant goals, objectives, policies and actions of the RTP are the following:

Core Regional Transportation Plan Policies

4.01 Transportation investments shall be based on SCAG's adopted Regional Performance Indicators.

Mobility - Transportation Systems should meet the public need for improved access, and for safe, comfortable, convenient and economical movements of people and goods.

- *Average Work Trip Travel Time in Minutes – 22 minutes*
- *PM Peak Highway Speed – 33 mph*
- *Percent of PM Peak Travel in Delay (All Trips) – 33%*

Accessibility - Transportation Systems should ensure the ease with which opportunities are reached. Transportation and land use measures should be employed to ensure minimal time and cost.

- *Work Opportunities within 25 Minutes – 88%*

Environment - Transportation Systems should sustain development and preservation of the existing system and the environment. (All Trips)

- *Meeting Federal and State Standards – Meet Air Plan Emission Budgets*

Reliability - Reasonable and dependable levels of service by mode. (All Trips)

- *Transit – 63%*
- *Highway – 76%*

Safety - Transportation Systems should provide minimal, risk, accident, death and injury. (All Trips)

- *Fatalities Per Million Passenger Miles – 0.008*
- *Injury Accidents – 0.929*

Livable Communities - Transportation Systems should facilitate Livable Communities in which all residents have access to all opportunities with minimal travel time. (All Trips)

- *Vehicle Trip Reduction – 1.5%*
- *Vehicle Miles Traveled Reduction – 10.0%*

Equity - The benefits of transportation investments should be equitably distributed among all ethnic, age and income groups. (All trips)

- *Low-Income (Household Income $12,000)) Share of Net Benefits – Equitable Distribution of Benefits*

Cost-Effectiveness - Maximize return on transportation investment. (All Trips)

- *Net Present Value – Maximum Return on Transportation Investment*
- *Value of a Dollar Invested – Maximum Return on Transportation Investment*

4.02 *Transportation investments shall mitigate environmental impacts to an acceptable level.*

4.04 *Transportation Control Measures shall be a priority.*

4.16 *Maintaining and operating the existing transportation system will be a priority over expanding capacity.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL STANDARD OF LIVING

The Growth Management goals to develop urban forms that enable individuals to spend less income on housing cost, that minimize public and private development costs, and that enable firms to be more competitive, strengthen the regional strategic goal to stimulate the regional economy. The evaluation of the proposed project in relation to the following policies would be intended to guide efforts toward achievement of such goals and does not infer regional interference with local land use powers.

3.04 *Encourage local jurisdictions' efforts to achieve a balance between the types of jobs they seek to attract and housing prices.*

3.05 *Encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities.*

3.08 *Encourage subregions to define an economic strategy to maintain the economic*

vitality of the subregion, including the development and use of marketing programs, and other economic incentives, which support attainment of subregional goals and policies.

3.09 *Support local jurisdictions' efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.*

3.10 *Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL QUALITY OF LIFE

The Growth Management goals to attain mobility and clean air goals and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life. The evaluation of the proposed project in relation to the following policies would be intended to provide direction for plan implementation, and does not allude to regional mandates.

3.11 *Support provisions and incentives created by local jurisdictions to attract housing growth in job rich subregions and job growth in housing rich subregions.*

3.12 *Encourage existing or proposed local jurisdictions' programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike.*

3.13 *Encourage local jurisdictions' plans that maximize the use of existing urbanized areas accessible to transit through infill and redevelopment.*

3.14 *Support local plans to increase density of future development located at strategic points along the regional commuter rail, transit systems, and activity centers.*

3.15 *Support local jurisdictions strategies to establish mixed-use clusters and other transit-oriented developments around transit stations and along transit corridors.*

3.16 *Encourage developments in and around activity centers, transportation corridors, underutilized infrastructure systems, and areas needing recycling and*

redevelopment.

3.17 Support and encourage settlement patterns which contain a range of urban densities.

3.18 Encourage planned development in locations least likely to cause environmental impact.

3.21 Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.

3.22 Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.

3.23 Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.

GMC POLICIES RELATED TO THE RCPG GOAL TO PROVIDE SOCIAL, POLITICAL, AND CULTURAL EQUITY

The Growth Management Goal to develop urban forms that avoid economic and social polarization promotes the regional strategic goal of minimizing social and geographic disparities and of reaching equity among all segments of society. The evaluation of the proposed project in relation to the policy stated below is intended guide direction for the accomplishment of this goal, and does not infer regional mandates and interference with local land use powers.

3.24 Encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing as evaluated in the Regional Housing Needs Assessment.

3.25 Encourage the efforts of local jurisdictions, employers and service agencies to provide adequate training and retraining of workers, and prepare the labor force to meet the challenges of the regional economy.

3.26 Encourage employment development in job-poor localities through support of labor force retraining programs and other economic development measures.

3.27 Support local jurisdictions and other service providers in their efforts to develop

sustainable communities and provide, equally to all members of society, accessible and effective services such as: public education, housing, health care, social services, recreational facilities, law enforcement, and fire protection.

AIR QUALITY CHAPTER CORE ACTIONS

The **Air Quality Chapter** core actions related to the proposed project include:

5.07 *Determine specific programs and associated actions needed (e.g., indirect source rules, enhanced use of telecommunications, provision of community based shuttle services, provision of demand management based programs, or vehicle-miles-traveled/emission fees) so that options to command and control regulations can be assessed.*

5.11 *Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.*

WATER QUALITY CHAPTER RECOMMENDATIONS AND POLICY OPTIONS

The **Water Quality Chapter** core recommendations and policy options relate to the two water quality goals: to restore and maintain the chemical, physical and biological integrity of the nation's water; and, to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of all waters.

11.02 *Encourage "watershed management" programs and strategies, recognizing the primary role of local governments in such efforts.*

11.03 *Coordinate watershed management planning at the subregional level by (1) providing consistent regional data; (2) serving as a liaison between affected local, state, and federal watershed management agencies; and (3) ensuring that watershed planning is consistent with other planning objectives (e.g., transportation, air quality, water supply).*

11.05 *Support regional efforts to identify and cooperatively plan for wetlands to facilitate both sustaining the amount and quality of wetlands in the region and expediting the process for obtaining wetlands permits.*

11.06 *Clean up the contamination in the region's major groundwater aquifers since its*

water supply is critical to the long-term economic and environmental health of the region. The financing of such clean-ups should leverage state and federal resources and minimize significant impacts on the local economy.

11.07 Encourage water reclamation throughout the region where it is cost-effective, feasible, and appropriate to reduce reliance on imported water and wastewater discharges. Current administrative impediments to increased use of wastewater should be addressed.

OPEN SPACE CHAPTER ANCILLARY GOALS

Outdoor Recreation

9.01 Provide adequate land resources to meet the outdoor recreation needs of the present and future residents in the region and to promote tourism in the region.

9.02 Increase the accessibility to open space lands for outdoor recreation.

9.03 Promote self-sustaining regional recreation resources and facilities.

Public Health and Safety

9.04 Maintain open space for adequate protection of lives and properties against natural and man-made hazards.

9.05 Minimize potentially hazardous developments in hillsides, canyons, areas susceptible to flooding, earthquakes, wildfire and other known hazards, and areas with limited access for emergency equipment.

9.06 Minimize public expenditure for infrastructure and facilities to support urban type uses in areas where public health and safety could not be guaranteed.

Resource Production

9.07 Maintain adequate viable resource production lands, particularly lands devoted to commercial agriculture and mining operations.

Resource Protection

9.08 Develop well-managed viable ecosystems or known habitats of rare, threatened and endangered species, including wetlands.

CONCLUSIONS

All feasible measures needed to mitigate any potentially negative regional impacts associated with the proposed project should be implemented and monitored, as required by CEQA.

ENDNOTE

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

SCAG is a ***Joint Powers Agency*** established under California Government Code Section 6502 et seq. Under federal and state law, SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). SCAG's mandated roles and responsibilities include the following:

SCAG is designated by the federal government as the Region's ***Metropolitan Planning Organization*** and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. '134(g)-(h), 49 U.S.C. '1607(f)-(g) et seq., 23 C.F.R. '450, and 49 C.F.R. '613. SCAG is also the designated ***Regional Transportation Planning Agency***, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080.

SCAG is responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the ***South Coast Air Quality Management Plan***, pursuant to California Health and Safety Code Section 40460(b)-(c). SCAG is also designated under 42 U.S.C. '7504(a) as a ***Co-Lead Agency*** for air quality planning for the Central Coast and Southeast Desert Air Basin District.

SCAG is responsible under the Federal Clean Air Act for determining ***Conformity*** of Projects, Plans and Programs to the Air Plan, pursuant to 42 U.S.C. '7506.

Pursuant to California Government Code Section 65089.2, SCAG is responsible for ***reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans*** required by Section 65080 of the Government Code. SCAG must also evaluate the consistency and compatibility of such programs within the region.

SCAG is the authorized regional agency for ***Inter-Governmental Review*** of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A-95 Review).

SCAG reviews, pursuant to Public Resources Code Sections 21083 and 21087, ***Environmental Impact Reports*** of projects of regional significance for consistency with regional plans [California Environmental Quality Act Guidelines Sections 15206 and 15125(b)].

LAS VIRGENES MUNICIPAL WATER DISTRICT
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Dedicated to Quality Service

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MEMBER AGENCY OF THE
METROPOLITAN WATER
DISTRICT
OF SOUTHERN CALIFORNIA

June 12, 2000

RECEIVED
JUN 19 2000
REGIONAL PLANNING
L.A. COUNTY

Los Angeles County Department
Of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012

Attention: **Tabitha Lam**

Subject: **Notice of Completion and Initial Study on Tentative Tract Map 53138**

Dear Ms. Lam:

We are in receipt of a Notice of Completion and Initial Study concerning Tentative Tract No. 53138. The project is located in the Twin Lakes area of Chatsworth north of the 118 freeway between Topanga Canyon Boulevard and Canoga Avenue. The project consists of 222 acres to be done in several phases. The Twin Lakes project will consist of 150 homes, while the Deer Lake phases will encompass 375 homes. There would be a total build out of 525 units. As stated in the report, Las Virgenes Municipal Water District will be the purveyor of potable water to this project. Our distribution system currently serves the southerly portion of the site and that the project will be required to reconstruct portions of the existing distribution mains from the Twin Lakes tanks to Topanga Canyon Boulevard. A Preliminary Water System Design Report must be prepared by LVMWD, at developer expense, to provide specific design parameters for this new system.

The EIR should address in detail the total water demand of the project and the resultant impact on the District's ability to serve the project. This impact should address the following:

1.) Planned water demand based on the current County Land Use versus what is prepared by this development.

2.) A comparison of this project's water demand with the District's Potable Water Master Plan.

3.) Impact on the District's ability to purchase additional water from Imported sources (Metropolitan Water District of Southern California).

The District would advocate strict water conservation measures as a condition of project approval. This would include, but not be limited to, fixture design and installation (use of low flow toilets and showerheads),

use of drought tolerant plantings and efficient irrigation systems and techniques.

The developer must also pay the appropriate connection fees for the subject tract and any other related fees.

Los Angeles County sewers would collect sewage for ultimate treatment by the City of Los Angeles. However, the developer would be required to pay sewer connection fees to the District since the tract lies within district boundaries

If you have any questions concerning this matter, please feel free to contact me at any time. Thank you.

Very truly yours,

C. Eugene Talmadge, RA
Planning Administrator

NLC:nlc

Bcc: Jim Colbaugh

South Coast
Air Quality Management District
AQMD
21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 · http://www.aqmd.gov

RECEIVED
JUN 22 2000
REGIONAL PLANNING
L.A. COUNTY

June 20, 2000

Ms. Tabitha Lam
Los Angeles County Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012

Dear Ms. Lam:

Notice of Preparation of an Environmental Impact Report
Chatsworth Ridge

The South Coast Air Quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The AQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR).

Air Quality Analysis
The AQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The AQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the AQMD's Subscription Services Department by calling (909) 396-3720.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be considered. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the evaluation. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures
In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the AQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additionally, AQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Pursuant to state CEQA Guidelines Section 15126 (c), any impacts resulting from mitigation measures must also be discussed.

Data Sources
AQMD rules and relevant air quality reports and data are available by calling the AQMD's Public Information Center at (909) 396-3600. Much of the information available through the Public Information Center is also available via the AQMD's World Wide Web Homepage (http://www.aqmd.gov).

The AQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Dr. Charles Blankson, Transportation Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:li

LAC000607-08L1
Control Number

APPENDIX A.3

COMMENTS FROM COUNTY OF LOS ANGELES DEPARTMENTS

COUNTY OF LOS ANGELES
DEPARTMENT OF HEALTH SERVICES
Public Health

FRED LEAF
Acting Director of Health Services

JONATHAN E. FIELDING, M.D., M.P.H.
Director of Public Health and Health Officer

Environmental Health
ARTURO AGUIRRE, Director

Bureau of Environmental Protection
Environmental Hygiene
510 South Vermont Avenue, Room 124
Los Angeles, California 90020
TEL (213) 738-4078 • FAX (213) 639-1809
www.lapublichealth.org/eh/progs/envirp

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Third District

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Fourth District

Michael D. Antonovich
Fifth District

August 20, 2001

Mr. Kerwin Chih
Los Angeles County Department of Regional Planning
Impact Analysis Section
320 West Temple Street
Los Angeles California 90012

RE: **Review of Environmental Impact Report 99 - 239**

Dear Mr. Chih:

This is to inform you that upon review of all documents forwarded to our program by you and investigation of the proposed project location, Chatsworth Ridge States, it appears that the project will not have a significant noise impact upon surrounding properties, however lots 1 thru 11 and 61 -69 will be impacted by their proximity to the SR-118. These lots will be exposed to noise levels above the 65 dB-A exterior noise standard. The following recommendations and comments are therefore presented to minimize noise exposure to the future tenants at the above location:

The topography, location and heavy vegetation of the lots away from the SR-118 are factors that contribute to the natural attenuation properties of the site.

Compliance with the Los Angeles County Noise Ordinance Section 12.08.440 will limit noise exposure to the surrounding residential dwellings.

A solid cement block shall be placed between the rear yards of lots 1 - 11 and 61 - 69 and the SR-118. The wall shall be as high as 8 feet but not less than 6 feet.

Exterior walls would be 2x4 feet wood frame construction, with 7/8 stucco on the exterior,

½ inch gypsum board on the interiors, and R-13 (minimum) in the cavity for lots 1-11 and 61-69.

Residential units located with exposure to SR-18 would have minimal window surface area. All windows would be mounted with low air-infiltration rate frames (0.5 cfm / foot or less per ANSI specifications).

Sliding glass doors on lots 1-11 and 61-69 would have a minimum sound transmission class of 34.

Roof or attic vents for lots 1 - 11 and 61-69 would be located away from the SR-118 or baffled.

All second floor windows in lots exposed to more than 65 dBA and facing the SR-113 shall be glazed with 1/4" laminated glass.

Second floor balconies are not recommended for structures with line of sight to the SR-118.

Air conditioning should be standard for the 1-11 and 61-69 lots.

All recommendations are based on the acoustical analysis prepared by Giroux and Associates and by the Environmental Hygiene Program own observations and measurements.

If you have any further questions, please contact Evenor Masis at (213) 739 - 6232.

Cole Landowski, M.S. CIH
Head, Environmental Hygiene Program

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-133
Telephone (626) 458-5100

JAMES A. NOYES, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

August 28, 2001

IN REPLY PLEASE REFER TO FILE. WM-4

TO: James E. Hartl, AICP
Planning Director
Department of Regional Planning

Attention Kerwin Chih

FROM: James A. Noyes
Director of Public Works

RESPONSE TO AN ENVIRONMENTAL IMPACT REPORT
CHATSWORTH RIDGE PROJECT NO. 99-239(5)
CITY OF CHATSWORTH

Thank you for the opportunity to provide comments on an Environmental Impact Report for the proposed Chatsworth Ridge Project No. 99-239(5). We have reviewed the submittal and offer the following comments:

Environmental Programs

The existing hazardous waste management (HWM) facilities in this County are inadequate to handle the hazardous waste currently being generated. The proposed project may generate household hazardous waste that could adversely impact existing HWM facilities. This issue should be addressed and mitigation measures provided.

Should any operation within the subject project include the construction/installation, modification or removal of underground storage tanks, industrial waste control or disposal facilities, and/or stormwater treatment facilities, our Environmental Programs Division must be contacted for required approvals and operating permits.

Post-it® Fax Note 7671	Date 8/28/01	# of pages ▶ 3
To Kerwin Chih	From Craig David	
Co./Dept. Regional Planning	Co. Public Works	
Phone #	Phone #	
Fax # 213 1026-0434	Fax # 626-457-1526	

Land Development (Geology and Soils)

The proposed project will not have significant environmental effects from a geology and soils standpoint. The project is located within a mapped potentially liquefiable area, per the State of California Seismic Hazard Zone Map, Oat Mountain Quadrangle. However, liquefaction analysis is not warranted at this time. Detailed liquefaction analyses, conforming to the requirements of the State of California Division of Mines and Geology, Special Publication 117, must be conducted at the tentative map and/or grading/building plans stages.

If you have any questions, please contact Mr. Amir Alam at (626) 458-3883.

Land Development (Grading and Drainage)

The applicant shall comply with the requirements of the Standard Urban Stormwater Mitigation Plan which was approved on March 6, 2001, to the satisfaction of Public Works.

If you have any questions, you may contact Mr. Perfecto Tobias at (626) 458-4921.

Land Development (Transportation Planning)

The proposed project may impact Canoga Avenue, a second highway, and Browns Canyon Road; a major highway on the County Highway Plan requiring 80 feet of right of way (40 feet from the centerline) and 100 feet of right of way (50 feet from the centerline) plus necessary slope easements, respectively.

If you have any questions, please contact Mr. Hubert Seto at (626) 458-4349.

Waterworks and Sewer Maintenance

The Consolidated Sewer Maintenance District is responsible for the operation and maintenance of the local sewers within the project area. The proposed project is subject to annexation to the Consolidated Sewer Maintenance District.

Watershed Management

The proposed project should include investigation of watershed management opportunities to maximize capture of local rainfall on the project site, minimize or eliminate incremental flows to the storm drain system, and provide filtering of flows to capture contaminants originating from the project site.

If you have any questions regarding these comments or the environmental reviewing process, please contact Ms. Massie Munroe at the address on the first page or at (626) 458-4359.

MM:sw
C:\Drainage\Mm\118.wpd

RECEIVED
AUG 21 2001
REGIONAL PLANNING
L.A. COUNTY

August 15, 2001

TO: Rod Kubomoto
Watershed Management Division

FROM: John T. Walker
Traffic and Lighting Division

DRAFT ENVIRONMENTAL IMPACT REPORT
TRAFFIC IMPACT STUDY (MARCH 22, 2001)
CHATSWORTH RIDGE ESTATES
TENTATIVE TRACT 53138
CHATSWORTH AREA

As requested, we have reviewed the transportation/traffic section of the above-mentioned document. The proposed project is located north of the Ronald Reagan (SR-118) Freeway, between Topanga Canyon Boulevard and Canoga Avenue, in the Chatsworth area of unincorporated County of Los Angeles.

The proposed project is for 538 single-family residential units. The project at its build-out in the Year 2005 is estimated to generate approximately 4,874 vehicle trips daily with 387 and 40 vehicle trips during the a.m. and p.m. peak hours, respectively.

This study assumes a revised build-out year of 2005. Our previous comments, dated March 29, 2001 (copy attached), are still valid and applicable with the following additional comments to the unsigned and undated signing and striping plan titled Topanga Canyon Boulevard/Poema Place at Westbound SR-118 On/Off Ramps submitted on March 26, 2001.

- Show jurisdictional boundary lines and signature blocks for all required agencies involved.

- Exclude contour lines. Clearly show and label all signs to be removed, installed, or relocated. Clearly show and label all existing striping and markings to be removed. Show all existing striping as dashed. Show and label all existing and proposed striping and markings.

- East approach of Topanga Canyon Boulevard at SR-118 westbound ramps should show lane configurations as two left-turn lanes and one shared through/right-turn lane.

- The proposed striping of the median for the south approach of Topanga Canyon Boulevard at SR-118 westbound ramps does not provide adequate turning radius from the inner left-turn lane onto the westbound on-ramp. A 45-foot turning radius is required.

- Provide crosswalks across east and west approaches of Topanga Canyon Boulevard at Mayan Drive and Poema Place, since pedestrian crosswalk was provided across the ramps.

We have the following comments to the concept traffic signal plan title Topanga Canyon Boulevard/Poema Place at Westbound SR-118 On/Off Ramps and the Synchro 5 analysis submitted on June 14, 2001.

- The proposed signal phase diagram should be modified as shown in red on the submitted plan (copy picked up by consultant). The current proposed signal phase diagram shows the northbound left-turn and westbound through movements occurring concurrently at Topanga Canyon Road/SR-118 Freeway westbound ramps. Our proposal eliminates this conflict. In addition, as previously mentioned for the striping plan above, provide crosswalks across east and west approaches of Topanga Canyon Boulevard at Mayan Drive and Poema Place, since a pedestrian crosswalk was provided across the ramps.

- Due to the close proximity of the two intersections, they will be required to be controlled by one traffic signal controller. Based on the predicted volumes and the Synchro 5 analysis, we concur that the intersection will be able to operate with a 90 second cycle. However, the 90 second cycle length is at capacity with the predicted p.m. peak hour volumes. An increase in future traffic volume at the intersection will cause significant delays and longer vehicle queues. As previously recommended, Mayan Drive and Poema Place should be relocated at least 350 feet, from centerline to centerline, from the SR-118 Freeway westbound ramps to handle any future increase in traffic volume and allow a cycle length less than 90 seconds. A smaller cycle length would reduce the overall intersection delays and vehicle queues.

We recommend the City of Los Angeles and the State of California Department of Transportation review this document for impacts/mitigations within their jurisdictions.

If you have any questions, please contact Suen Fei Lau of our Traffic Studies Section at Extension 4820; for questions regarding geometric design, please contact Rick Diaz of our Traffic Design Section at Extension 4786; for questions regarding signal design and timing, please contact Sam Chinn of our Traffic Systems Section at Extension 4718.

GS:vm
T-4/EIR01172

Attach.

cc: T. M. Alexander
Linscott, Law and Greenspan, Engineers (Alfred Ying)
Land Development (Ruiz)
Regional Planning (Tabitha Lam)
Traffic and Lighting (Munoz, Chinn)

March 29, 2001

T-2

Mr. David S. Shender
Linscott, Law and Greenspan, Engineers
234 East Colorado Boulevard, Suite 400
Pasadena, CA 91101-2212

Attention Mr. Alfred Ying

Dear Mr. Shender:

TRAFFIC IMPACT STUDY (NOVEMBER 20, 2000)
CHATSWORTH RIDGE ESTATES
TENTATIVE TRACT 53138
CHATSWORTH AREA

We have reviewed the above-mentioned document. The proposed project is located north of the Ronald Reagan (SR-118) Freeway between Topanga Canyon Boulevard and Canoga Avenue in the Chatsworth area of unincorporated Los Angeles County.

The proposed project is for 538 single family residential units. The project at its build out in the Year 2003 is estimated to generate approximately 4,874 vehicle trips daily with 387 and 490 vehicle trips during the a.m. and p.m. peak hours, respectively.

We agree with the report the traffic generated by the project alone will significantly impact the following County intersections. We recommend the following mitigation measures be the sole responsibility of the project.

Topanga Canyon Boulevard at Mayan Drive/Poema Place

East Approach: One left-turn lane and one shared through/left-turn lane (add one left-turn lane).

South Approach: One left-turn lane and one exclusive right-turn lane (convert shared left-/right-turn lane to a left-turn lane and add one exclusive right-turn lane).

Install traffic signals.

We do not recommend the traffic signals be connected to the City of Los Angeles Department of Transportation Automated Traffic Surveillance and Control System (ATSAC)

Topanga Canyon Boulevard/SR-118 Westbound Ramps

North Approach: Two through lanes and one right-turn lane (add exclusive right-turn lane).

East Approach: Two left-turn lanes and one shared through/right-turn lane (add second left-turn lane and convert shared left/through/right-turn lane to shared through/right-turn lane).

Install traffic signals.

We do not recommend the traffic signals be connected to the City of Los Angeles Department of Transportation ATSAC.

We have the following comments to the unsigned and undated signing and striping plan for Topanga Canyon Boulevard/Poema Place at the westbound SR-118 on/off ramps submitted on December 13, 2000:

- We recommend Poema Place/Mayan Drive be moved northerly so that the spacing between SR 118 westbound on-off ramps and Poema Place/Mayan Drive intersection be at least 350 feet from centerline to centerline. The plan as submitted requires a long signal operation cycle length and the State of California Department of Transportation (Caltrans) would not allow a cycle length longer than 90 seconds because the delays would result in traffic backing up on the off ramp.

- Label the east approach of the intersection as Mayan Drive.

- Submit revised signing and striping plans along with detailed signal plans to Public Works for review and approval. If the relocation is not feasible or not adopted then traffic signal plans for the two intersections as shown in the current signing and striping plan should be prepared and submitted to Public Works and Caltrans for review and approval. The two traffic signals should be coordinated to facilitate the continuous movement of traffic and minimize vehicle queues on the SR-118 westbound off-ramp.

The May 4, 2000, Tract Map shows the SR-118 off-ramp at Topanga Canyon Boulevard realigned to connect with Mayan Drive. We have been informed that this proposal is no longer being considered. A new proposal as of February 15, 2001, was submitted for review. Our Traffic Design Section will be providing review and comments on the new proposal as soon as they become available.

We recommend Caltrans and the City of Los Angeles review this document for impacts/mitigations within their jurisdictions.

If you have any questions, please contact Mr. Suen Fei Lau of our Traffic Studies Section at (626) 300-4820; for questions regarding geometric design, please contact Mr. Rick Diaz of our Traffic Design I Section at (626) 300-4786.

Very truly yours,

JAMES A. NOYES
Director of Public Works

JOHN T. WALKER
Assistant Deputy Director
Traffic and Lighting Division

:rj

GS:rj
T-2/EIR00282

bc: Caltrans District 7 (Stephen Buswell)
Department of Regional Planning (Tabitha Lam)

cc: T. M. Alexander
Land Development (Ruiz)
Watershed Management (Kubomoto)
Traffic and Lighting (Munoz)

County of Los Angeles Public Library
7400 East Imperial Hwy., P.O. Box 7011, Downey, CA 90241-7011
(562) 940-8461, TELEFAX (562) 803-3032

Library

August 17, 2001

Kerwin Chih, Section Head
Los Angeles County Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

SCREENCHECK EIR AND REQUEST FOR COMMENTS
Chatsworth Ridge
Project No. 99-239 (5)
SCH. No. 2000061049

This letter is in response to the request for comments on the above-referenced project. We have reviewed the documents, and following is our assessment of the impact of this proposed project with regard to library services.

The project area would be primarily served by the County of Los Angeles Las Virgenes Bookmobile, which is part of the County's Las Virgenes Library, located at 29130 West Roadside Drive, Agoura Hills, CA 91301. The Las Virgenes Bookmobile has a collection of 8,521 items consisting of books, audio/video recordings, software, magazines, and periodicals. The Bookmobile serves an estimated 2,750 residents in the Chatsworth Ridge area.

The Las Virgenes Library is a 7,523 square foot building that serves an estimated population of 27,508 residents. It has a collection of 107,624 items consisting of books, pamphlets, audio/video recordings, software, magazines, periodicals, books on tape, reference materials, and laser discs.

In addition, we recommend the following changes to the Draft EIR:

Page S-17

Table / Environmental Impact / Libraries

First paragraph, please **change** to read as follows:

> Los Angeles County Ordinance requires that new residential subdivisions pay a Library Facilities Mitigation Fee to ensure that new projects mitigate impacts to library facilities in unincorporated areas. The developer would pay the applicable fees to offset potential impacts to area libraries.

Page 4.11-1

Public Services - Libraries / Environmental Impact / Significance Threshold

First Bullet: **change** 0.35 to **0.389 gross square feet per capita . . .**

Page 4.11-2

Project Impact

First paragraph, second sentence: **change** (**$606 . . .** to **($626 or the fee in effect at the time, when the permits are pulled, per residential unit for the project area) . . .**

First paragraph, third sentence: **delete** all references to the Chatsworth Library which provides services to Los Angeles City residents and replace with information for the County's Las Virgenes Library and Bookmobile which provides library service for the unincorporated Chatsworth Ridge area.

Thank you for the opportunity to provide comments regarding this project. If you have any questions or need additional information, please contact Amelia McNeal at (562) 940-8455.

Very truly yours,

Fred Hungerford
Assistant Director

FH: am

a: David Flint
Sandy Duncan

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294
(323) 890-4330

RECEIVED
SEP 5 2001
REGIONAL PLANNING
L.A. COUNTY

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

August 28, 2001

Mr. Kerwin Chih
Impact Analysis Section
Department of Regional Planning
320 West Temple Street
Los Angeles, CA 90012

Dear Mr. Chih:

NOTICE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE CHATSWORTH RIDGE ESTATES – SECOND SCREENCHECK DRAFT (EIR #1197/2001)

We have reviewed the Draft Environmental Impact Report for the Chatsworth Ridge Estates project. The project is located in the community of Chatsworth north of the 118 freeway. This draft has been reviewed by the Planning, Land Development, and Forestry Divisions of the County of Los Angeles Fire Department. The following are their comments:

PLANNING:

Section 4.8, Fire Protection, requires a few corrections or clarifications. The 1999 response activity cited for Station 75 includes all of the station's responses, not just those in the project area (page 4.8-1, 3rd paragraph).

At the bottom of page 4.8.4 the text states: "Fire protection and emergency access from Station 75 would be provided via Topanga Canyon Boulevard. Under current conditions, the average response time is 7.1 minutes." This is a misleading and conflicting statement. As the document points out elsewhere, the response time of 7.1 minutes is the countywide average for all rural areas; the response time from Station 75 to the center of the project is approximately 16 minutes. This is correctly noted in the second paragraph under the section "Project Impact" on this same page.

Appendix A, Notice of Preparation/Comments on NOP, does not include any of the letters from the County of Los Angeles Fire Department, though several are referenced in the document.

Due to the projected response times to the project area, the Fire Department will require the developer to provide a helispot for fire suppression and medical evacuation/transportation in an area approved by the Fire Department. The helispot shall have a 20' wide paved access and a fire hydrant on-site. The helispot must be graded with a graded pad that is approximately 200' by 200', and 2" rock must be laid on the graded area for dust abatement. Developer should contact the Fire Department's Planning Section at (323) 881-2404 for specific requirements and location for helispot.

It may be appropriate to have the Los Angeles (City) Fire Department review this document for accuracy and completeness.

GENERAL REQUIREMENTS:

The projected use of the proposed development may necessitate multiple ingress/egress access for the circulation of traffic, and emergency response issues.

The Department may condition future development to provide additional means of access.

The development of this project must comply with all applicable code and ordinance requirements for construction, access, water mains, fire flows and hydrants.

This property is located within the area described by the Forester and Fire Warden as a Fire Zone 4, Very High Fire Hazard Severity Zone (VHFHSZ). All applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans, must be met.

Specific fire and life safety requirements for the construction phase will be addressed at the building fire plan check. There may be additional fire and life safety requirements during this time.

Every building constructed shall be accessible to Fire Department apparatus by way of access roadways with an all weather surface of not less than the prescribed width, unobstructed, clear-to- sky. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

When a bridge is required to be used as part of a fire access road, it shall be constructed and maintained in accordance with nationally recognized standards and designed for a live load sufficient to carry a minimum of 75,000 pounds.

The maximum allowable grade shall not exceed 15% except where the topography makes it impractical to keep within such grade, and then an absolute maximum of 20% will be allowed for up to 150 feet in distance. The average maximum allowed grade, including topography difficulties, shall be no more than 17%. Grade breaks shall not exceed 10% in ten (10) feet.

When involved with subdivision, Fire Department requirements for access, fire flows and hydrants are addressed at the Los Angeles County Subdivision Committee meeting during the subdivision tentative map stage.

Fire sprinkler systems are required in some residential and most commercial occupancies. For those occupancies not requiring fire sprinkler systems, it is strongly suggested that fire sprinkler systems be installed. This will reduce potential fire and life losses. Systems are now technically and economically feasible for residential use.

SINGLE-FAMILY DWELLING UNITS:

Single-family detached homes shall require a fire flow of 1,250 gallons per minute at 20 pounds per square inch residual pressure for a two-hour duration.

Fire hydrant spacing shall be 600 feet and shall meet the following requirements:

1. No portion of lot frontage shall be more than 450 feet via vehicular access from a public fire hydrant.

2. When cul-de-sac depth exceeds 450 feet on a residential street, hydrants shall be required at the corner and mid-block.
3. Additional hydrants will be required if hydrant spacing exceeds specified distances.

Fire Department access shall be provided to within 150 feet of all portions of the exterior walls of the first story of any single-unit. If exceeding 150 feet, provide 20 foot, paved width "Private Driveway/Fire Lane" to within 150 feet of all portions of the exterior walls of the unit

A Fire Department approved turning area shall be provided for all driveways exceeding 150 feet in length and at the end of all cul-de-sacs.

Streets or driveways within the development shall be provided with the following:

1. Thirty-six (36) feet in width on all collector streets and those streets where parking is allowed on both sides.
2. Thirty-four (34) feet in width on cul-de-sacs up to 700 feet in length. This allows parking on both sides of the street.
3. Thirty-six (36) feet in width on cul-de-sacs from 701 to 1,000 feet in length. This allows parking on both sides of the street.
4. For streets or driveways with parking restrictions: The entrance to the street/driveway and intermittent spacing distances of 150 feet shall be posted with Fire Department approved signs stating "NO PARKING – FIRE LANE" in three inch high letters. Driveway labeling is necessary to ensure access for Fire Department use.
5. Turning radii shall not be less than thirty-two (32) feet. This measurement shall be determined at the centerline of the road.
6. A Fire Department approved turning area shall be provided at the end of a driveway of 300 feet or more in length.

LIMITED ACCESS DEVICES (GATES, ETC.):

1. Any single gate used for ingress and egress shall be a minimum of twenty-six (26) feet in width, clear-to-sky.
2. Any gate used for a single direction of travel, used in conjunction with another gate, used for travel in the opposite direction, (split gates) shall have a minimum width of 20 feet each, clear-to-sky.
3. Gates and/or control devices shall be positioned a minimum of 50 feet from a public right of way, and shall be provided with a turnaround having a minimum of 32 feet of turning radius. If an intercom system is used, the 50 feet shall be measured from the right of way to the intercom control device.
4. All limited access devices shall be of a type approved by the Fire Department.
5. Gate plans shall be submitted to the Fire Department prior to installation. These plans shall show all locations, widths, and details of the proposed gates.

TRAFFIC CALMING MEASURES:

All proposals for traffic calming measures (speed humps/bumps, traffic circles, roundabouts, etc.) shall be submitted to the Fire Department for review, prior to implementation.

Should any questions arise regarding design and construction, and/or water and access, please contact Inspector Mike McHargue at (323) 890-4243.

OTHER ENVIRONMENTAL CONCERNS:

The statutory responsibilities of the County of Los Angeles Fire Department Forestry Division includes erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources and the County Oak Tree Ordinance.

The areas germane to the statutory responsibilities of the County of Los Angeles Fire Department have been addressed. However, the Department is still in the process of reviewing the Oak Tree Report for this project. This process is being delayed since the application was submitted without an accurate map. The County Forester and the Consulting Arborist were unable to determine specific impacts to the Oak resource within the project boundaries. Upon receipt of an accurate map, our response will be completed.

This project will require an EIR fee deposit of $1,000 payable to the Los Angeles County Fire Department at the time the DEIR is submitted for review (see enclosed). If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

DAVID R. LEININGER, ACTING CHIEF, FORESTRY DIVISION
PREVENTION BUREAU

DRL:sc

Enclosure

LOS ANGELES COUNTY FIRE DEPARTMENT
ENVIRONMENTAL REVIEW FEES & DEPOSITS

Effective September 11, 1991, whenever a review for impact on the fire prevention, natural resources, and/or fire resource allocation responsibilities of the Fire Department is required, as part of the environmental review process, the applicant shall pay a minimum deposit fee of $1,000 from which actual costs shall be billed and deducted. Additional deposits may have to be made if actual review costs exceed 80% of deposited funds. A larger deposit may be made for more complex projects to ensure prompt continuation of environmental review efforts. All unused funds shall be refunded to the applicant.

All Environmental Review Deposits should be made payable and sent to:

Los Angeles County Fire Department
1320 North Eastern Avenue
Los Angeles, CA 90063-3294
Attn: Fiscal Services Division, Room 225

If you have any questions regarding the Environmental Review Fee or Deposit amount, please call the Forestry Division at (213) 881-2481.

If you have any questions regarding your Environmental Review Deposit status, please contact the Fiscal Services Division at (213) 881-2322.

COUNTY OF LOS ANGELES
DEPARTMENT OF PARKS AND RECREATION

DATE: September 13, 2001

TO: Kerwin Chih
Department of Regional Planning
Impact Analysis Section

FROM: Mr. Larry R. Hensley
County of Los Angeles
Department of Parks and Recreation

SUBJECT: Second Screencheck Draft Environmental Impact Report
Chatsworth Ridge
Project No. 99-239 (5)
Conditional Use Permit/Oak Tree Permit No. 99239
Tentative Tract Map No. 53138
SCH. No. 2000061049

The Department of Parks and Recreation has reviewed the Second Screencheck Draft Environmental Impact Report For the proposed Chatsworth Ridge and hereby provides the following comments:

- Page 1-1: The project description states, there are 538 single family units and the Tract Map indicates there are 485 units. Please verify and correct this discrepancy.
- Page S-2: The first sentence states the four alternatives to the proposed project have been evaluated for environmental impacts section 5.0 including: Alternative 1 - No Project (No Construction), Alternative 2 - No Project (Certificate of Compliance Build-out), and Alternative 3 - Reduced Density. What is the fourth alternative?
- Page S-2: The fourth Sentence in the first paragraph under Alternative 3- Reduced Density, "re" = "be"?
- Page S-3: Summary of Environmental Impacts - states that as shown in Table S-1, implementation of the proposed project would

not result in significant impacts. Do you mean that the proposed project would not result in unavoidable significant impacts because the project does result in significant impacts, however with the implementation of mitigation measures, the significance decreases to a less significant impact.

- Page S-4 — The last sentence of mitigation measure 4.1-2 does not make sense.

- Page S-4 — Unavoidable Impacts after mitigation - for all statements that state "no unavoidable significant impacts with the implementation of the proposed project". Include which specific impact area you are discussing. For example, "No unavoidable significant impacts **to Aesthetics/Visual** would result with the implementation of the proposed project"

- Page S-5 — The last sentence of mitigation measure 4.2-2.. should say "trucks", not "tricks."

- Page 1-4 — The Population/Housing/Employment/Recreation component of Section 1.0 Project Description (Year 2001), should disclose that the county of Los Angeles is currently experiencing a deficit in regional park acreage as documented in *A Parks and Recreation Strategic Plan for 2010* (May 1992). As indicated in the Park Obligation Reports for Tentative Map # 53138, the Proposed project fulfills the requirement for the local parks through a payment of in-lieu fees. However the *County of Los Angeles General Plan* (1980) also requires 6 acres of regional park facilities for every 1,000 residents. Therefore, the project will contribute to the significant cumulative deficit of regional park acreage, thus requiring mitigation. The dedication of the required trail easement (a regional facility will lesson the impacts of the cumulative deficit to a less than significant level.).

- Section 4: — It is necessary to include more specific details in all of the prescribed mitigation measures. Each mitigation measure should include the following information: (1) the party of agency responsible for the implementation of the measure, (2) the agency that is responsible for enforcing the measure, (3) the agency that is responsible for the monitoring of the

activity described in the measure, and (4) the starting point and complete period of time that is required for the monitoring of each measure.

If you have any questions or comments regarding this matter, Please contact Ms. Lillie Lowery, Departmental facility Planner at (213) 738-2977

Sincerely,

Larry Hensley
Acting Chief of Planning

c: Mark Melinkoff
Frank Gonzalez, DPR

County of Los Angeles
Sheriff's Department Headquarters
4700 Ramona Boulevard
Monterey Park, California 91754-2169
(818) 878-1808

LEROY D. BACA, SHERIFF

October 10, 2001

Kerwin Chih, Impact Analysis Section Head
Los Angeles County Department of Regional Planning
380 West Temple Street, Room 1348
Los Angeles, CA 90012

Dear Mr. Chih:

Re: Second Screen Check, Draft EIR for Chatsworth Ridge, Project #99-239(5)

We have reviewed the draft Environmental Impact Report (EIR) submitted for the above project. Chatsworth Ridge is a proposed residential development of five hundred thirty-eight (538) single-family homes in currently rural terrain in unincorporated Los Angeles County. As the report suggests, this project and other projects in the area will necessitate the deployment of additional law enforcement personnel to service the area.

The use of ratios of peace officers to population is a simplistic means of determining staffing levels and works best in an urban environment where there are multiple officers on duty in an area and available to respond to calls. This is clearly not the case with this location. Due to the distance of this location from the other areas served by the Malibu/Lost Hills Sheriff's Station, even with the additional staffing suggested in the EIR, there will probably be some degradation in response times upon build-out of all the projects in the area. This is a result of the distance to be traveled from other areas served by Malibu/Lost Hills Sheriff's Station and the ever increasing traffic delays on the major arterial roadways in the City of Los Angeles needed to access this site. The traffic report which is part of this EIR concedes many of the intersections used to access this project will be gridlocked (Level of Service F) by the time this project is completed.

Mitigation measures that may be considered for this project include:

1) Crime prevention by design. The residences should be designed so as to minimize opportunistic crimes against property. Good sight lines; exterior lighting; sound landscape design; and strong exterior doors, windows, and locks all contribute to this end. This may entail a review of building plans by a crime prevention deputy as part of the plan check process.

2) Since one of the largest wastes of law enforcement time involves responding to false residential burglary alarms, it may be appropriate to consider having all the residential alarms in this project serviced by one company (perhaps through the HOA). Many alarm companies fail to properly maintain their systems since they do not fear losing a lone account. Given this would be a 538 unit account contract, there would be greater leverage on the company to take the elimination of false alarms seriously.

3) Design culverts, channels, debris basins and other public works-type facilities to minimize their attractiveness as places for youth to congregate. This may include fencing, lighting, and designing the facilities to make them less desirable (i.e. using rough concrete to discourage skateboards.)

4) Those items listed in mitigation measure 4.9 -1 of the draft EIR should include a review of street names for duplications, similar names, etc. . . to avoid confusion in dispatching emergency calls to public safety agencies.

Implementation of these measures, coupled with additional staffing, will help to mitigate the impacts this project will present for law enforcement agencies.

I appreciate the opportunity to participate in this process and hope that it may result in an even better project than first suggested. If you have any questions, please contact me or Sergeant Kevin Mauch at (818) 878-1808.

Sincerely,

LEROY D. BACA, SHERIFF

James N. Glazar, Captain
Malibu/Lost Hills Station

APPENDIX B

LAND USE INTERPRETATION MEMORANDUM

Hartman, John

From:	Malone, George
Sent:	Monday, January 24, 2000 6:35 PM
To:	Sanabria, Jon; Holt, Pam; Culbertson, Don
Cc:	Hartman, John
Subject:	Chatsworth Ridge Estates: Land Use Interpretation

In response to a directive from Mr. Sanabria, I have reviewed the General Plan policy regarding Rural Communities with respect to a proposed development within the Deerlake Highlands Rural Community and submit the following comments.

The issue regarding the Chatsworth Ridge Estates, the name of the proposed development, is over whether the Rural Community land use designation would allow infill densities at low Urban 1 densities. The most relevant passages from the Land Use Element is found on page LU-17 (Background Report) and reads as follows:

"In most instances, the Rural Communities depicted will experience little significant growth by the year 2000. Where further development does occur, it should be of an "infill" nature, consistent with existing community character and service levels. The intent of plan policy is to permit such future development at non-urban, and in some instances, low urban intensities....

"Review and approval of a specific site plan shall be required within these special Rural Communities to assure the appropriateness of a development proposal in terms of its character, scale and design. Part of this design review shall include an evaluation of fire protection since some of these communities are located in high fire hazard areas and are remote from urban-type services...."

Based on the foregoing, I recommend that staff determine that a proposal in the Rural Community land use category at low urban densities (up to 6 units per acre) could be found consistent with the General Plan, and that the most appropriate form of case review is the filing of a new subdivision and conditional use permit which would allow compliance with the General Plan requirement to ensure adequate hazard mitigation in such areas and the provision of appropriate services and infrastructure requirements.

In do not plan any further write-up of this position.

I was informed by Chuck Moore today that the property owner/potential applicant is anxious to hear from us regarding our position.

George Malone

The remaining two legend items (i.e., Rural Communities and Significant Ecological Areas) reflect key land development and management concepts of the Plan, and directly influence future land use and development activities within the areas covered. They are identified on the Land Use Policy Map to graphically link selected general development, conservation, open space and land use policies, and to illustrate areas in which various conditions and standards for development will apply. Due to graphic limitations, the various types of Special Management Areas identified in the Conservation and Open Space Element are not reflected on the Land Use Policy Map. They are however, addressed in later sections of this chapter (see General Conditions and Standards for Development).

J. Rural Communities

As described in the General Goals and Policies Chapter, Rural Communities are essentially clustered non-urban settlements served by a non-urban level of commercial and public facilities. These communities vary in terms of size and intensity of development, and range in function from rustic bedroom communities within or near highly urbanized communities, to focal points or activity nodes serving more dispersed non-urban areas.

In most instances, the Rural Communities depicted will experience little significant growth by the year 2000. Where further development does occur, it should be of an "infill" nature, consistent with existing community character and service levels. The intent of Plan policy is to permit such future development at non-urban, and in some instances, low urban intensities.

There are instances, however, where identified Rural Communities are associated with existing or emerging regional recreational areas (Gorman, Wrightwood, Mount Baldy Village, and the Santa Catalina Island Two Harbors areas are prime examples[5]). In these cases, provision of visitor accommodations and services may accelerate normal community growth. Such development may be appropriate within the Rural Community classification, providing that it is compatible with the recreational and natural resource assets of the area, and does not create a demand for public investment in major urban service systems.

Review and approval of a specific site plan shall be required within these special Rural Communities to assure the appropriateness of a development proposal in terms of its character, scale and design. Part of this design review shall include an evaluation of fire protection since some of these communities are located in high fire hazard areas and are remote from urban-type services. Special design and development standards need to be included in the planning and construction phases. In reviewing and approving such projects, the County shall consider the fire standards set forth in the "Fire Safe Guides for Residential Development in California,"

5 *The Two Harbors area will be the subject of a detailed plan, to be included as part of the Local Coastal Program for Santa Catalina Island.*

prepared by the California Department of Forestry. The specific standards will be recommended by the Los Angeles County Forester and Fire Warden. Consideration shall be given to access/traffic conditions, street and building identification, roadside vegetation, water supply, roofing, building construction standards, vegetation clearance, and building spacing and densities.

K. Significant Ecological Areas

The Significant Ecological Areas classification (SEA) identifies lands having important biological resources. This classification, as set forth in the Conservation and Open Space Element, includes habitats of rare and endangered species, sites with critical fish and wildlife values, relatively undisturbed areas of typical natural habitat and regionally scarce biotic resources.[6] The intent of the countywide General Plan is to preserve and enhance, to the extent possible, SEAs for the benefit of prevent and future County residents.

In addition to regulated scientific study and limited recreational activities, a range of more intensive uses may be permitted within SEAs where it can be demonstrated by a detailed biotic survey and project analysis that the proposed development is highly compatible with the resource values present. In the absence of specific project proposals and detailed biotic data, the countywide Land Use Element has not attempted to identify, in other than the most general terms, appropriate use types and intensities within significant ecological areas. The Element does however set forth the general process and criteria for evaluating specific use proposals as they arise (see General Conditions and Standards for Development).

6 *The Significant Ecological Area/Habitat Management classification includes Buffer Areas depicted on the Special Management Areas Policy Map of the Conservation and Open Space Element.*

APPENDIX C

MEMORANDUM OF UNDERSTANDING

County of Los Angeles
CHIEF ADMINISTRATIVE OFFICE
LEASING AND SPACE MANAGEMENT
550 SOUTH VERMONT AVENUE, 10TH FLOOR - LOS ANGELES, CALIFORNIA 90012
(213) 738-2301

DAVID E. JANSSEN
Chief Administrative Officer

Board of Supervisors
GLORIA MOLINA
First District
YVONNE BRATHWAITE BURKE
Second District
ZEV YAROSLAVSKY
Third District
DON KNABE
Fourth District
MICHAEL D. ANTONOVICH
Fifth District

December 10, 1997

Paul Edelman
Northern Division Deputy Chief
Santa Monica Mountains Conservancy
5750 Ramirez Canyon Road
Malibu, CA.90265

Dear Mr. Edelman:

SALE OF COUNTY-OWNED DEERLAKE HIGHLANDS PROPERTY

On December 9, 1997, the County Board of Supervisors approved the sale of the County-owned lots located in the Deerlake Highlands area to the Mountains Recreation and Conservation Authority as designee of the Santa Monica Mountains Conservancy.

We are prepared to issue a quitclaim deed to complete this transaction at such time as a check in the amount of $1,150,00 is received made payable to the County of Los Angeles.

We also request that you advise us in writing as to how title to this property shall be vested on the deed.

If you have any questions, please call me at (213) 738-2319.

Very truly yours,

Greg Merrel
Real Property Agent

c. Hans Giraud

DEEDTRAN

Date

The Honorable Board of Supervisors
County of Los Angeles
383 Kenneth Hahn Hall of Administration
500 West Temple Street
Los Angeles, CA 90012

Dear Supervisors:

CONVEYANCE OF COUNTY SURPLUS REAL PROPERTY TO THE STATE OF CALIFORNIA SANTA MONICA MOUNTAINS CONSERVANCY DEERLAKE HIGHLANDS AREA (FIFTH DISTRICT) (4 VOTES)

IT IS RECOMMENDED THAT YOUR BOARD:

1. Make a finding that all County-owned lots located in the DeerlakeHighlands area, shown on the attached map and legally described in Exhibit "A", are not required for County use.

2. Make a finding that the sale of this property to the Santa Monica Mountains Conservancy is exempt under CEQA.

3. Approve the sale of this property to the Santa Monica Mountains Conservancy for the sum of $1,150,000.

4. Instruct the Chairman to execute the quitclaim deed upon presentation by the Chief Administrative Office, and execute any other such deeds as may be necessary to convey all of the County's ownership in this area.

5. Authorize the Chief Administrative Office to execute all documents necessary to complete the sale transaction, upon approval by County Counsel.

6. Instruct the Auditor-Controller to deposit the net proceeds in the appropriate fund(s) as directed by the Chief Administrative Office.

PURPOSE OF RECOMMENDED ACTION:

During the 1950s and 1960s, the County acquired, through tax defaults, a large number of substandard subdivided lots in the Deerlake Highlands area. This holding now consists of approximately 1300 lots, which due to their location and physical characteristics, have been designated for Mountain Preserve purposes. As shown on the attached map, these properties are located northerly of the Simi Valley-San Fernando Valley (118) Freeway, in the foothills of the Santa Susana Mountains, west of the Brown's Canyon area. These lots exist as vacant, raw land without any infrastructure. The County's property has limited access, and is interspersed with privately owned lots.

Deerlake Highlands is within the Santa Monica Mountains zone, and the Conservancy, pursuant to Public Resources Code Section 32207, has the first right of refusal to acquire any publicly owned property that may be declared excess by a public agency. The Conservancy has approached the County and expressed its interest in acquiring this property in order to effect an exchange with a private developer. This transaction will enable the Conservancy to gain ownership and control of other ecologically sensitive acreage in the area.

JUSTIFICATION:

This Office has evaluated the County's Mountain Preserve Program, and has determined that this conveyance to the Conservancy is consistent with the Program's original intended purpose. While the majority of the County property would eventually be developed with residential estates, the surrounding acreage acquired by the Conservancy in exchange with the developer, would be dedicated to the preservation of mountainous open space for continued wildlife use as a corridor to the Browns Canyon area. The Conservancy would retain some of the County lots totaling approximately 14 acres, which would connect the City of Los Angeles's open space in the Brown's Canyon area with that open space dedicated by the Porter Ranch development. In addition, the Conservancy will obtain ownership of 16 acres, which will provide a habitat linkage for maintaining the wildlife movement into the Stoney Point habitat area.

FISCAL IMPACT:

The Conservancy has agreed to pay the County the sum of $1,150,000. The exchange of the County's property by the Conservancy with a developer will restore these lots to the tax rolls. In addition, the tax values of all the property in this area will be enhanced when the developer consolidates all these substandard lots into residential estate parcels.

FACTS AND PROVISIONS:

The Santa Monica Mountains Conservancy, at its meeting of September 15, 1997, adopted Resolution No. 97 which; 1) found that the proposed acquisition and exchange will not have a significant adverse impact on the environment; 2) approved the Negative Declaration; 3) authorized the acquisition of the County lots in the Deerlake Highlands subdivision; and 4) approved a land exchange agreement between the Conservancy, Mountains Recreation and Conservation Authority, and the developer, Chatsworth Ridge Estates, Inc.

The value of $1,150,000 for the County's property was negotiated based on two separate appraisals. These valuations, one by an independent appraiser, and the other by the Valuation staff of the Department of Public Works, resulted in significantly lower value conclusions than the negotiated amount. This sum is full consideration for the conveyance of all County owned lots in this area, as set forth in Exhibit "A".

Public Resources Code Section 33207 grants the Conservancy the right of first refusal on any property within the Santa Monica Mountains zone presently owned by a public agency and scheduled for disposal as excess lands. The Code stipulates the Conservancy may purchase the property at the agency's original acquisition price plus any administrative and managements costs incurred by that agency.

The County acquired all these lots by various Tax Deeds which required the payment of one dollar plus advertising costs. The Conservancy is exercising its right of first refusal, but has agreed to pay the County fair market value to be funded by the private developer.

The sale of this property by the County is authorized by California Government Code Section 25365.

County Counsel has reviewed the proposed transaction, and approved all documents as to form.

IMPACT ON CURRENT SERVICES (OR PROJECTS):

There will be no impact on County services.

ENVIRONMENTAL IMPACT:

The sale of this property is categorically exempt under Class 12 of the State CEQA and the revised Environmental Document Reporting Procedures and guidelines adopted by your Board. However, the Conservancy prepared an environmental impact report for the acquisition of this property, and a Negative Declaration was approved at its Board meeting of September 15, 1997.

CONCLUSION:

The Executive Officer/Clerk of the Board is requested to return to the Chief Administrative Office, Leasing and Space Management, one copy of this stamped adopted Board letter, and the original quitclaim deed when executed by the Chairman upon preparation by the Chief Administrative Office and approval by County Counsel.

Respectfully submitted,

DAVID E. JANSSEN
Chief Administrative Officer

DEJ:SNY:
CB:GM

c. Executive Officer/ Clerk of the Board
County Counsel
Auditor Controller
Assessor

Attachments (2)

STATE OF CALIFORNIA—THE RESOURCES AGENCY

PETE WILSON, Governor

SANTA MONICA MOUNTAINS CONSERVANCY
STREISAND CENTER FOR CONSERVANCY STUDIES
5750 RAMIREZ CANYON ROAD
MALIBU, CALIFORNIA 90265
PHONE (310) 589-3200
FAX (310) 589-3207

November 14, 1997

VIA FACSIMILE

Mr. Greg Merrel, Real Property Agent
Chief Administrative Office
County of Los Angeles
550 South Vermont Avenue
Los Angeles, CA 90020

Deerlake Highlands Subdivision Surplus Property Sale

Dear Mr. Merrel:

On September 15, 1997 the Conservancy adopted a resolution approving the purchase of the subject County-owned lots in the Deerlake Highlands Subdivision (attached). Both because it is the Conservancy that statutorily has the first right of refusal, and because it is more advantageous for the Conservancy, rather than our joint powers entity the Mountains Recreation and Conservation Authority (MRCA), it is the Conservancy that will take title to all of the subject lots.

Because of the complexity our this agency's proposed transaction with Chatsworth Ridge Estates, it appears that our payment to the County and the transfer of the grant deeds would best be tied into an escrow. In addition, a condition for the close of that escrow shall be approval of the transfer by the State Public Works Board. That could extend the escrow period significantly depending on the date the item is considered by the Board.

If need be, we could explore the possibility of the MRCA being the Conservancy's designee for the transfer. I will research the practicability of that route on our end. Please call me at (310) 589-3200 if can provide any additional information.

Sincerely,

Paul Edelman
Northern Division Deputy Chief

September 15, 1997 - Item No. 12
Resolution No. 97

RESOLUTION OF THE SANTA MONICA MOUNTAINS CONSERVANCY TO APPROVE: (1) NEGATIVE DECLARATION FOR PROPOSED DEERLAKE HIGHLANDS SUBDIVISION LAND EXCHANGE WITH CHATSWORTH RIDGE ESTATES, INC.; (2) PURCHASE OF LOS ANGELES COUNTY SURPLUS LAND IN DEERLAKE HIGHLANDS SUBDIVISION; (3) LAND EXCHANGE AGREEMENT WITH CHATSWORTH RIDGE ESTATES, INC., AND THE MOUNTAINS RECREATION AND CONSERVATION AUTHORITY, AND (4) ACQUISITION OF CONSERVATION EASEMENT ON APN: 2818-021-002, LOS ANGELES COUNTY

WHEREAS, The Deerlake Highlands Subdivision in Devil and Browns Canyons of the Santa Susana Mountains is composed of numerous substandard lots and streets; and

WHEREAS, Los Angeles County has become the primary landowner in the subdivision as a result of property tax default; and

WHEREAS, The Conservancy has the first right of refusal on any property within the Santa Monica Mountains zone that is scheduled for disposal as excess land; and

WHEREAS, The Conservancy is authorized to restore areas which, because of scattered ownerships, poor lot layout, inadequate lot size, and other conditions impeding orderly development, adversely affect the environment; and

WHEREAS, The County of Los Angeles' Chief Administrative Office has agreed to sell 1,304 lots in the Deerlake Highlands Subdivision to the Conservancy at a specific appraised value;

WHEREAS, Chatsworth Ridge Estates, Inc. (CRE) has agreed to provide all funds to the Conservancy for the purchase of said County surplus lots; and

WHEREAS, A draft land exchange agreement between CRE, the Mountains Recreation and Conservation Authority (MRCA), and the Conservancy for the exchange of specific portions of the County surplus lots, additional open space, and monetary compensation has been prepared; and

WHEREAS, The subject draft land exchange agreement between the Conservancy, the MRCA, and CRE (Agreement) contains provisions that significantly remedy both existing and potential problems with the disorderly development of land in the Deerlake Highlands Subdivision; and

WHEREAS, The Agreement also significantly reduces the potential threat of inappropriate development to the north of this subdivision area, provides a minimum of 31 acres of fee title open space area to the Conservancy, and provides substantial immediate and long-term monetary benefits for park operations and improvements to the MRCA; and

WHEREAS, The Conservancy has requested additional modifications and assurances the Agreement to further limit potential road access north of the Deerlake Highland Subdivision; and

WHEREAS, Permanent protection of the western portion of APN 2818-021-002, the Horner property, would significantly enhance existing, and any future, wildlife movement capability through the Canoga Avenue-118 Freeway underpass; and

WHEREAS, The Horner property, as a subset of the Brown's Canyon project (Resolution number 97-36), is a high priority on the Conservancy's adopted Workprogram for the Safe Neighborhood Parks Act of 1996 that was approved by the Los Angeles County Board of Supervisors; and

WHEREAS, A Negative Declaration has been prepared that addresses the potential environmental impacts of the Conservancy purchasing the subject County-owned parcels, of the draft land exchange agreement between the Conservancy, MRCA and CRE, and of acquisition of the Horner property; and

WHEREAS, No comments were received regarding the Negative Declaration and a Notice of Determination has been filed that the subject actions will not result in any significant adverse impacts to the environment; and

WHEREAS, The proposed actions are consistent with the Rim of the Valley Trail Corridor Plan; and

WHEREAS, The staff report and staff report addendum, both dated September 15, 1997, provide further information and recommend adoption of said actions; NOW

THEREFORE BE IT RESOLVED, That the Santa Monica Mountains Conservancy hereby:

1. FINDS that the proposed actions will not have a significant adverse impact on the environment.

2. APPROVES the Negative Declaration, entitled, "Deerlake Highlands Subdivision Surplus Land Acquisition and Partial Transfer."

3. AUTHORIZES the acquisition of 1,304 lots in the Deerlake Highlands Subdivision from Los Angeles County using funds provided by CRE.

4. APPROVES the draft land exchange agreement between the Conservancy, the MRCA and CRE, subscript dated September 12, 1997.

5. AUTHORIZES the acceptance of approximately 17 acres of land in Devil Canyon from CRE.

6. AUTHORIZES the acquisition of a conservation easement over APN 2818-021-002 using funds provided in part from CRE and through the land exchange agreement or from Section 3(c)(2)(FF)(xiii) of the Los Angeles County Safe Neighborhood Parks Act of 1996.

7. REQUIRES that staff negotiate additional protections to limit road access across the northern boundary of the Deerlake Highlands Subdivision.

8. ADOPTS the staff report and recommendation dated September 15, 1997.

9. AUTHORIZES the Executive Director of the Santa Monica Mountains Conservancy, in accordance with Division 23 of the Public Resources Code, to take such steps as necessary to ensure execution and completion of the aforementioned project as specified in the staff report dated September 15, 1997 or by other conditions as he may deem necessary to safeguard the expenditure of funds or to otherwise comply with the law.

10. FINDS that the project is consistent with the Rim of the Valley Trail Corridor Master Plan.

-End of Resolution-

I HEREBY CERTIFY that the foregoing resolution was adopted at a regular meeting of the Santa Monica Mountains Conservancy held on the 15th day of September, 1997.

Dated: SEP 15 1997

Executive Director

Notice of Completion and Environmental Document Transmittal Form

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 — 916/445-0613

See NOTE below

SCH # _____

1. Project Title

2. Lead Agency: Santa Monica Mountains Conservancy
3. Contact Person: Paul Edelman
3a. Street Address: 5750 Ramirez Canyon Road
3b. City: Malibu
3c. County: Los Angeles
3d. Zip: 90265
3e. Phone: (310) 589-3200 ext. 128

Project Location — Specific

4. County: Los Angeles
4a. City/Community: Chatsworth, Twin Lakes
4b. Assessor's Parcel No.: L.A.Co Book 2816 & 2818
4c. Section: 6 & 7 Twp.: T.2N. Range: R. 16W
5a. Cross Streets: Canoga Ave & Chatsworth
5b. For Rural, Nearest Community: No
6. Within 2 miles: a. State Hwy #: 118
b. Airports: No
c. Railways: So. Pacific
d. Waterways: Devil & Brown's Canyons

7. Document Type

CEQA: 01. ☐ NOP; 02. ☐ Early Cons; 03. ☒ Neg Dec; 04. ☐ Draft EIR; 05. ☐ Supplement/Subsequent EIR (Prior SCH No.: _____); 06. ☐ NOE; 07. ☐ NOC; 08. ☐ NOD

NEPA: 09. ☐ NOI; 10. ☐ FONSI; 11. ☐ Draft EIS; 12. ☐ EA

OTHER: 13. ☐ Joint Document; 14. ☐ Final Document; 15. ☐ Other _____

8. Local Action Type

01. ☐ General Plan Update
02. ☐ New Element
03. ☐ General Plan Amendment
04. ☐ Master Plan
05. ☐ Annexation
06. ☐ Specific Plan
07. ☐ Community Plan
08. ☐ Redevelopment
09. ☐ Rezone
10. ☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.)
11. ☐ Use Permit
12. ☐ Waste Mgmt Plan
13. ☐ Cancel Ag Preserve
14. ☒ Other: Surplus Land Aquisition & Transfer

9. Development Type

01. ☐ Residential: Units _____ Acres _____
02. ☐ Office: Sq.ft. _____ Acres _____ Employees _____
03. ☐ Shopping/Commercial: Sq.ft. _____ Acres _____ Employees _____
04. ☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
05. ☐ Water Facilities: MGD _____
06. ☐ Transportation: Type _____
07. ☐ Mining: Mineral _____
08. ☐ Power: Type _____ Watts _____
09. ☐ Waste Treatment: Type _____
10. ☐ OCS Related
11. ☒ Other: Small Lot Ownership Agregation and open space donation.

10. Total Acres 85

11. Total Jobs Created 1

12. Project Issues Discussed in Document

01. ☒ Aesthetic/Visual
02. ☐ Agricultural Land
03. ☐ Air Quality
04. ☐ Archaeological/Historical
05. ☐ Coastal Zone
06. ☐ Economic
07. ☐ Fire Hazard
08. ☐ Flooding/Drainage
09. ☐ Geologic/Seismic
10. ☐ Jobs/Housing Balance
11. ☐ Minerals
12. ☐ Noise
13. ☐ Public Services
14. ☐ Schools
15. ☒ Septic Systems
16. ☐ Sewer Capacity
17. ☐ Social
18. ☐ Soil Erosion
19. ☐ Solid Waste
20. ☐ Toxic/Hazardous
21. ☒ Traffic/Circulation
22. ☒ Vegetation
23. ☐ Water Quality
24. ☐ Water Supply
25. ☒ Wetland/Riparian
26. ☒ Wildlife
27. ☒ Growth Inducing
28. ☐ Incompatible Land Use
29. ☒ Cumulative Effects
30. ☐ Other _____

13. Funding (approx.) Federal $ 0 **State $** 0 **Total $** 0

14. Present Land Use and Zoning R-1-6000 & A-1-1 Open Space & Vacant land graded prior to 1960.

15. Project Description The Santa Monica Mountains Conservancy (SMMC) proposes to exercise its first right of refusal to purchase 71.02 acres composed of 1,304 substandard lots in the 1927 Deerlake Highlands subdivision from Los Angeles County as surplus property with funding from Chatsworth Ridge Estates, Inc. (CRE). CRE receives 57 acres. SMMC receives 14 acres plus an additional 16.5 adjacent acres and immediate and long-term monetary compensation from CRE for local park improvements and to fund one local park ranger position.

16. Signature of Lead Agency Representative Paul Edel **Date** 8/13/97

NOTE: Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. from a Notice of Preparation or previous draft document) please fill it in.

Form Revised 4/86 — Replaces CA189

Mark Distribution on Reverse

STATE OF CALIFORNIA—THE RESOURCES AGENCY

PETE WILSON, Governor

SANTA MONICA MOUNTAINS CONSERVANCY
STREISAND CENTER FOR CONSERVANCY STUDIES
5750 RAMIREZ CANYON ROAD
MALIBU, CALIFORNIA 90265
(310) 589-3200
FAX (310) 589-3207

NOTICE OF AVAILABILITY FOR PUBLIC REVIEW MITIGATED NEGATIVE DECLARATION

Date:	August 13, 1997
To:	All Interested Parties
From:	Santa Monica Mountains Conservancy
Project Name:	**Deerlake Highlands Subdivision Surplus Land Acquisition and Partial Transfer**
Applicant:	Santa Monica Mountains Conservancy (Lead Agency)
Project Location:	The project is located in an unincorporated portion of Los Angeles County immediately north of the Chatsworth District of the City of Los Angeles. The property is accessed from the northern terminus of Canoga Avenue just north of the Simi Valley (118) Freeway. All of the subject areas falls within the Brown's and Devil Canyon watersheds which join just east of the project area. Both of these canyons are located on the portion of the south-facing slope of the Santa Susana Mountains that drains into the San Fernando Valley and the Los Angeles River. The project area includes a portion of the historic Twin Lakes subdivision area and the majority of the historic Deerlake Highlands subdivision.
Project Description:	The Santa Monica Mountains Conservancy (SMMC) proposes to exercise its first right of refusal to purchase 71.02 acres composed of 1,304 substandard lots in the 1927 Deerlake Highlands subdivision from Los Angeles County as surplus property with funding from Chatsworth Ridge Estates, Inc. (CRE). CRE receives 57 acres. SMMC receives 14 acres plus an additional 16.5 adjacent acres and immediate and long-term monetary compensation from CRE for local park improvements and to fund one local park ranger position.
Effects of Project:	The Lead Agency found that there is no substantial evidence that there will be significant adverse environmental impacts associated with this project with the incorporation of specifically identified mitigation measures.

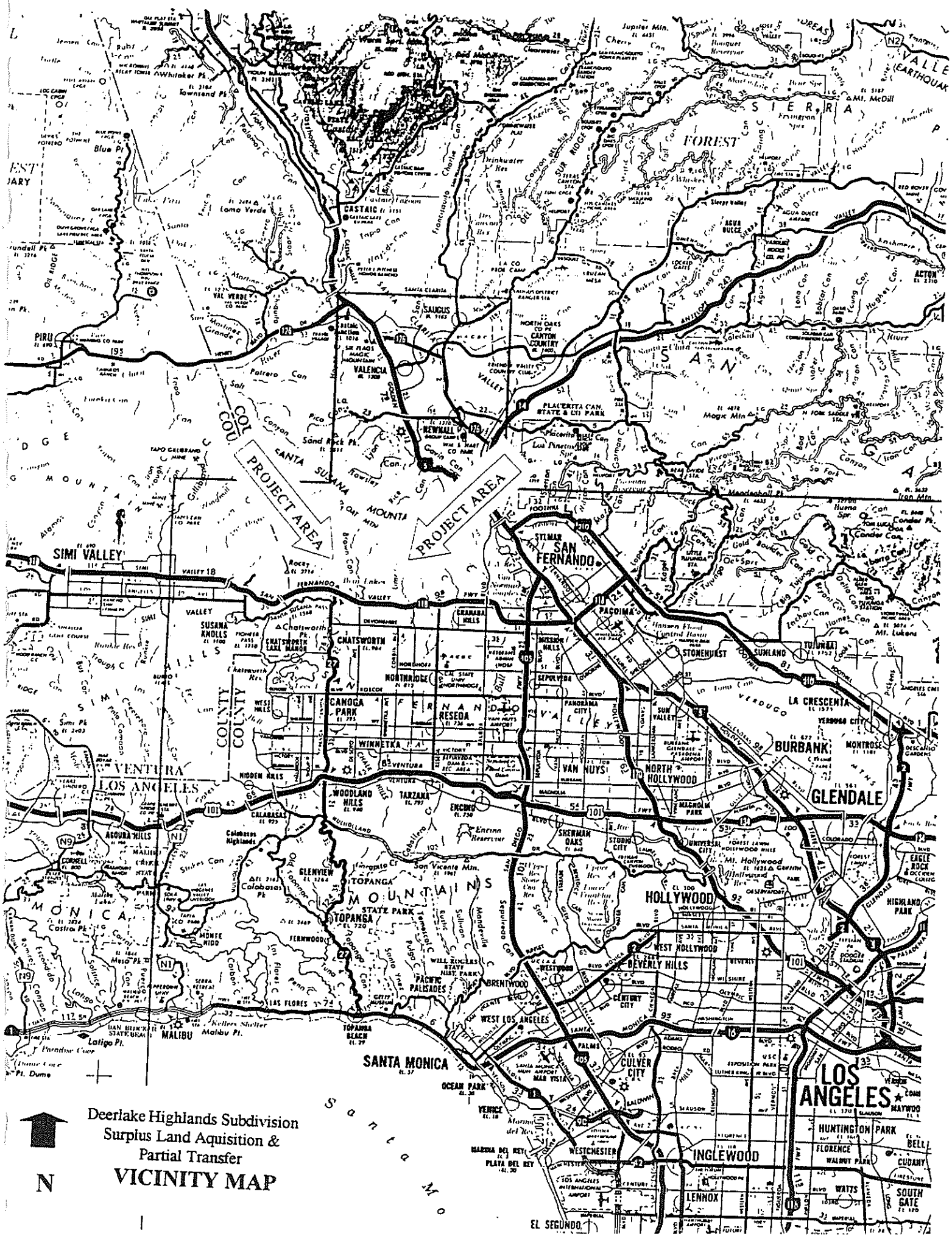
This is to advise that Santa Monica Mountains Conservancy has prepared a Mitigated Negative Declaration for the project identified above. As mandated by State law, the minimum public review period for this document is thirty (30) days. The 30-day comment period for this document closes on September 15, 1997.

The document, and supporting information, are available for review at the headquarters of the Santa Monica Mountains Conservancy, 5750 Ramirez Canyon Road, Malibu, CA 90265. Anyone interested in the matter is invited to comment on the Mitigated Negative Declaration by written response. Written responses to should be sent to the above address, attention Paul Edelman, and faxed responses should be sent to (310) 589-3207. Testimony at future public hearings may be limited to those issues raised during the public review period. Calls regarding the project, the date and place of any public hearings, and the Mitigated Negative Declaration should be directed to Paul Edelman at (310) 589-3200 ext. 128.

A public hearing has been scheduled to consider comments on the document and the proposed project at the regularly scheduled meeting of the Santa Monica Mountains Conservancy on September 15, 1997 beginning at 7:30 pm. Please call the Conservancy's Board Secretary at (310) 589-3200 ext. 118 for information regarding the location of the public hearing. The meeting is tentatively scheduled to occur in the City of Simi Valley at the headquarters of the Rancho Simi Recreation and Park District at 1692 Sycamore Drive.

Paul Edelman
Deputy Division Chief

8/13/97
Date



Deerlake Highlands Subdivision
Surplus Land Aquisition &
Partial Transfer

N

VICINITY MAP

PROJECT INFORMATION AND INITIAL STUDY

Deerlake Highlands Subdivision Surplus Land Acquisition and Partial Transfer

Applicant: Santa Monica Mountains Conservancy

Lead Agency: Santa Monica Mountains Conservancy

Project Location: The project is located in an unincorporated portion of Los Angeles County immediately north of the Chatsworth District of the City of Los Angeles. The property is accessed from the northern terminus of Canoga Avenue just north of the Simi Valley (118) Freeway. All of the subject areas falls within the Brown's and Devil Canyon watersheds which join just east of the project area. Both of these canyons are located on the portion of the south-facing slope of the Santa Susana Mountains that drains into the San Fernando Valley and the Los Angeles River. The project area includes a portion of the historic Twin Lakes subdivision area and the majority of the historic Deerlake Highlands subdivision. A vicinity map and a project boundary are attached.

Project Description: The subject project is comprised of four main parts as follows:

1] The Santa Monica Mountains Conservancy (Conservancy) purchases 71.02 surplus acres from Los Angeles County in the Deerlake Highland subdivision using funds from Chatsworth Ridge Estates, Inc.

2] The Conservancy transfers approximately 57 of those 71 acres to Chatsworth Ridge Estates, Inc. and retains approximately 14 acres in fee.

3] Simultaneous with the escrow which transfers the 57 acres to Chatsworth Ridge Estates, Inc., the Santa Monica Mountains Conservancy, or its designee, would receive an additional 16.5 acres just south of the Deerlake Highlands Subdivision.

4] In the same simultaneous escrow CRE would pay, the Conservancy, or its designee, $165,000 to build related trail staging areas, trail connectors, to purchase trail or conservation easements, or to acquire additional related property in fee. Of this amount, $15,000 would be directed to related ranger services and maintenance.

For the first, second, and third years from the date of escrow closure (1998-2000), Chatsworth Ridge Estates, Inc. (CRE) or its successor, shall pay the

For the first, second, and third years from the date of escrow closure (1998-2000), Chatsworth Ridge Estates, Inc. (CRE) or its successor, shall pay the Conservancy, or its designee, $24,000, $30,000, and $45,000, respectively, to pay for related ranger services and maintenance. For all subsequent years, in perpetuity or for the life of the proposed development, CRE, or its successor, shall pay the Conservancy, or its designee, $60,000 on the anniversary date of the escrow closure. A trust fund in the name of the Conservancy, or its designee, shall be set up by the anniversary date in 2001 that guarantees such payments to the Conservancy.

Attached maps show the relationships and boundaries of these properties.

Detail on Project Part One: The Deerlake Highlands subdivision, which is composed of 1,923 recorded lots, was created in 1927. The majority of this small lot subdivision is located on a natural bench to the north of Devil Canyon Creek. At some point, virtually all of the flat area on this bench was scraped clear and a road system and an above ground water system were installed. A minimum of several dozen dwellings were occupied in a resort type community. The total acreage of the Deerlake Highlands subdivision is 125.75 acres. The dimension of the subdivision area is approximately 4,500-feet by 1,500-feet.

To date, Los Angeles County has assumed ownership of 1,304 of these 1,923 lots through property tax default. These 1,304 County-owned lots occupy an area of 71.02 acres. The remaining 619 lots are owned by multiple private parties including CRE and potential related business entities. Only two of these private lots currently contain inhabited houses. Several old foundations, much of the old internal road system, and multiple old water pipes are evident across the property. The only vehicular access to the area is via unimproved Saugus Road that originates from the terminus of Canoga Avenue and crosses Devil Canyon on a one lane bridge. The only existing services are phone and electricity.

The project entails the County declaring the subject 1,304 lots surplus and the Conservancy exercising its first right of refusal [Public Resources Code Section 33207(b)] to purchase the lots. The Conservancy would acquire the lots (71.02 acres) with funds from CRE. The purchase price for the 1,304 lots has been determined by an appraisal agreed upon by the County and CRE. CRE also owns an unspecified number of additional lots within the subdivision.

Detail on Project Part Two: In a simultaneous escrow with the Conservancy's purchase of the land from the County, the Conservancy would transfer an approximately 57-acre portion of the 71.02 acres to CRE. Approximately 14 acres

would remain in fee to the Conservancy.

Of the 1,304 County-owned lots, the Conservancy would retain 215 whole lots and portions of 175 lots that make up the 14 acre total. A considerable portion of this acreage is located in the Brown's Canyon watershed with a few lots on the east side of Brown's Canyon Road. With the following exceptions, the 14 acres would give the Conservancy a contiguous band (minimum width of 10 feet) of fee ownership around the subject portion of the Deerlake Highlands subdivision:

1] Two 175-foot-wide and four approximately 90-foot wide gaps along the 4,250-foot-wide northern subdivision boundary.

2] An easement for CRE to put a two-lane access road into the southwestern corner of the subdivision area via a clear span bridge across Devil Creek

3] A 2,125-foot gap along the southern boundary where the project area contacts the Twin Lakes subdivision.

Detail on Project Part Three: In the same simultaneous escrow, the Conservancy would receive a minimum of 16.5 additional contiguous acres from CRE that are located immediately south of Deerlake Highlands along Devil Creek. These 16.5 acres currently function as a wildlife movement corridor to Brown's Canyon. A minimum 60-foot-wide strip of land would provide a habitat linkage to the Canoga Avenue undercrossing beneath the 118 Freeway for the purpose of maintaining wildlife movement into the Stoney Point habitat area. This 60-foot-wide strip would be broken by the existing access road to the Twin Lakes community from Canoga Avenue. The 16.5 acres also connect to City of Los Angeles open space in Brown's Canyon that leads to the Brown's Canyon open space dedication from the Porter Ranch Specific Plan.

In combination with this City of Los Angeles property, a contiguous ring of public fee ownership would surround all of the undeveloped portion of the Twin Lakes subdivision located north of Devil Creek. CRE would retain two easements to put two-lane roads across Devil Creek via clear span bridges to connect to Saugus Road or Mayan Drive. CRE intends to file a tract map to develop unsubdivided portions of the Twin Lakes area in combination with a series of existing recorded lots. Access would come over one or two of these bridges depending on whether or not another secondary access is developed. An attached map shows the relationships and boundaries of these described properties.

Detail on Project Part Four: Also as part of the same escrow, CRE will provide the Conservancy, or its designee, $165,000 to build related trail staging areas, trail connectors, to purchase trail or conservation easements, or to acquire additional related property in fee. Of this amount, $15,000 would be directed to related ranger services and maintenance.

Two related areas that could benefit greatly from trail construction and construction of a staging area, are the Conservancy's existing Devil Canyon open space and the proposed northern addition to Stoney Point park by the City of Los Angeles. However, separate documentation under the California Environmental Quality Act would be required for each of these projects.

The principal payment to the Conservancy would be for CRE to fund the establishment of a special endowment to fund one Mountains Recreation and Conservation Authority ranger position for the southern Santa Susana Mountains and the northern Simi Hills. The proposed mechanisms and safe guards to develop such an endowment have not been finalized.

In the time period prior to the completion of the endowment, CRE must make the following payments to the Conservancy, or its, designee. For the first, second, and third years from the date of escrow closure (1998-2000), CRE or its successor(s), shall pay the Conservancy, or its designee, $24,000, $30,000, and $45,000, respectively, to pay for related ranger services and maintenance. For all subsequent years, in perpetuity or for the life of the proposed development, CRE, or its successor(s), shall pay the Conservancy, or its designee, $60,000 on the anniversary date of the escrow closure. The said endowment to generate such funding shall be set up by the escrow closure anniversary date in 2001.

General Plan Designation:	Rural Residential
Current Zoning:	R-1-6000 in Deerlake Highlands, A-1-1 in Twin Lakes area
Existing Use:	Public (County) and private open space.
Proposed Use:	Public parkland and potential residential development.
Surrounding Land Uses:	Public parkland, County-owned open space and flood control easements, private undeveloped land, high and low density residential.

Environmental Setting:

The south facing slope of the Santa Susana Mountains support a variety of scrub and annual grassland vegetation communities with deeply incised drainages that support extensive oak woodland and riparian plant assemblages. Both Brown's and Devil Canyon contain extensive riparian vegetation and periodic stretches of perennial surface water even in the driest years. Deerlake Highlands occupies a broad sandstone bench between these two drainages. Chaparral plant communities dominated by chamise (*Adenostoma fasciculatum*) cover most of the more level areas that were repeatedly disturbed between 1927 and the 1960s. Most of the bench sits at approximately 1,450 above sea level. The habitat to the north of the subdivision can be characterized as part of the core habitat of the central Santa Susana Mountains ecosystem. Much of the habitat south of the subdivision is of excellent quality also and remains remote because of topographic isolation. Los Angeles County Significant Ecological Area Number 21 lies several thousand feet to the west. The Conservancy's 70-acre Devil Canyon open space abuts the western end of the subdivision.

Project Background and Purpose

Public Resources Code Section 33204 states, in part, as follows:

The conservancy may, in accordance with the priorities of the plan, do the following:

(a) Award grants or make interest-free loans to cities, counties, and recreation and park districts for the purpose of restoring areas which, because of scattered ownerships, poor lot layout, inadequate lot size, inadequate park and open space, incompatible land uses, or other conditions, are adversely affecting the Santa Monica Mountains environment or are impeding orderly development.

The Deerlake Highlands subdivision is composed of 1,923 lots of substandard size, that are poorly laid out and poorly accessed. Ownership is highly scattered. Los Angeles County is by far the largest land owner and owns 1,304 of these lots. The County has no purpose for these lots and desires to sell them to generate much needed revenue. If the County were to declare the lots surplus, the Conservancy would statutorily have the first right of refusal. The location, past land use, scattered ownership pattern, and costs of acquiring such lots make it improbable that the Conservancy would acquire a sufficient number of lots to eliminate development over large areas of the subdivision.

Over time, additional residences would be constructed in the subdivision. The pattern, nature and rate of such development cannot be accurately surmised.

In addition, over 100 acres of additional, undeveloped but highly subdivided land is situated immediately north of the Deerlake Highlands subdivision.

The proposed project provides an opportunity to favorably shape future growth within the Deerlake Highlands subdivision and to limit future inappropriate growth in surrounding open space areas. Simultaneous with these balanced, but not optimal, effects on potential land use (within areas that were subdivided to a level exceeding landscape constraints) this project provides a set of substantial, related public benefits.

CRE controls approximately 90% of the undeveloped, subdivided property in the adjacent Twin Lakes community and another 50+ acres that are part of Tentative Tract Map No. 49163.

This immediate area near the confluence of Devil and Brown's Creeks represents both an important ecological and recreational hub. The attached maps show a significant ring of existing public ownership around this area. Destination parkland exists immediately upstream from this hub in both Devil and Brown's Canyons. The potential for additional future contiguous public open space up each drainage is vast. City of Los Angeles Trail Plans reflect these connections.

Given CRE's substantial interest and control in this area, the opportunity exists to "lock in" substantial trail and open space connections that otherwise could not be made without an

aggregated ownership. The potential also exists to develop a comprehensive plan that mitigates future problems associated with a mass block of substandard lots and to contain such an area with a perimeter of fee title parkland or green belt. This project provides over 31 acres of open space, several trail connections, a full time funded ranger position, and $125,000 for further enhancement to this immediate area.

Any comprehensive development of the areas addressed in this document would require a Conditional Use Permit for development in a Hillside Management which in turn triggers extensive review under the CEQA process. The proposed project involves no development. This Negative Declaration only addresses the impacts of transferring land to CRE and receiving land and other compensation in return.

In any case, all of the raw land discussed in this proposal was surveyed by one of the most respected biologists in Los Angeles County. The result was that no state or federally listed plant or animal species reside with the Deerlake Highlands subdivision. See attached letter from Envicom Corporation dated November 11, 1996 regarding the presence of some unlisted but sensitive species.

Mitigation Measures

To further mitigate any potential impacts associated with the Conservancy transferring approximately 57 acres of ownership in the Deerlake Highlands subdivision to CRE, CRE agrees to provide the following measures to be recorded in a written agreement with the Conservancy.

1. Any bridges over Devil Creek will be of clear span design that avoids impacts within the stream bed.

2. Any post-project undeveloped land between developed areas and Conservancy property shall be offered to the Conservancy as a conservation easement area.

3. No structures or appurtenant facilities shall be sited such that any brush clearance is required on the Conservancy's existing 70-acre Devil Canyon open space parcel (APN 2821-024-007). Hence a minimum 100-foot-wide setback area will be required in the northwest corner of the land transfer area.

Persons contacted or participated in preparation of this document

Paul Edelman, Santa Monica Mountains Conservancy, Staff Ecologist, Northern Division Deputy Chief
Rorie Skei, Mountains Recreation and Conservation Authority (MRCA), Assistant Executive Officer
Dani Howard, MRCA, Project Assistant
Hans Giraud, Hans Giraud and Associates, Consultant for CRE
Jan Sirchuk, CRE and Doug Riley, CRE

ENVICOM
CORPORATION

Environmental Analysis & Compliance

Urban Planning & Design

Land Use Development & Entitlement

Environmental Restoration

18328 Ventura Road
Agoura Hills, California 91301

Tel. (818) 879-4700

Fax (818) 879-4711

November 11, 1996

Chatsworth Ridge Estates
90 Dappiegray Road
Bell Canyon, California 91307

Attn.: Doug Riley

Subj.: Preliminary Biological Site Assessment
Chatsworth Ridge Estates

Dear Mr. Riley:

The purpose of this letter is to apprise you of the results of our field investigation of the subject property to the existence of any listed rare, threatened, or endangered plants and animals thereon. Envicom Corporation's onsite surveys were conducted by Mr. Carl Wishner, Principal Biologist. Our observations indicate that no state or federally threatened or endangered plant or animal species currently reside on the site. In addition to general observations, the survey consisted of a focused search for the Santa Susana tarplant, a state-listed rare species. No individuals of this species were found within the project site, although several were noted on an adjacent property. Literature review of the California Department of Fish and Game's Natural Diversity Data Base (CNDDB) also showed that no state or federally listed species have been previously observed or mapped on the project site. Several sensitive, but non-listed plant and animal species are present, however, impacts to these species are not presently regulated under state or federal Endangered Species Acts. In addition, our review of the County of Los Angeles Significant Ecological Areas (SEA) map indicates that Phase I is clearly outside any designated SEA.

Regarding wetland resources on the project site, we understand that two span-type bridges are proposed. In light of the regulatory requirements for the alteration of, or disturbance to wetland habitat, use of the bridge type will eliminate time-consuming and costly regulatory processes. The California Department of Fish and Game (CDFG), under Fish and Game Code 1600-1603, is authorized to review all projects that would alter any bed, bank, or channel of a watercourse, including riparian habitat. If impacts are proposed to any watercourse, the applicant must apply for a Section 1603 Agreement and must comply with all of its terms and conditions. Such terms and conditions could involve expensive mitigation requirements and time delays. The same is true for the US Army Corps of Engineers, the federal agency with jurisdiction over waters of the U.S. and wetlands. Section 404 of the Clean Water Act requires that disturbances to streamcourses must be avoided, minimized, or compensated. In conjunction with the Section 404 permit, an applicant is also required to obtain 401 Water Quality Certification from the Regional Water Quality Control Board. In light of these layers of regulatory control, the best and most efficient alternative is to completely avoid impacts to wetlands. Under those circumstances the applicant need only notify the agencies of the work and ensure that all construction avoids these regulated areas.

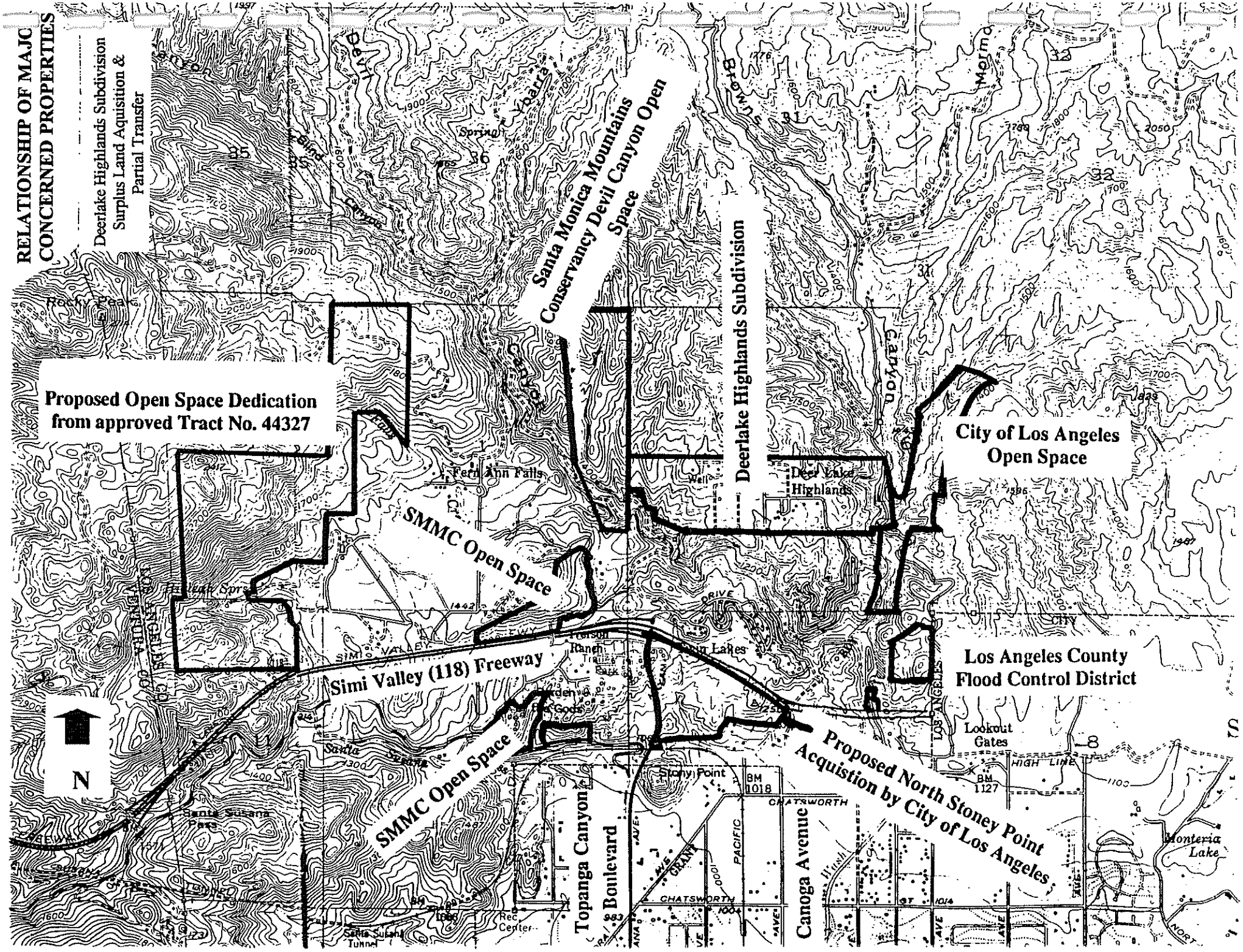
If you would like further information regarding our work, please do not hesitate to call.

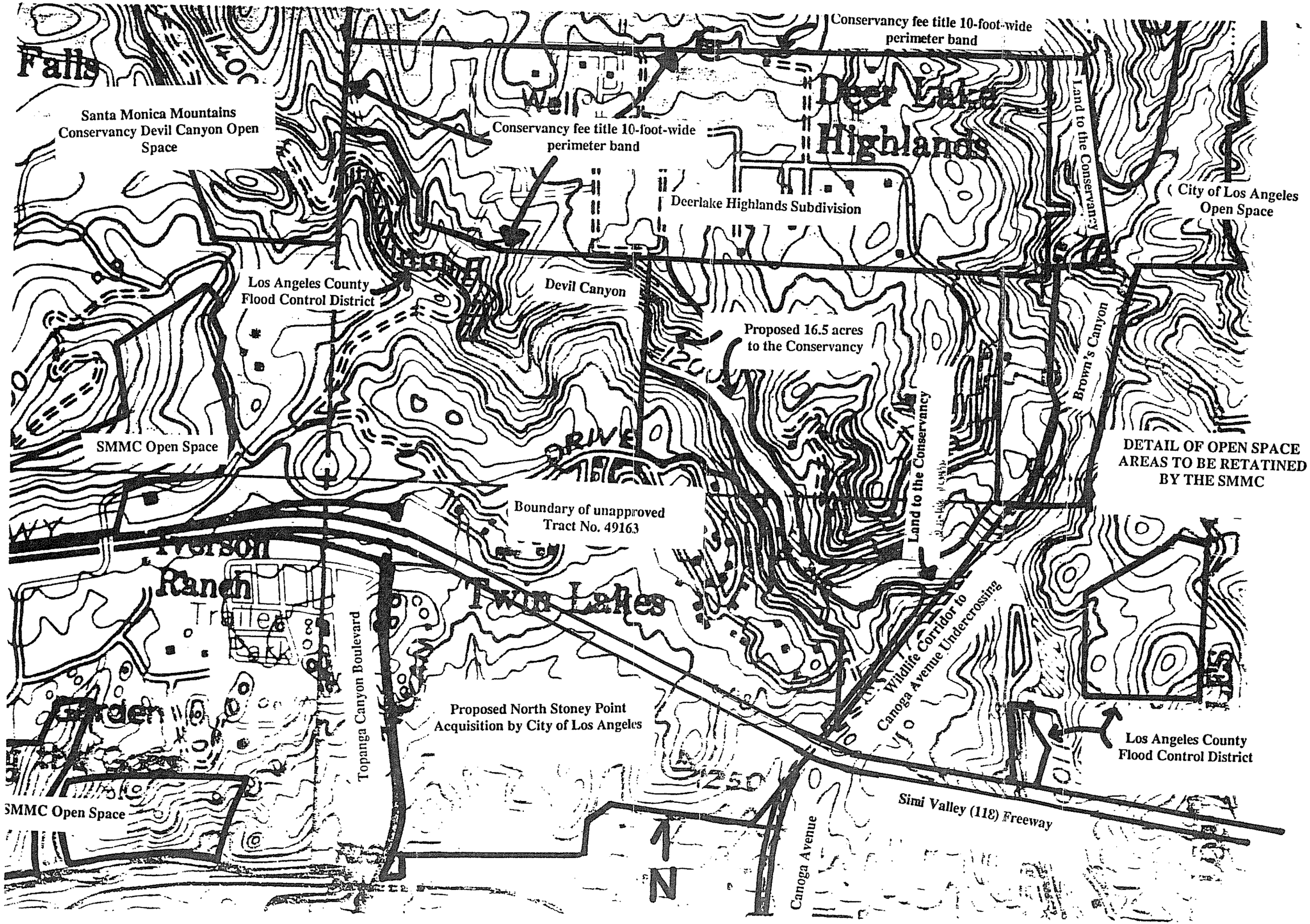
Sincerely,

Katherine Patey

Katherine Patey
Director, Biological Resources Division

cc: Hans Girard


RELATIONSHIP OF MAJC
CONCERNED PROPERTIES
Deerlake Highlands Subdivision
Surplus Land Aquisition &
Partial Transfer
Proposed Open Space Dedication
from approved Tract No. 44327
Santa Monica Mountains
Conservancy Devil Canyon Open
Space
Deerlake Highlands Subdivision
City of Los Angeles
Open Space
SMMC Open Space
Simi Valley (118) Freeway
Los Angeles County
Flood Control District
Proposed North Stoney Point
Acquisition by City of Los Angeles
SMMC Open Space
Topanga Canyon
Boulevard
Canoga Avenue
Rocky Peak
Fern Ann Falls
Deer Lake
Highlands
Lookout
Gates
Stony Point
Santa Susana
Pass
Monteria
Lake
N


Conservancy fee title 10-foot-wide perimeter band
Falls
Santa Monica Mountains Conservancy Devil Canyon Open Space
Conservancy fee title 10-foot-wide perimeter band
Deer Lake Highlands
Land to the Conservancy
City of Los Angeles Open Space
Deerlake Highlands Subdivision
Los Angeles County Flood Control District
Devil Canyon
Proposed 16.5 acres to the Conservancy
Brown's Canyon
SMMC Open Space
DETAIL OF OPEN SPACE AREAS TO BE RETATINED BY THE SMMC
Land to the Conservancy
Boundary of unapproved Tract No. 49163
Person Ranch
Twin Lakes
Wildlife Corridor to Canoga Avenue Undercrossing
Topanga Canyon Boulevard
Proposed North Stoney Point Acquisition by City of Los Angeles
Los Angeles County Flood Control District
SMMC Open Space
Simi Valley (118) Freeway
Canoga Avenue
N

ENVIRONMENTAL INITIAL STUDY CHECKLIST FORM

Project Name: **Deerlake Highlands Subdivision Surplus Land Acquisition and Partial Transfer**

Applicant: Santa Monica Mountains Conservancy - Lead Agency
5750 Ramirez Canyon Road
Malibu, CA 90265
(310) 589-3200 ext. 128

Environmental Impacts

Checklist categories reflect an evaluation of the likelihood of potential significant, adverse environmental impact. An asterisked (*)item indicates that an explanation or discussion is provided in the Checklist Addendum Sheet, as well as a mandatory explanation of all "yes" and "maybe" answers.

		YES	MAYBE	NO
I.	LAND USE AND PLANNING. Would the proposal:			
(a)	Conflict with general plan designation or zoning?			X
(b)	Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?			X
(c)	Be incompatible with existing land use in the vicinity?			X
(d)	Affect agricultural resources or operations (e.g. impacts to soils or farmlands, or impacts from incompatible land uses)?			X
*(e)	Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?			X
II.	POPULATION AND HOUSING. Would the proposal:			
(a)	Cumulatively exceed official regional or local population projections?			X
*(b)	Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure)?			X
(c)	Displace existing housing, especially affordable housing?			X

	YES	MAYBE	NO
III. GEOLOGIC PROBLEMS. Would the proposal result in or expose people to potential impacts involving:			
(a) Fault rupture?			X
(b) Seismic ground shaking?			X
(c) Seismic ground failure, including liquefaction?			X
(d) Seiche, tsunami, or volcanic hazard?			X
(e) Landslides or mudflows?			X
(f) Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?			X
(g) Subsidence of the land?			X
(h) Expansive soils?			X
(I) Unique geologic or physical features?			X
IV. WATER. Would the proposal result in:			
(a) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?			X
(b) Exposure of people or property to water related hazards such as flooding?			X
(c) Discharge into surface waters or other alteration of surface water quality (e.g. temperature, dissolved oxygen or turbidity?			X
(d) Changes in the amount of surface water in any body of water?			X
(e) Changes in currents, or the course or direction of water movements?			X
(f) Change in the quantity of ground waters, either through direct additions or withdrawals,			

	YES	MAYBE	NO
or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability?			X
(g) Altered direction or rate of flow of groundwater?			X
(h) Impacts to groundwater quality?			X
(i) Substantial reduction in the amount of groundwater otherwise available for public water supplies?			X
V. AIR QUALITY. Would the proposal:			
(a) Violate any air quality standard or contribute to an existing or projected air quality violation?			X
(b) Expose sensitive receptors to pollutants?			X
(c) Alter air movement, moisture, or temperature, or cause any change in climate?			X
(d) Create objectional odors?			X
VI. TRANSPORTATION/CIRCULATION. Would the proposal result in:			
(a) Increased vehicle trips or traffic congestion?			X
(b) Hazards to safety from design features (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?			X
(c) Inadequate emergency access or access to nearby uses?			X
(d) Insufficient parking capacity on-site, or off-site?			X
(e) Hazards or barriers for pedestrians or bicyclists?			X
(f) Conflicts with adopted policies supporting alternative transportation (e.g. bus turnouts, bicycle racks)?			X

	YES	MAYBE	NO
(g) Rail, waterborne or air traffic impacts?			X
VII. BIOLOGICAL RESOURCES. Would the proposal result in impacts to:			
(a) Endangered, threatened or rare species or their habitats (including but not limited to plants, fish, insects, animals and birds)?			X
(b) Locally designated species (e.g. heritage trees)?			X
(c) Locally designated natural communities (e.g. oak forest, coastal habitat, etc.)?			X
(d) Wetland habitat (e.g. march, riparian and vernal pool)?			X
(e) Wildlife dispersal or migration corridors?			X
VIII. ENERGY AND MINERAL RESOURCES. Would the proposal:			
(a) Conflict with adopted energy conservation plans?			X
(b) Use non-renewable resources in a wasteful and inefficient manner?			X
(c) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the state?			X
IX. HAZARDS. Would the proposal involve:			
(a) A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation)?			X
(b) Possible interference with an emergency response plan or emergency evacuation plan?			X

	YES	MAYBE	NO
(c) The creation of any health hazard or potential health hazard?			X
(d) Exposure of people to existing sources of potential health hazards?			X
(e) Increased fire hazard in areas with flammable brush, grass or trees?			X
X. NOISE. Would the proposal result in:			
(a) Increases in existing noise levels?			X
(b) Exposure of people to severe noise levels?			X
XI. PUBLIC SERVICES. Would the proposal have and effect upon, or result in a need for new or altered government services in any of the following areas?			X
(a) Fire protection?			X
(b) Police protection?			X
(c) Schools?			X
(d) Maintenance of public facilities, including roads?			X
*(e) Other governmental services?			X
XII. UTILITIES AND SERVICE SYSTEMS. Would the proposal result in a a need for new systems or supplies, or substantial alterations to the following utilities?			X
(a) Power or natural gas?			X
(b) Communications systems?			X
(c) Local or regional water treatment or distribution facilities?			X
(e) Storm water drainage ?			X

		YES	MAYBE	NO
(f)	Solid waste disposal?			X
(g)	Local or regional water supplies?			X
XIII.	AESTHETICS. Would the proposal:			
(a)	Affect a scenic vista or scenic highway?			X
(b)	Have a demonstrable negative aesthetic effect?			X
(c)	Create light or glare?			X
XIV.	CULTURAL RESOURCES. Would the proposal:			
(a)	Disturb paleontological resources?			X
(b)	Disturb archaeological resources?			X
(c)	Affect historical resources?			X
(d)	Have the potential to cause a physical change which would affect unique ethnic cultural values?			X
(e)	Restrict existing religious or sacred uses within the potential impact area?			X
XV.	RECREATION. Would the proposal:			
(a)	Increase the demand for neighborhood or regional parks or other recreational facilities?			X
*(b)	Affect existing recreational opportunities?			X
XVI.	MANDATORY FINDINGS OF SIGNIFICANCE.			
(a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal			

	YES	MAYBE	NO
community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X
(b) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?			X
(c) Does the project have environmental effects which are individually limited but cumulatively considerable?			X
(d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X

DISCUSSION OF ENVIRONMENTAL EVALUATION

See attached Initial Study Addendum.

DETERMINATION

(To be completed by the Lead Agency's decision-making body.)

On the basis of this evaluation:

✓ I find the proposed project could NOT have a significant adverse effect, and a NEGATIVE DECLARATION will be prepared.

8/13/97
Date

Paul Edelman
Deputy Division Chief

For: Santa Monica Mountains Conservancy

INITIAL STUDY CHECKLIST ADDENDUM

Item 1(a) Land Use and Planning. Would the proposal (a) disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?

The proposal increases the potential for the orderly development of portions of the Deerlake Highland subdivision. The existing, adjacent Twin Lakes small lot subdivision would contrast with such potential orderliness with its lack of sewers and substandard streets. The proposal does not have any potential disrupt or divide the Twin Lakes community.

Item 2(b) Population and Housing. Would the proposal (b) induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure)?

By aggregating ownership of public land into a single private entity, to some extent, the proposal indirectly increases the economic and land use potential both for development in a predominantly undeveloped area (the Deerlake Highlands subdivision) and for the extension of substantial infrastructure to this area.

Simultaneously, the proposal indirectly decreases the potential of the subject area to be degraded overtime by dispersed and poorly controlled land uses that could have a greater detrimental effect on surrounding wild lands. The proposal also indirectly decreases the longterm potential maximum number of units to potentially be constructed within the subject portion of the Deerlake Highlands subdivision. The proposal also guarantees that over 15 acres of the 126 acre subdivision will never be graded.

In addition, the proposal would have a significant direct effect on reducing the potential for growth in surrounding undeveloped private areas by limiting both the width and the depth of the intrusion of road access from Topanga Canyon Boulevard and road width along lower Brown's Canyon Road. It also retards existing potential for road access north out of the Deerlake Highland subdivision. These suppressions of growth affect a far larger and more ecologically sensitive area than the area where growth is potentially induced by the proposal indirectly.

Item 11(e) Public Services. Would the proposal have an effect upon, or result in a need for new or altered government services?

The proposal calls for a minimum net gain of 31 acres of public parkland and $125,000 of additional park improvements, easements or fee title property. These public assets cost money to maintain and secure. The proposal thoroughly covers any added costs by providing both immediate funds, $15,000 to $45,000 for the first four years, and $60,000 a year in perpetuity

for ranger services and maintenance. The proposal also makes in incumbent upon CRE and all successors to pay, in perpetuity, for all fuel modification on the Conservancy's newly acquired 31+ acres of open space.

Item 15(b) Recreation. Would the proposal (b) affect existing recreational opportunities?

The proposal will have no negative effects on recreational opportunities.

The proposal is guaranteed to improve conditions for protected public trail access into the Santa Susana Mountains from the end of Canoga Avenue. This guarantee shall be secured in a written agreement between CRE and the Conservancy. That agreement shall require a permanent (floating) trail easement from the 118 freeway to the area of the existing Saugus Road crossing of Devil Creek and two attached easements. One would course up the west side of the sparsely developed portion of the Twin lakes subdivision into to Deerlake Highlands. The other easement would course along the east side. CRE cannot guarantee contiguous extended trails easement to the northern border of Deerlake Highlands, however said written agreement will provide for such connections if CRE or its successor develops the area. If CRE does seek development approvals from Los Angeles County in either the Twin Lakes or Deerlake Highlands, said agreement will also bind CRE to offer permanent fixed trail easements serving these purposes to the County or other park agencies.

By providing contiguous public open space connections, the proposal increases the potential for a publically dedicated trail from Canoga Avenue into Brown's Canyon. The current prescribed trail uses private land.

The proposal guarantees the acquisition or development of $125,000 worth of trail or open space benefits in the immediate area.

AGREEMENT RE ACQUISITION OF REAL PROPERTY

This AGREEMENT RE ACQUISITION OF REAL PROPERTY ("Agreement") is made as of this 30th day of December, 1997, by and between THE SANTA MONICA MOUNTAINS CONSERVANCY ("Conservancy"), the Conservancy's Designee MOUNTAINS RECREATION CONSERVATION AUTHORITY ("Designee"), CHATSWORTH RIDGE ESTATES, LLC, a California limited liability company ("CRE LLC"); CHATSWORTH RIDGE ESTATES, a California Corporation ("CRE Corp.") ("CRE LLC" and "CRE Corp." are collectively referred to as "CRE") and CALMONT PROPERTIES, INC. a California Corporation ("Calmont"), with respect to the following:

RECITALS

A. Whereas, the County of Los Angeles currently owns certain real property, shown and described in Exhibit "A" attached hereto and incorporated herein by this reference (the "County Lots"); and

B. Whereas, the "County Lots" are inadequate in size and are located within an area which has additional lots with scattered ownerships, thereby impeding orderly development; and

C. Whereas, Designee is a joint powers agency and the Conservancy a resource agency of the State of California, and both are responsible for acquiring, maintaining and preserving portions of the Santa Monica Mountains and related area as open space wilderness reserves for the public benefit; and

D. Whereas, the Conservancy has the authority under §33204(a) of the Public Resources Code to award grants or make interest-free loans to cities, counties, and recreation and park districts for the purpose of restoring areas which, because of scattered ownerships, poor lot layout, inadequate lot size, inadequate park and open space, incompatible land uses, or other conditions that adversely affect the environment or impede orderly development; and

E. Whereas, the Conservancy has the authority under §33204(b) of the Public Resources Code to undertake, award grants or make interest-free loans to any state agency, city, county or recreation and park district for the purposes of undertaking the acquisition of critically needs buffer zones to ensure that the character and intensity of development surrounding public lands do not adversely impact natural resources; and

F. Whereas, CRE owns certain rural wilderness real property in the mountain area of Chatsworth, California; and

G. Whereas, CRE is interested in acquiring certain real property, shown and described in

WE.

Exhibit "B" attached hereto and incorporated herein by this reference (the "CRE Lots"), for residential development, which CRE Lots are located in the general area of other CRE holdings in Chatsworth, California; and

H. Whereas, the County Lots are currently owned by the County of Los Angeles and the Conservancy has the ability to purchase the County Lots from the County; and

I. Whereas, CRE has proposed to the Conservancy that the Conservancy or Designee purchase the County Lots retain certain lots and portions of lots as described in Exhibit B-I ("Conservancy/Designee Lots") and convey to CRE the CRE Lots as in exchange for that certain rural wilderness real property owned by CRE as described in Exhibit C (Devils Canyon Habitat) together with certain other consideration and inducements; and

J. Whereas said exchange and other consideration and inducements will be consistent with the provisions of §33204(a) and (b) of the Public Resources Code and with the Santa Monica Mountains Conservancy Act; and

K. Whereas, CRE will provide, through an escrow to be established for the purpose of facilitating the intent and purpose of this Agreement, the sum of One Million One Hundred Fifty Thousand Dollars ($1,150,000.00) required for the purchase of the County Lots from the County of Los Angeles, said sum having been determined independently by appraisals conducted by the County of Los Angeles; and

L. Whereas, CRE and the Conservancy have agreed that the Conservancy or Designee will obtain title to the County Lots from the County of Los Angeles and then convey the CRE Lots to CRE as further provided herein; and

M. Whereas, i CRE Corp. is a California Corporation in good standing and wholly owned by Colleen C. Welter, ii and Calmont Properties, Inc. is a California Corporation in good standing which is also wholly owned by Colleen C. Welter, and iii for good and valuable consideration pursuant to corporate resolution Calmont has agreed to be jointly and severally liable with CRE Corp. and CRE LLC on the $1,000,000 recourse promissory note secured by a first deed of trust on real property owned by Calmont as described in Section 6 f of this Agreement; and

N. Whereas, in consideration thereof CRE has agreed to convey specifically identified real property to the Conservancy or Designee, and CRE and Calmont have agreed to pay certain sums of money specified hereinbelow to Designee, and to perform certain other obligations, all upon the terms and conditions hereinafter provided, and consistent with the provisions of §33204(a) and (b) and 33203 of the Public Resources Code and the Rim of the Valley Trail Corridor Plan.

W.E

NOW, THEREFORE, the Parties enter into this Agreement, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged.

TERMS AND CONDITIONS

Section 1. Recitals. The hereinabove Recitals are true and correct and are hereby incorporated into this Agreement by this reference.

Section 2. Acquisition and Sale of County Lots. The Conservancy and Designee hereby agrees to purchase from the County of Los Angeles the County Lots, and further agree to convey title to CRE to the CRE Lots. Ownership of the Conservancy/Designee Lots as set forth on Exhibit B-I, shall be retained by Conservancy or Designee. The purchase price to be paid to the County of Los Angeles for the County Lots shall be the sum of not to exceed $1,150,000.00, which sum shall be provided by CRE to the Conservancy or Designee through the escrow to be established, for delivery to the County of Los Angeles in exchange for the County's quit claim deed for the County Lots. Upon receipt of title to the County Lots by the Conservancy or Designee, the Conservancy or Designee shall convey the CRE Lots to CRE by quit claim deed through said escrow. The foregoing transactions shall be consummated through an escrow to be established by the parties and conducted by First American Title Company of Los Angeles (FATCOLA)("Escrow"). Upon execution and delivery of this Agreement the parties shall cause to be prepared mutually acceptable written escrow instructions for the consummation of the transactions contemplated by this Agreement. It is the intent of the parties that said Escrow shall be opened within thirty (30) days after the date hereof and shall close on or about January 9, 1998, or as extended by mutual agreement of the parties ("Close of Escrow"). The Conservancy shall be solely responsible for obtaining the approval and firm commitment of the County of Los Angeles to participate in this transaction, to sell the County Lots to the Conservancy or Designee for the sum of not to exceed $1,150,000.00, and to execute and deliver into Escrow in a timely manner the County's quit claim deed(s) conveying the County Lots to Conservancy or Designee.

Section 3. CRE Lots to be Purchased "AS IS". CRE hereby acknowledges, represents, warrants and agrees to and with Conservancy and Designee that:

a. CRE is purchasing the CRE Lots in an "AS IS" condition as of the date of the Close of Escrow, subject to all then existing facts, circumstances, conditions and defects, and in its unimproved, ungraded condition;

CONSERVANCY:	DESIGNEE:	CRE, LLC:	CRE, CORP:	CALMONT:
BF	BF			

b. CRE is assuming the risk, based upon its own due diligence investigations of the CRE Lots and their condition, of the presence or absence of any chemicals or

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other materials which are the subject of any Federal, State or local regulations relating to contaminants or hazardous materials or substances; and

c. CRE agrees to indemnify, hold harmless and defend the Conservancy and Designee with respect to any and all damages, judgments claims, fines, penalties, costs, expenses, attorney fees that may arise out of any claims or lawsuits, or any other actions based upon the existence of contaminants or hazardous materials on or in the CRE Lots.

Section 4. Condition of Title. The Parties hereto agree that the preliminary title reports prepared by FATCOLA, described on Exhibit "A" attached hereto, and dated February through November 1997, shall satisfy the preliminary title requirements for the purchase of the County Lots by the Conservancy or Designee from the County of Los Angeles, and the purchase of said CRE Lots by CRE from the Conservancy or Designee.

The Conservancy or Designee shall review and approve the above-referenced preliminary title reports which pertain to the Conservancy/Designee Lots within seven (7) days after the Conservancy's or Designee's execution of an agreement to purchase the County Lots from the County of Los Angeles, CRE shall review and approve the above-referenced preliminary title reports which pertain to the CRE Lots within seven (7) days after CRE's execution of an agreement to purchase the CRE Lots from Conservancy or Designee. CRE's approval of the condition of title to the CRE Lots shall be a contingency which must be met before CRE is obligated to purchase the CRE Lots. Conservancy or Designee shall deliver title to the CRE Lots to CRE through Escrow subject only to:

a. Covenants, conditions, restrictions, reservations, easements, rights and rights of way of record or to be recorded in connection with development of the CRE Lots; and

b. Any encumbrance or other matter recorded in connection with any financing obtained by CRE to finance the purchase price of the CRE Lots.

c. Any other matter approved by CRE in its sole and absolute discretion.

d. The Memorandum of Agreement in the form of Exhibit F which Memorandum shall be recorded prior in any other encumbrance notwithstanding Section 4(2).

Section 5. Condition Precedent. The obligations of the parties contained in this Agreement, including, but not limited to the obligation to purchase and sell the County Lots, and to convey the real property described on Exhibit "C" hereto, shall be subject to the prior adoption by the County of Los Angeles of a resolution, or the taking of other appropriate official action, approving the sale by the County of Los Angeles to the Conservancy and/or Designee of the County Lots upon the terms and conditions contained in this Agreement.

W.E

Section 6. Obligation of CRE. In consideration of the Conservancy's purchase of the County Lots and sale of the CRE Lots to CRE as herein provided, CRE shall perform the following for the benefit of the Conservancy, Designee, the City of Los Angeles, and/or the County of Los Angeles:

a. Conveyance of Real Property.

i. The Conservancy or Designee intends to retain the Conservancy/Designee Lots or portions of lots described in Exhibit B-I to provide a buffer zone around the Deerlake Highlands area and along the western edge of Brown Canyon, and to provide an equestrian trail linkage between the Deerlake Highlands and the Brown Canyon Park land of the City of Los Angeles Department of Recreation and Parks.

In order to limit the further extension of access roads northward from the Deerlake Highlands subdivision, CRE, and any and all successors or related business entities, agree to the following conditions:

(1) That any road, or proposed road, in any development application after the date of this Agreement which concerns area shown and described on Exhibit "B" or properties controlled by CRE, its successors in interest, or any related business entities, shall terminate no less than 50 feet from the northern boundary of the Deerlake Highlands Subdivision.

(2) Once grading plans are approved for such roads, CRE, and any and all successors, shall offer to dedicate to the Conservancy or Designee a minimum 10-feet-wide strip of east west trending land across the full right-of-way width of the road terminus.

(3) The only exception to this road termination shall be that an access road to a proposed water tank site shall not be restricted as to its proximity to the northern boundary of the Deerlake Highlands Subdivision. This access road, which shall be dedicated to the Las Virgenes Municipal Water District for the sole purpose of providing access to the future water tank site, shall not exceed the minimum paved width required by the District. In addition, this access road may traverse the Conservancy's/Designee's 10 foot-buffer zone if required by the District to meet its water service standards for the Deerlake Highlands Subdivision. The one exception to the road termination condition is that CRE shall have the right to acquire property for a single water tank, the center point of which is not

W.E

to be located more than 500 feet north of the center line of Section 6, Township 2 North, Range 16 West, S.B.B.M (hereafter "Section 6"). The use of that water tank shall be forever limited and connected to the Deerlake Highlands Subdivision (area south of the centerline of Section 6). Said water tank shall also only be accessed via a road that crosses the Conservancy/Designee's 10-foot-wide fee title buffer strip as it is configured at that point in time. Prior to the Conservancy/Designee granting this above described water tank easement to CRE or the Las Virgenes Municipal Water District, CRE, and any and all successors must meet the following conditions:

(a) The Conservancy/Designee, must be the owner of a minimum 25-foot- wide fee title strip of land that forms a contiguous band around the proposed water tank facility and its one access road that originates south of the center line of Section 6. This contiguous band of fee title property must tie into the MRCA's minimum 10-foot-wide, fee title, northern boundary buffer strip on both the east and west sides of the described water tank access road. Said fee title property must be free of all liens, encumbrances, and tax liability. No other uses other than water storage and distribution may occur on any CRE land located north of the center line of Section 6.

(b) CRE and its successors shall pay for all real estate costs associated with the Conservancy/Designee granting an access road easement and for CRE providing the Conservancy/Designee with the said fee title strip. The Conservancy/Designee, must also be provided with a $100,000 title insurance policy against any recorded or, to the extent insurable, unrecorded easements across said fee title strip.

(c) At no cost to the Conservancy/Designee CRE and its successors shall provide to the Conservancy/Designee, or its successors, an irrevocable offer to dedicate either in fee title, or in a conservation easement, any and all land not related to said water tank, or access thereto, that CRE, its successors or related business entities, ever acquire within two miles north of the center line of Section 6. Said land shall be free of all encumbrances, liens and tax liability prior to transfer to the Conservancy/Designee.

(4) The limitations to the use of the clear span bridges as described

in Section 6 (a)(v)

In order to maximize the amount of permanently protected open space in the Devil and Brown's Canyon Watershed, CRE, and any and all successors and related business entities, agree to dedicate a conservation easement over any and all remaining project related open space within the area addressed in the Agreement which is contiguous with existing, or future Conservancy fee title owned open space. It is agreed that such an offer will be extended as a condition to obtain approved grading plans. The definition of open space in this case shall not include any land within proposed lots to be developed, along with access road, utility right of ways, bridges and related graded slopes and fuel modification areas as designated by Los Angeles County Fires Code. This portion of the Agreement coincides with the mitigation measure two in the Conservancy's Negative Declaration dated 08/1 3/97.

ii. Simultaneously with the conveyance of the CRE Lots to CRE, CRE shall convey to the Conservancy or Designee, through such Escrow, that certain real property shown and described in Exhibit"C" attached hereto and incorporated herein by this reference. The Conservancy or Designee intends to acquire such property in order to provide an addition to the Devil Creek Wildlife corridor and a Conservancy owned buffer zone along such portion of Devil Canyon. Said real property to be conveyed to Conservancy or Designee shall not include a certain parcel of land, shown and described in Exhibit "C-1" which contains the existing Twin Lakes Dam structure. The area occupied by Exhibit C-1 shall never be improved to carry more than one lane of vehicular traffic as it exists at the time this Agreement is signed unless such road is subject to the same restrictions as the clear span bridges.

iii. CRE shall, as its sole cost and expense, obtain for and provide to Conservancy or Designee a title company's standard CLTA Owners Policy of title insurance, insuring title to the Conservancy/Designee Lots (Exhibit B-1) and the Devil's Basin Habitat real property described in Exhibit"C" the Canoga Avenue property (Exhibit G) provided that no insurance shall be required if the Horner easement is first recorded in favor of the Conservancy/Designee and is insured in a manner satisfactory to the Conservancy/Designee, and insuring the Conservancy/Designees non-fee interest in the area adjacent to the Twin Lakes Dam (Exhibit C-1) the Twin Lakes property (Exhibit D), and the Deerlake Highland Property (Exhibit B). The policies on the Conservancy/Designee's fee interest rights shall be free and clear of deeds of trusts and liens including property tax liens. The policies of insurance on the Conservancy's non-fee interest shall, as to Exhibit B, be prior in time to any deeds of trust and shall, as to the Twin Lakes Property (Exhibit D), not be prior in time to existing deeds of trust. The policy of title insurance as to the Devil's Basin Habitat Property

W.F.

(Exhibit C) shall be in the amount of $500,000 and the Canoga Avenue Property (Exhibit G) shall be in the amount of $50,000. The amount of the policy of title insurance on the Conservancy/Designee lots (Exhibit B-1) and the Conservancy/Designee non-fee rights in the CRE Lots described in Exhibit B shall be $50,000. The policy of title insurance amounts on the Conservancy/Designees right in the Exhibit C-1 property area adjacent to (Twin Lakes Dam) shall be $50,000 and the rights to the Twin Lakes Property shall be insured in the amount of $50,000. CRE further agrees to pay for a lender's policy of title insurance in the amount of $1,000,000.00 to insure title to the first deed of trust described in Section 6f. below.

iv. CRE shall pay all costs of Escrow and of closing the purchase and sale transactions described herein, including, but not limited to, escrow fees, transfer taxes (if any), recording fees, and premiums for title insurance.

v. Subject to the terms of this Agreement the Conservancy/Designee agree to provide easements for CRE to construct at its sole expense and liability a maximum of three (3) clear-span bridges across Devil Canyon after conveyance of title of said canyon as shown and described in Exhibit "C" and Exhibit "B-1". The parties agree that the precise alignment of said bridges cannot be determined at present. The construction of said bridges shall conform with respective Federal, State and Local agency requirements, shall accommodate a maximum of two (2) vehicular travel lanes (one in each direction), and not exceed forty feet (40') in width for that portion of the structure required for vehicular traffic. Additional structural requirements for pedestrian traffic shall add no more than seven feet (7') to the forty foot (40') vehicular structure. All utilities shall be underground and/or attached under the bridge structures. The future use of all such bridges shall be restricted to property owners within the South ½ of Section 6, Township 2 North, Range 16 West, S.B.B.M., and that portion of the North ½ of Section 7, Township 2 North, Range 16 West, S.B.B.M. lying between the southerly line of said Section 6 and the Simi Valley (118) Freeway, as shown in Exhibit D-1.

Prior to the Conservancy/Designee granting an easement to CRE for a bridge that ties back to Topanga Canyon Boulevard, but that does not directly tie to Mayan Drive, the Conservancy/Designee must receive $60,000.00 from CRE. That $60,000.00 amount must be expended by the Conservancy/Designee, only for open space purchases in Section 6 of the U.S.G.S. Oat Mountain Quadrangle. The full sum must be expended within 2 years of receipt by the MRCA provided there are willing sellers. Up to 20 percent of the amount can be used for project planning and design expenses by the Conservancy/Designee.

W.E.

Prior to the Conservancy/Designee granting an easement to CRE for a bridge that ties back to Topanga Canyon Boulevard or Canoga Avenue via Mayan Drive, the Conservancy/Designee must receive $25,000.00 from CRE. That $25,000.00 amount must be expended by the Conservancy/Designee, only for open space purchases in Section 6 of the U.S.G.S. Oat Mountain Quadrangle provided there are willing sellers. The full sum must be expended within two years of receipt by the Conservancy/Designee. Up to twenty percent (20%) of the amount can be used for project planning and design expenses by the Conservancy/Designee.

Prior to the Conservancy/Designee granting an easement to CRE for a bridge that will carry Saugus Road traffic across Devil Canyon to Canoga Avenue, the Conservancy/Designee must receive $75,000.00 from CRE. That $75,000.00 amount must be expended by the Conservancy/Designee, only for open space purchases in Section 6 of the U.S.G.S. Oat Mountain Quadrangle provided there is a willing seller. A $50,000 portion of that sum shall be spent to acquire property or conservation easements that abut the west side of Brown's Canyon Road within the Deerlake Highlands Subdivision. The full sum must be expended within 2 years of receipt by the Conservancy/Designee provided there is a willing seller. Up to twenty percent (20%) of the amount can be used for project planning and design expenses by the Conservancy/Designee.

vi. Conservancy/Designee and CRE hereby agree that minor adjustments in the boundaries of that certain real property shown and described in Exhibit "B", attached hereto, may be necessary after precise Topographical surveys have been made in conjunction with proposed development of properties adjoining said properties described in said Exhibits. If necessary, such minor adjustments shall be made with consent of both parties, hereto, and shall not adversely affect the objectives of either party as stated in this Agreement.

vii. In order to allow for adequate wildlife movement up and down Devil Creek and around the existing Twin Lakes Dam as described in Exhibit C-1, by July 1, 1998 CRE, and any and all successors, agree to provide a natural surfaced by-pass on the south side of the dam. The bypass must provide the following characteristics:

(1) Possess a minimum width of thirty (30') of native soil surface free of any concrete infrastructure, fencing, above ground utilities, or direct lighting.

(2) On its upstream end, the width of land interface of the by-pass linkage with Conservancy or Designee fee title open space shall be no less than one hundred feet (100').

W.E

(3) On its downstream end, the by-pass shall tie back into the Conservancy's or Designee's fee title open space between the dam and the proposed new Saugus Road bridge and shall include all available open space between the dam and new bridge.

All parties agree that the existing equestrian trail, and any future, native-soil-surfaced trails proposed within this easement area, are compatible with its wildlife corridor purposes.

By July 1, 1998 CRE, and any and all of its successors, agree to convey an offer to dedicate a conservation easement for the by-pass, as described above, to the Conservancy or Designee. Such rights as described in this paragraph as they relate to Exhibit C-1 shall be included in the recorded Memorandum of Agreement set forth in Exhibit F.

viii. Concurrently with the close of escrow CRE shall grant the Conservancy/Designee that 0.8 acres near Canoga Avenue as set forth in Exhibit G and a diagram of which is included as Exhibit G-1 subject to being reconveyed as provided in Section 7 below but at no cost to the Conservancy/Designee.

b. Funding for Trail Related Improvements or Land Acquisition. CRE hereby agrees to pay for Conservancy/Designee $150,000.00 as a condition of Escrow closure to be used only for the following purposes: 1) the acquisition of property either in fee, or through easement, for trail or habitat purposes, (2) the construction of new trails or the repair of existing trails, or (3) the construction of trailhead/staging area facilities. The expenditure of the money must occur on the south facing slopes of the Santa Susana Mountains between the Santa Susana Pass and the eastern edge of the Brown's Canyon watershed. Two projects under consideration include a trail head facility at the southwest corner of 118 Freeway and Canoga Avenue and a Hiking trail from Poema Place into Devil Canyon.

c. Dedication or Conveyance of Trail System. It is the intention of the parties that, at some future date, CRE shall convey to the Conservancy or Designee or to the County of Los Angeles Department of Parks and Recreation, permanent easements on, over, under and across that certain proposed hiking trail system shown and described on Exhibit "D-1" attached hereto and incorporated herein by this reference, as such trail system may subsequently be realigned (subject to approval by the County of Los Angeles) in connection with the completion of design of CRE's adjacent project. Such dedication or conveyance (of the eventual realigned trail system) is anticipated to be required by the County of Los Angeles as a condition of its granting of certain development entitlement to CRE and will be performed by CRE in due course as required. If CRE, or any of its successors, files a map to develop the Deerlake

Highlands Subdivision area as shown generally by Exhibit "B", that map will include the extension of the two northward headed trail stubs shown in Exhibit "D-1" to join Conservancy-owned property on either the west, north, or east boundary of the Deerlake Highlands subdivision area. CRE shall convey to the Conservancy or Designee, or to the County of Los Angeles Department of Parks and Recreation, permanent easements over the final County-approved alignment of these two trail extensions. CRE shall construct both such trail extensions to either Conservancy or County standards prior to the construction of any homes in the area represented by Exhibit "A".

Pending the completion of CRE's development design, the realignment of such trail system, and the granting of entitlements requiring such dedication or conveyance, CRE agrees to permit the general public a temporary right of access and use of the trail system aligned as depicted on Exhibit "D-1" hereto, which right shall expire upon recordation of the eventual conveyance or dedication of such trail system as permanently aligned, as contemplated by this paragraph. Such rights as to Exhibit D-1 shall be included in the recorded Memorandum of Agreement described in Exhibit F.

d. Memorandum of Understanding. CRE shall execute and deposit into Escrow, for delivery to the Santa Susana Mountains Park Association and recording upon Close of Escrow, that certain Memorandum of Understanding attached hereto as Exhibit "E" and incorporated herein by this reference, which document requires CRE to dedicate to the Conservancy or Designee approximately 275 acres of Tract No.44327 as open space, as shown and described in Exhibit "E". No escrow shall be opened until the parties have agreed upon the form and substance of said Exhibit "E" hereto but such agreement shall be recorded concurrently with all other documents in this transaction.

e. Weed Abatement. It is the intention of the parties that the cost of weed abatement by the Los Angeles County Fire Department or City of Los Angeles Fire Department on the Conservancy/Designee Lots and that certain real property to be owned by the Conservancy or Designee and shown in Exhibit "C", hereto, will for in perpetuity be borne by the homeowners' association(s) to be established prior to establishment by CRE or any and all of its successor in connection with its adjacent residential development(s). Therefore, CRE shall deposit into Escrow a covenant and agreement or other appropriate obligation, in form to be negotiated by the parties, to assure performance of CRE's obligations under this paragraph to include such an obligation in the Covenants, Conditions and Restrictions for such future homeowners' association(s), and/or to bind successor owners of the affected real property, to bear such costs. No escrow shall be opened until the parties have agreed upon the form and substance of such document. In addition, CRE hereby represents and warrants that it will design and develop its residential development adjacent to Devil Canyon, as shown in Exhibit "C", and adjacent to the buffer areas, as shown in Exhibit "B-1", in such a manner that minimal weed abatement activity will be required therein by the

W.E.

Los Angeles County Fire Department, which representation and warranty shall survive the Close of Escrow. Both parties hereto agree that maintaining said areas in a natural condition provides a significant inducement for the Conservancy and Designee to enter into this Agreement. Until such time as such homeowner's associations are created, CRE shall be responsible for such weed abatement should weed abatement be required. In addition CRE hereby represents and warrants that it will design and develop its project on the west side of Deerlake Highlands such that absolutely no form of fuel modification shall be required on APN 2821-024-007 which the Conservancy shall soon acquire in fee title.

f. Santa Susana Mountains Ranger Position. It is the intention of the parties hereto that CRE shall provide for the funding in perpetuity, of $60,000.00 per year, to fund the costs of a ranger position for the Santa Susana Mountains area to have specific responsibility for the publicly owned open space real properties that are the subject of this Agreement. The mechanism for the funding of such annual $60,000 amount for such purpose shall be as follows:

i. CRE and Calmont shall deposit in Escrow a promissory note secured by a full recourse First Trust Deed in a form acceptable to and which names as beneficiary the Mountains Recreation and Conservation Authority (Designee) which note shall be in the principal amount of $1,000,000 encumbering Calmont's 15-acre real property located at Mulholland Highway and Valmar Street in Calabasas (APN 2080-014-004)(the "Deed of Trust") to protect the Designee's interest until the earlier of (a) the date on which, an endowment fund of $1,000,000 in a Conservancy/Designee account is set up by CRE within four (4) years after signing of this Agreement or (b) the date within four (4) years after the signing of this Agreement that an annuity is established with an established insurance carrier admitted in California and acceptable to Conservancy or Designee to provide the specified payments required under this Section. (That first Trust Deed can be reduced proportionately as the endowment is assembled). The First Trust Deed shall be prior in time to all tax liens or judgement liens. Prior to the Close of Escrow Calmont shall provide Escrow and the Conservancy/Designee the following:

(1) A current certificate of Corporate Status showing that Calmont Properties is a corporation in good standing in the State of California

(2) A letter from Calmont, CRE Corp, Colleen C. Welter, the wife of Douglas Riley, and Douglas Riley representing and warranting that Colleen C. Welter is the sole shareholder of Calmont and CRE Corp.

W.E.

(3) A duly authorized corporate resolution authorizing Calmont for valid corporate purposes, to execute such promissory note and deed of trust as a primary obligor and that Calmont is not considered a guarantor and acknowledges that the beneficiary under that deed of trust may elect to proceed first against Calmont and the Mulholland property as opposed to CRE.

ii. The parties agree that CRE shall not initially be required to fund such full $60,000 annual amount. In lieu of such full initial funding, the parties agree that CRE shall pay the following annual amounts to cover portions of the cost of such ranger, which payment obligation shall be secured by the Deed of Trust described above:

(1) $15,000 for the initial year, to be paid through Escrow upon close of escrow.

(2) $24,000 no later than one year after the Close of Escrow.

(3) $30,000 no later than two years after the Close of Escrow.

(4) $45,000 no later than three years after the Close of Escrow.

(5) $60,000 no later than four years after the Close of Escrow, and an equal sum thereafter, in accordance with Section 6 (f)(l).

iii. Even in the event the Conservancy/Designee elects not to fund such ranger position in whole or in part for any reason including but not limited to the failure of CRE and/or Calmont to comply with the terms and conditions of the promissory note or this Agreement, or a decision by the Conservancy/Designee that such a ranger position is not warranted or for any other reason, then the obligations of CRE and Calmont under the endowment fund or annuity or promissory note shall remain in full force and effect.

g. Additional Attorney Fees and Miscellaneous Expenses. As an additional condition to the close of escrow CRE shall pay to the Conservancy/Designee an additional $3,000 for attorney fees for outside counsel over and above the $7,000 previously paid. The Conservancy or Designee must refund to CRE any portion of the attorney fees to outside counsel which are less than $10,000. Such refund shall occur within thirty days from the close of escrow.

Additionally at the close of escrow CRE shall pay to the Conservancy/Designee the sum of $750 to reimburse its staff time for conducting an in-house Phase One

W.G.

Environmental Assessment on the acreage to be retained by the Conservancy/Designee.

h. Property North of Deerlake Highlands. By the signing of this agreement, CRE represents and warrants that neither it nor its officers, directors, shareholders, employees, agents or related business entities ("Related Parties") have a vested interest in real property, including options or easements, in the northern half of Section 6 of the U.S.G.S. Oat Mountain Quadrangle. CRE and related parties, and their successors, hereby agree that if such interest existed prior to the execution date of this Agreement that the Conservancy/Designee, is under no obligation to grant bridge or water tank related easements as defined in this Agreement and may, if previously granted, revoke, such easements.

By the signing of this Agreement, CRE, Related Parties, and their successors, also agree not to enter into any agreements related to any real property interests in the northern half of Section 6 of the U.S.G.S. Oat Mountain Quadrangle. CRE, the Related Parties, and any and all of their successors, hereby agree that if such interest exists at any time subsequent to the execution date of this agreement, that the Conservancy/Designee, is under no obligation to grant bridge or water tank related easements as defined in this document and may, if previously granted revoke such easements.

If it is demonstrated to the sole satisfaction of the Conservancy/Designee any CRE or related parties interest in property in the north half of Section 6 is immaterial to any access or utility related connection between the Deerlake Highlands Subdivision, or Topanga Canyon Boulevard, and the northern half of Section 6, then the Conservancy/Designee must grant such bridge easements and/or may not revoke such bridge easements as the case may be.

i Additional Property along Northern Boundary of Exhibit B. If CRE or a Related Party and any and all of its successors acquire, or have acquired, any additional properties along the northern boundary of the area defined by Exhibit B, all such parties must provide a written offer to the Conservancy/Designee, to dedicate, in fee title, at no cost to the Conservancy/Designee, a minimum 10 foot-wide strip of east-west trending land along the entire northern boundary of all such properties. For each subject parcel the Conservancy/Designee must receive an offer to dedicate via registered mail within 90 days after any close of escrow. The Conservancy/Designee must also be provided a minimum of $25,000 of title insurance and title must be free from recorded or unrecorded easements over the dedicated property.

Section 7. Agreement with Horner. If by June 1, 1998 the parties shall complete the agreement to acquire the Conservation Easement from Mr. and Mrs. Horner as contemplated by the parties hereto, then the property described in Exhibit G shall be redeeded by Designee to the entity from which it was acquired. Additionally CRE shall remove all trash and organic

W.E.

debris from all portions of a conservation easement that is to be acquired by the Designee as a portion of APN 2818-021-002 along its western boundary. Such clean-up required by this Agreement shall not occur until the Designee indicates to CRE that sufficient barriers are in place to reduce further dumping.

Section 8. Memorandum of Agreement. Concurrently with the execution of this Agreement, the parties shall execute and record a "Memorandum of Agreement Re Acquisition of Real Property" (the "Memorandum of Agreement"), in the form of Exhibit "F" attached hereto and incorporated herein by this reference.

Section 9. Governing Law. This Agreement shall be governed by, and construed and enforced in accordance with, the laws of the State of California.

Section 10. Entire Agreement. This Agreement constitutes the entire understanding and supersedes any and all other prior agreements, whether written or oral, among the parties regarding the subject hereto This Agreement shall not be amended or modified except by a writing signed by the parties hereto which specifies that it is an amendment to this Agreement, or as otherwise contemplated by this Agreement for the negotiation and development of the additional documents necessary to consummate the transactions described herein.

Section 11. Further Assurances. Each of the parties hereto agrees to execute and deliver, in recordable form (if applicable), any and all additional papers, documents, and other assurances, and shall do any and all acts and things reasonably necessary in connection with the performance of their obligations hereunder, and to carry out the intent of the parties hereto.

Section 12. Arbitration of Disputes. IN THE EVENT OF ANY DISPUTE ARISING UNDER THIS AGREEMENT THE PARTIES AGREE TO SUBMIT SUCH DISPUTES FOR BINDING ARBITRATION TO J.A.M.S /ENDISPUTE ("JAMS"), 350 SOUTH FIGUEROA STREET, SUITE 990, LOS ANGELES, CALIFORNIA, 90071, WHICH ENTITY OR ANY SUCCESSOR THERETO SHALL HAVE EXCLUSIVE JURISDICTION TO RESOLVE SUCH DISPUTES. SHOULD JAMS NO LONGER BE ENGAGED IN BUSINESS OR FOR ANY REASON DECLINE OR REFUSE TO DETERMINE A SUBMITTED DISPUTE, THE PARTIES AGREE TO SUBMIT THE DISPUTE TO THE AMERICAN ARBITRATION ASSOCIATION ("AAA"), FOR ARBITRATION IN THE PLACE OF JAMS. WITHIN TEN (10) DAYS AFTER EITHER PARTY GIVES NOTICE OF ITS INTENT TO ARBITRATE A DISPUTE UNDER THIS SECTION, THE PARTIES SHALL AGREE UPON ONE (1) JUDGE WHO SHALL BE THE ARBITRATION PANEL. IN THE EVENT THAT THE PARTIES ARE UNABLE TO AGREE UPON ONE (1) JUDGE WITHIN SUCH TIME PERIOD, THEN A THREE JUDGE PANEL WILL BE SELECTED TO ARBITRATE THE DISPUTE. JAMS OR THE AAA, WHICHEVER ARBITRATES THE DISPUTE, WILL PROVIDE THE NAMES OF FIVE POTENTIAL ARBITRATORS, GIVING EACH PARTY THE OPPORTUNITY TO STRIKE ONE NAME. THE REMAINING THREE JUDGES WILL SERVE AS THE ARBITRATION PANEL. THE PARTIES AGREE THAT THE ARBITRATION ORDER SHALL BE ENFORCEABLE IN ANY

W.E.

COURT OF COMPETENT JURISDICTION. ARBITRATION FEES AND EXPENSES SHALL BE PAID BY THE PARTY AGAINST WHOSE POSITION SUCH DISPUTE SHALL BE FINALLY DECIDED. THE PARTIES AGREE THAT ANY ARBITRATION HEARINGS SHALL BE HELD WITHIN THE CITY OF LOS ANGELES. THE PARTIES HERETO SHALL HAVE THE RIGHT TO CONDUCT DISCOVERY IN ANY DISPUTE SUBMITTED OR ARBITRATION MEDIATION IN ACCORDANCE WITH CALIFORNIA CODE OF CIVIL PROCEDURE §1283.05. THE DECISION OF THE ARBITRATION PANEL SHALL BE APPEALABLE ACCORDANCE WITH THE APPLICABLE LAWS OF THE STATE OF CALIFORNIA. NOTHING HEREIN SHALL REQUIRE THE HOLDER OF THE PROMISSORY NOTE SECURED BY A FIRST DEED OF TRUSTS DESCRIBED IN SECTION 6(F) TO SEEKARBITRATION PRIOR TO COMMENCING FORECLOSURE UNDER THE POWER OF SALE.

NOTICE: BY INITIALING IN THE SPACE BELOW YOU ARE AGREEING TO HAVE ANY DISPUTE ARISING OUT OF THE MATTERS INCLUDED IN THE"ARBITRATION OF DISPUTES" PROVISION DECIDED BY MUTUAL ARBITRATION AS PROVIDED BY CALIFORNIA LAW AND YOU ARE GIVING UP ANY RIGHTS YOU MIGHT POSSESS TO HAVE THE DISPUTE LITIGATED IN A COURT OR JURY TRIAL. BY INITIALING IN THE SPACE BELOW, YOU ARE GIVING UP YOUR JUDICIAL RIGHTS TO DISCOVERY AND APPEAL, UNLESS THOSE RIGHTS ARE SPECIFICALLY INCLUDED IN THE "ARBITRATION OF DISPUTES" PROVISION. IF YOU REFUSE TO SUBMIT TO ARBITRATION AFTER AGREEING TO THIS PROVISION, YOU MAY BE COMPELLED TO ARBITRATE UNDER THE AUTHORITY OF THE CALIFORNIA CODE OF CIVIL PROCEDURE. YOUR AGREEMENT TO THIS ARBITRATION PROVISION IS VOLUNTARY. WE HAVE READ AND UNDERSTAND THE FOREGOING AND AGREE TO SUBMIT DISPUTES ARISING OUT OF THE MATTERS INCLUDED IN THE "ARBITRATION OF DISPUTES" PROVISION TO NEUTRAL ARBITRATION.

CONSERVANCY:	DESIGNEE:	CRE, LLC:	CRE, CORP:	CALMONT:
BF	BF			

Section 1.3. Notices. Any notices to be given hereunder by any party to any other party shall be in writing and shall be delivered either personally or by United States mail, registered or certified, postage paid with return receipt requested. Notice shall be delivered or addressed to the parties, until notice of a different address is given, at the following addresses:

"Conservancy"
and "Designee":

Mr. Joseph Edmiston, Executive Director
Santa Monica Mountains Conservancy and
Mountains Conservation and Recreation Authority
5750 Ramirez Canyon Road
Malibu, California 90265

W.G

Fax No.: (310) 589-3207

With Copy To:

Laurie Collins, Esq.
Counsel for Santa Monica
Mountains Conservancy Mountains
Recreation Authority
5750 Ramirez Canyon Road
Malibu, California 90265
Fax No.: (310) 589-3207

"Chatsworth Ridge Estates, LLC"
or
"Chatsworth Ridge Estates
a California Corporation"
or
"Calmont Properties, Inc.
a California Corporation"

23480 Park Sorrento, Suite lOlA
Calabasas, California 91 302
ATTN: Mr. Dewitt Lancaster, Controller
Fax No.: (818) 876-8525

With Copy To:

Robert Smylie & Associates
2049 Century Park East, Suite 2050
Los Angeles, California 90067
Attention: Robert 0. Smylie, Esq.
Fax No.: (213) 553-7401

Notices not personally served shall be deemed delivered three (3) days after mailing.

Section 14 Attorney Fees: Costs. In any action, mediation, arbitration or other proceeding between the parties to and arising out of this Agreement, the prevailing party in such action shall be entitled to recover its reasonable attorney's fees and costs.

Section 15. Severability. If any term, provision, condition or covenant of this Agreement or its application to any party or circumstance shall be held, to any extent, invalid or unenforceable, the remainder of this Agreement, or the application of the terms, provisions, conditions or covenants to persons or circumstances other than those to whom or for which it is held invalid and unenforceable, shall not be affected, and shall be valid and enforceable to the fullest extent permitted by law; provided, such invalidation or unenforceability does not materially adversely affect the receipt of any essential material benefit of this Agreement in favor of any of the parties.

Section 16. Successors and Assigns. All of the terms and provisions of this Agreement shall be binding upon and inure to the benefit of and be enforceable by the parties and each of their respective successors and assigns.

W.E

Section 1 7. Counterparts. The Agreement may be executed in one or more counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date stated above.

SANTA MONICA MOUNTAINS CONSERVANCY

By: Belinda Faustinos
Belinda Faustinos, Deputy Director

MOUNTAIN RECREATION CONSERVATION AUTHORITY

By: Belinda Faustinos
Belinda Faustinos, Deputy Executive Officer

CHATSWORTH RIDGE ESTATES, LLC,
a California limited liability company

By: Chatsworth Ridge Estates,
a California Corporation,

By: _____
Colleen C. Welter, President

CHATSWORTH RIDGE ESTATES,
A California Corporation

By: _____
Colleen C. Welter, President

CALMONT PROPERTIES, INC.
a California Corporation

By: _____
Colleen C. Welter, President

STATE OF CALIFORNIA }
} ss.
COUNTY OF LOS ANGELES }

On December 30, 1997, before me, Cynthia L. Silverman, the undersigned Notary Public in and for said State, personally appeared Belinda Faustinos, personally known to me, or proved to me on the basis of satisfactory evidence, to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in her/his capacity, and that by her/his signature on the instrument, the person, or entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Cynthia L Silverman
Signature of Notary Public

CYNTHIA L. SILVERMAN
Comm. # 1156746
NOTARY PUBLIC - CALIFORNIA
Los Angeles County
My Comm. Expires Sept. 26, 2001

STATE OF _____ }
} ss.
COUNTY OF _____ }

On _____, 1997, before me, _____, the undersigned Notary Public in and for said State, personally appeared _____, personally known to me, or proved to me on the basis of satisfactory evidence, to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in her/his capacity, and that by her/his signature on the instrument, the person, or entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

_____
Signature of Notary Public

W.E.

Recording Requested by
and when recorded mail to:

Santa Monica Mountains
Conservancy
5750 Ramirez Canyon Road
Malibu, California 90265
Attn: Paul Edelman

MEMORANDUM OF AGREEMENT RE ACQUISITION OF REAL PROPERTY

THIS MEMORANDUM OF AGREEMENT RE ACQUISITION OF REAL PROPERTY "Memorandum of Agreement") is made and entered into as of the 29th day of December, 1997, by and among between THE SANTA MONICA MOUNTAINS CONSERVANCY ("Conservancy"), the Conservancy's Designee, MOUNTAIN RECREATION CONSERVATION AUTHORITY ("Designee") CHATSWORTH RIDGE ESTATES, LLC, a California limited liability company. ("CRE") and CHATSWORTH RIDGE ESTATES, INC. a California Corporation (CRE Corp.)

Conservancy, Designee, and CRE have entered into that certain "Agreement Re Acquisition of Real Property", dated December 29, 1997, which related to real property, in the County of Los Angeles, State of California, legally described on **Exhibit "A"; Exhibit B; Exhibit B-1, Exhibit C; Exhibit C-1, Exhibit D, Exhibit D-1** and **Exhibit G**. At such time as this Memorandum of Agreement no longer effects a particular parcel of property attached hereto as an exhibit, then the parties hereto agree to release such parcel of property from the terms of such Agreement in a form suitable for recording.

IN WITNESS WHEREOF, the parties have executed this Memorandum of Agreement as of the date above.

SANTA MONICA MOUNTAINS CONSERVANCY

By: Belinda Faustinos
Belinda Faustinos, Deputy Director

MOUNTAINS RECREATION CONSERVATION AUTHORITY

By: Belinda Faustinos
Belinda Faustinos, Deputy Executive Officer

CHATSWORTH RIDGE ESTATES, A Limited Liability Company

By: Chatsworth Ridge Estates, Inc.
A California Corporation

By: _____
Colleen C. Welter, President

WE.

Chatsworth Ridge Estates, Inc.,
A California Corporation

By: _____
Colleen C. Welter, President

STATE OF CALIFORNIA }
}ss.
COUNTY OF LOS ANGELES }

On December 30, 1997, before me, Cynthia L. Silverman the undersigned Notary Public in and for said State, personally appeared Belinda Faustinos, personally known to me or proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal

Cynthia L. Silverman
Signature of Notary Public

CYNTHIA L. SILVERMAN
Comm. # 1156746
NOTARY PUBLIC - CALIFORNIA
Los Angeles County
My Comm. Expires Sept. 26, 2001

STATE OF _____ }
}ss.
COUNTY OF _____ }

On _____, before me, _____ the undersigned Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal

_____
Signature of Notary Public

W.E.

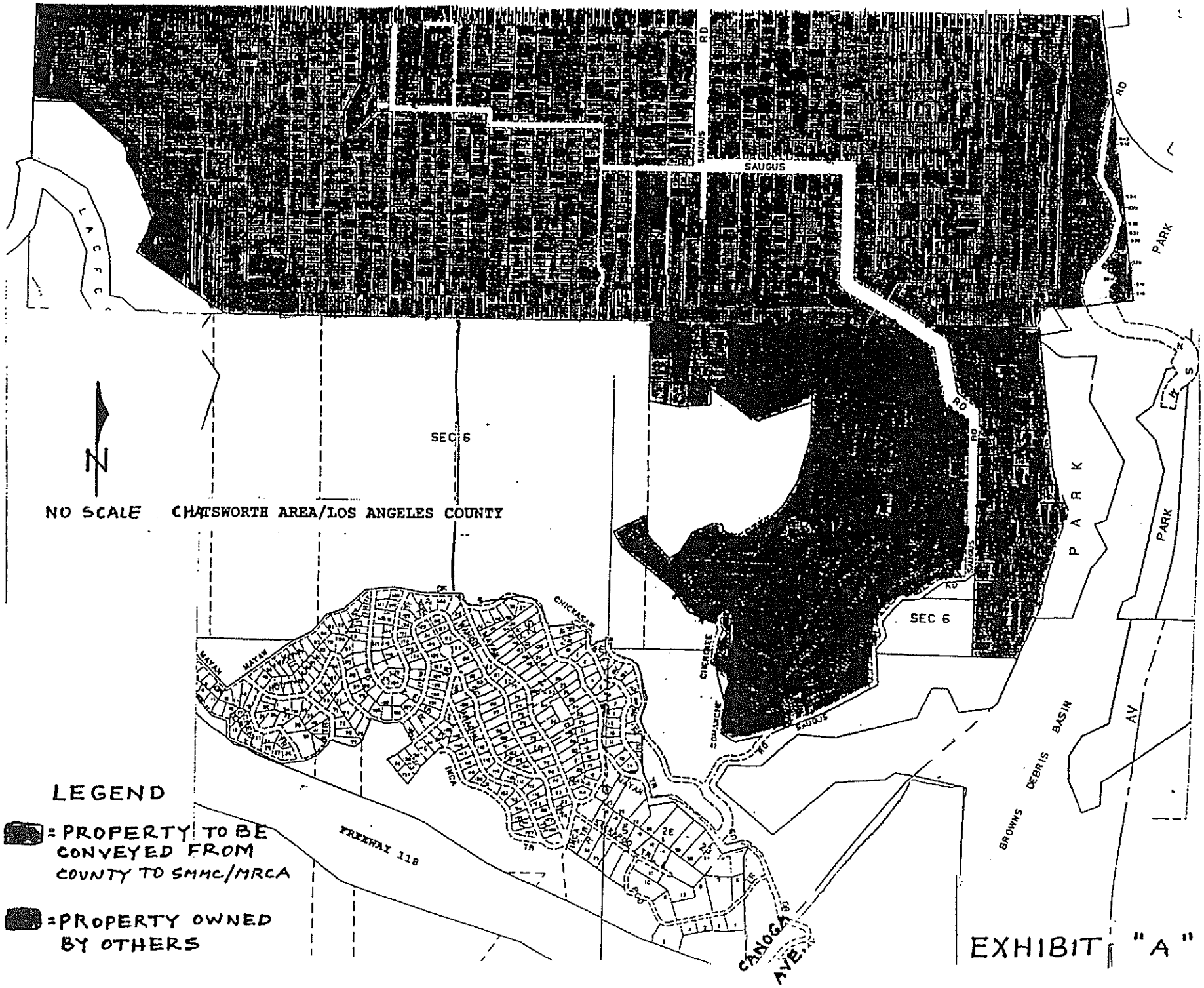

NO SCALE
CHATSWORTH AREA/LOS ANGELES COUNTY
SEC 6
SEC 6
SAUGUS
RD
PARK
PARK
PARK
BROWNS DEBRIS BASIN
AV
FREEWAY 118
CANOGA AVE.
MAYAN
INCA
CHICKASAW
CHEROKEE
LEGEND
= PROPERTY TO BE CONVEYED FROM COUNTY TO SMMC/MRCA
= PROPERTY OWNED BY OTHERS

EXHIBIT "A"

EXHIBIT " A "
DEERLAKE HIGHLANDS

THOSE PORTIONS OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN SHOWN AS THE FOLLOWING LOTS ON LICENSED SURVEYORS MAP FILED IN BOOK 24, PAGE 14, OF RECORD OF SURVEYS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER OF SAID COUNTY:

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
LS: 24 -14 (9613477)	2148 to 2163, inclusive 2111 to 2120, inclusive 2122 to 2126, inclusive	2819 / 001 / 901
24 - 14 (9613478)	2035B 2036 to 2044, inclusive 2047 and 2048 2175 to 2182, inclusive	2819 / 002 / 901
	539 to 545, inclusive	2819 / 002 / 902
24 - 14 AND ALSO LS 23 - 45 (9613478)	569 533 to 538, inclusive	2819 / 003 / 900 2819 / 003 / 901
	510 to 514, inclusive 2167 to 2174, inclusive 2183 to 2197, inclusive	2819 / 003 / 902
24 - 14 (9720968)	518, 519, & 528 531 & 532 547 & 548	2819 / 004 / 900 2819 / 004 / 901 2819 / 004 / 902

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
24 - 14 (9613480)	168 to 175, inclusive 190 to 199, inclusive 396, 397, 431, 432 506 to 509, inclusive 2164 to 2166, inclusive 2199 to 2218, inclusive	2819 / 005 / 900 –

THOSE PORTIONS OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN SHOWN AS THE FOLLOWING LOTS ON LICENSED SURVEYORS MAP FILED IN BOOK 22, PAGE 03, OF RECORD OF SURVEYS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER OF SAID COUNTY:

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
22 - 03 (9613481)	176 to 183, inclusive 185 to 189, inclusive 382 to 384, inclusive 386 to 388, inclusive 392 to 395, inclusive 398 to 404, inclusive 424 to 429, inclusive	2819 / 006 / 901
	390, 391 412 to 414, inclusive 417 & 418	2819 / 006 / 902
LS: 22 - 03 (9613482)	433 to 438, inclusive 461, 497 & 498	2819 / 007 / 901
	440 442 to 449, inclusive 452, 453 455 to 459, inclusive 467, 468, 472, 473, 474 477 to 482, inclusive 484 to 489, inclusive 493, 494, 495	2819 / 007 / 902

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
22 - 03 (9613483)	805	2819 / 008 / 900
	499 to 505, inclusive	2819 / 008 / 901
	808, 812	
	814 to 821, inclusive	
	823 to 825, inclusive	–
	827 to 830, inclusive	
	832 to 860, inclusive	
	2050	
22 - 03 (9613484)	2049	2819 / 009 / 900
	2052 to 2064, inclusive	
	2074, 2075	
	2139 to 2147, inclusive	
22 - 03 (9613485)	2066 to 2073, inclusive	2819 / 010 / 901
	2077	
	2080 to 2097, inclusive	
	2099 to 2105, inclusive	
	2107 to 2110, inclusive	
	2127, 2128	
	2131 to 2138, inclusive	
22 - 03 AND ALSO LS 21 - 50 (9613486)	647, 648, 649	2819 / 011 / 902
	657, 658, 667, 677	
	771, 772, 780, 781	
	783 to 787, inclusive	
	790 to 797, inclusive	
	764 to 767, inclusive	2819 / 011 / 903
22 - 03 (9613487)	646, 655 & 656	2819 / 012 / 901
	641, 642, 643, & 652	2819 / 012 / 902
	587 to 596, inclusive	2819 / 012 / 903
	670 to 675, inclusive	

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
22 - 03 (9613488)	688,698, 699 707 to 709, inclusive 717, 719	2819 / 013 / 900
	750	2819 / 013 / 901
	721 to 727, inclusive 731 to 737, inclusive 741 to 747, inclusive 752 to 754, inclusive 756 & 757	2819 / 013 / 902
22 - 03 (9613489)	579 582 to 586, inclusive 690, 691	2819 / 014 / 900 2819 / 014 / 901
	682, 683, & 693 695 704, 713 & 714	2819 / 014 / 902 2819 / 014 / 903 2819 / 014 / 904
22 - 03 (9613490)	340 376	2819 / 015 / 900 2819 / 015 / 901
22 - 03 (9613491)	373 313 317	2819 / 017 / 900 2819 / 017 / 901 2819 / 017 / 902
22 - 03 (9613492)	307 219, 220 223 224 & 225 334 336 to 338, inclusive 332 & 346	2819 / 018 / 900 2819 / 018 / 901 2819 / 018 / 902 2819 / 018 / 903 2819 / 018 / 904 2819 / 018 / 905 2819 / 018 / 906

BOOK-PAGE	LOT NUMBERS	MAP BOOK
22 - 03 (9613493)	283 to 289, inclusive	2819 / 019 / 901
	298 to 300, inclusive	
	368	
22 - 03 (9613494)	213	2819 / 020 / 900
	218	2819 / 020 / 901
	290	2819 / 020 / 902
	278 & 292	2819 / 020 / 903
	280, 281, 282, 294 & 296	2819 / 020 / 904
22 - 03 (9613495)	256, 257, 259, 261, & 363	2819 / 021 / 901
	269 to 274, inclusive	
	361	2819 / 021 / 902
22 - 03 (9613496)	200	2819 / 022 / 901
	202 & 203	2819 / 022 / 902
	207 to 211, inclusive, 231 (west 10 feet of 206)	2819 / 022 / 903
	263	2819 / 022 / 904
	250, 251, 266	2819 / 022 / 905
	253	2819 / 022 / 906

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
	ASSESSOR MAP BOOK 2816	
22 - 03	614	2816 / 007 / 902
(9613497)	619	2816 / 007 / 903
	634	2816 / 007 / 904
	874	2816 / 007 / 905
	897 & 898	2816 / 007 / 906
	900	2816 / 007 / 907
	905	2816 / 007 / 908
	910 & 911	2816 / 007 / 909
	918, 919, 938, 941, 943, 944	2816 / 007 / 911
	947 & 948	2816 / 007 / 912
	950 & 951	2816 / 007 / 913
	953, 954 & 1026	2816 / 007 / 914
	932	2816 / 007 / 915
	956 to 959, inclusive	
	1021 to 1024, inclusive	
	1019	2816 / 007 / 916
	636 to 639, inclusive	2816 / 007 / 917
	861 to 863, inclusive	
	865 & 869	
	886 to 894, inclusive	
	896	
	901 to 903, inclusive	
	907 & 908	
	921 to 923, inclusive	
	926 to 928, inclusive	
	961 to 967, inclusive	
	969 to 977, inclusive	
	979 to 985, inclusive	
	987 to 989, inclusive	
	992 to 995, inclusive	
	998 to 1012, inclusive	
	1014 to 1017, inclusive	
	1028 & 1029	

L.C. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
22 - 03 (9613498)	1118	2816/011/900
	1120, 1121	2816/011/901
	1077 & 1078	2816/011/902
	1082 to 1085, inclusive	
	1087, 1088 ,	–
	1097 to 1111, inclusive	
	1147 to 1157, inclusive	
	1167,1169,1170,1176,1177	
	1095	2816/011/903
22 - 03 (9613499)	1049,1050,1053,1065,1067	2816/012/902
	1068,1070,1072,1073,1075	
	1089 to 1094, inclusive	
	1134 to 1138, inclusive	
	1140 & 1141	
	1143 to 1145, inclusive	
	1159 to 1165, inclusive	
22 - 03 (9619000)	1030 to 1038, inclusive	2816/013/901
	1041 to 1044, inclusive	
	1054 to 1063, inclusive	
	1112 to 1115, inclusive	
	1122 to 1126, inclusive	
	1128	
	1130 to 1133, inclusive	
22 - 03 AND ALSO LS 21 - 50 (9619001)	1306, 1308 & 1346	2816/014/900
	1268	2816/014/901
	1311 to 1313, inclusive	2816/014/902
	1116, 1181, 1182	2816/014/903
	1184 to 1188, inclusive	
	1190	
	1224 to 1227, inclusive	
	1229 to 1238, inclusive	
	1275 & 1276	
	1315 to 1317, inclusive	

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
22 - 03 (9619002)	1291 & 1331	2816/015/900
	1200 to 1203, inclusive	2816/015/901
	1245,1246,1248, & 1250	
	1285 to 1288, inclusive	
	1323 to 1329, inclusive	–
	1280	2816/015/902
	1319	2816/015/903
	1195 to 1198, inclusive	2816/015/905
	1242,1243 & 1282	
	1193, 1194 & 1239	2816/015/906
22 - 03 AND ALSO LS 21 - 50 (9619003)	1295	2816/016/903
	1334	2816/016/904
	1205 to 1207, inclusive	2816/016/905
	1252 to 1254, inclusive	
	1209 to 1211, inclusive	2816/016/907
	1213 & 1216	2816/016/908
	1218 to 1220, inclusive	
	1258 to 1266, inclusive	
	1297 & 1298	
	1304 & 1305	
	1337 to 1344, inclusive	
22 - 03 AND ALSO LS 21 - 50 (9619004)	1345	2816/017/900
	1378	2816/017/901
	1470 & 1471	2816/017/903
22 - 03 AND ALSO LS 21 - 50 (9619005)	1456	2816/018/901
	1452	2816/018/902
	1361 to 1366, inclusive	2816/018/903
	1368, 1369 & 1401	
	1403 to 1409, inclusive	
	1443	
	1411	2816/018/904

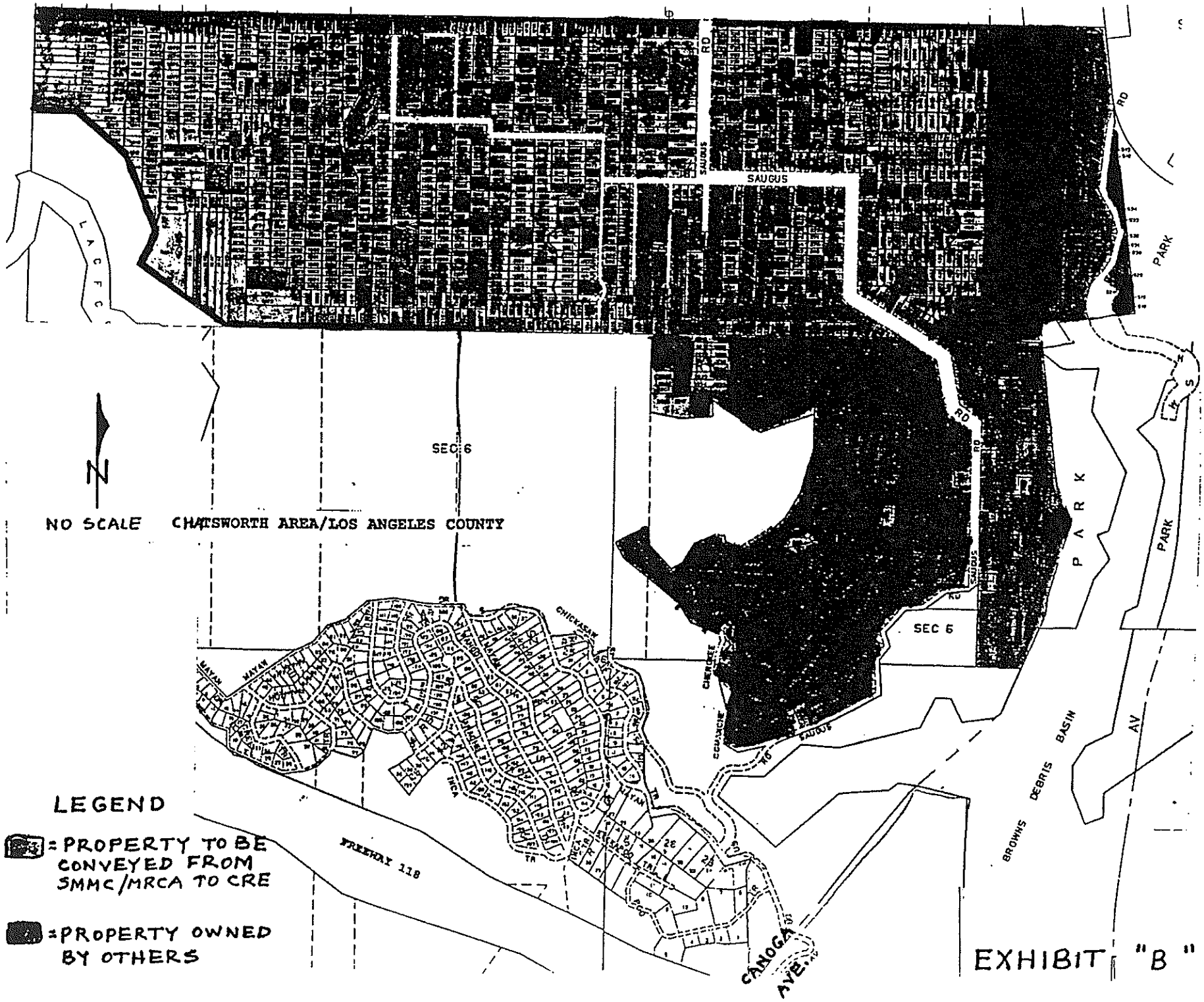
L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
22 - 03 AND ALSO LS 21 - 50 (9619006)	1428 1358 to 1360, inclusive 1399 & 1400	2816 / 019 / 901 2816 / 019 / 903
	1430	2816 / 019 / 904
	1348 & 1349 1350 1352 to 1356, inclusive 1388 1390 & 1391 1393 1395 to 1397, inclusive	2816 / 019 / 905
22 - 03 (9619007) and 24 - 15 AND ALSO LS 28 -26	1472 & 1473 1475 to 1482, inclusive 1484, 1485 & 1487 1518 to 1523, inclusive 1525 & 1603 1605 to 1629, inclusive	2816 / 020 / 901
22 - 03 24 - 15 AND ALSO LS 21 - 50 LS 23 - 46 LS 28 - 28 (9619008)	1493 1526 to 1531, inclusive 1567 1569 to 1574, inclusive 1576 to 1578, inclusive 1602	2816 / 021 / 901
	1534 1565 1581 to 1586, inclusive	2816 / 021 / 903 2816 / 021 / 904

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
24 - 15 (9619013)	1832 to 1837, inclusive 1840 to 1843, inclusive 1672	2816 / 026 / 900
	1838 & 1964	2816 / 026 / 901
24 - 15 (9619014)	1821 to 1828, inclusive 1830 & 1831 1844 to 1855, inclusive 1857 & 1858 1898 to 1904, inclusive 1910 & 1911 1961 to 1963, inclusive	2816 / 027 / 900
24 - 15 (9619015)	1814 to 1820, inclusive 1860 1863 to 1866, inclusive 1877 to 1884, inclusive 1888 to 1897, inclusive 1912 to 1919, inclusive 1921 1944 to 1947, inclusive	2816 / 028 / 900
24 - 15 (9619016)	1803 to 1812, inclusive 1867 to 1875, inclusive 1885 to 1887, inclusive 1922 to 1943, inclusive C	2816 / 029 / 900
24 - 15 (9619017)	1905 to 1909, inclusive 1948 to 1960, inclusive	2816 / 030 / 900

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
24 - 15 (9619009)	1553 to 1559, inclusive 1561,1562, 1564 1587 to 1592, inclusive 1594 to 1596, inclusive	2816 / 022 / 902
24 - 15 AND ALSO LS 23 - 46 LS 28 - 28 (9619010)	1597 to 1601, inclusive 1631 to 1634, inclusive 1636 to 1639, inclusive 1701 to 1714, inclusive 1719 to 1721, inclusive 1723 & 1724 1726 to 1739, inclusive 1757A, 1758A, 1759A 1794 to 1802, inclusive A & B	2816 / 023 / 900
24 - 15 AND ALSO LS 28 - 28 (9619011)	1641 to 1646, inclusive 1649 to 1656, inclusive 1686 to 1693, inclusive 1695 to 1697, inclusive 1740 to 1746, inclusive 1748 to 1756, inclusive 1760 & 1761 1775 to 1786, inclusive 1788 to 1793, inclusive 1757B, 1758B, 1759B	2816 / 024 / 902
24 - 15 AND ALSO LS 23 - 46 LS 28 - 28 (9619012)	1658 1660 to 1671, inclusive 1673 to 1682, inclusive 1762 to 1774, inclusive	2816 / 025 / 900

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
	ASSESSOR'S MAP BOOK 2818	
24 - 16 (9619018)	2518 to 2524, inclusive 2528 to 2531, inclusive 2533	2818 / 001 / 900
	2505 to 2508, inclusive 2517	2818 / 001/ 901
24 - 17 (9701764)	122 123 139 145	2818 / 004 / 900 2818 / 004 / 901 2818 / 004 / 902 2818 / 004/ 903
24 - 17	118	2818 / 005 / 900
24 - 17	97	2818 / 006 / 900
24 - 17	58 77 & 78 68 80	2818 / 007 / 900 2818 / 007 / 901 2818 / 007 / 902 2818 / 007 / 903
24 - 17	32 & 33	2818 / 008 / 900
24 - 17	02 17 & 22 27	2818 / 009 / 900 2818 / 009 / 901 2818 / 009 / 902
25 - 38	26 & 27	2818 / 010 / 900
25 - 38	205	2818 / 012 / 900
25 - 38	362 & 365	2818 / 013 / 900

L.S. BOOK-PAGE	LOT NUMBERS	ASSESSOR MAP BOOK
25 - 38 (9701764 cont.)	401 & 402	2818/019/900
25 - 37	294 & 295	2818/016/901


NO SCALE
CHATSWORTH AREA/LOS ANGELES COUNTY
SAUGUS
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SEC 6
SEC 6
PARK
PARK
PARK
BROWNS DEBRIS BASIN
AV
FREEWAY 118
CANOGA AVE.
CHICKASAW
CHEROKEE
COMANCHE
MAYAN
INCA
LEGEND
= PROPERTY TO BE CONVEYED FROM SMMC/MRCA TO CRE
= PROPERTY OWNED BY OTHERS

EXHIBIT "B"

EXHIBIT "B"
LEGAL DESCRIPTION OF PROPERTIES TO BE CONVEYED TO CHATSWORTH RIDGE ESTATES, INC.

THOSE PORTIONS OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, SHOWN AS THE FOLLOWING LOTS ON LICENSED SURVEYORS MAPS FILED IN BOOK 22, PAGE 03, AND BOOK 21, PAGE 50, OF RECORD OF SURVEYS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER OF SAID COUNTY:

AMB 2819-006-901
LOTS 183; 185; 382 TO 384 INCLUSIVE; 386 TO 388 INCLUSIVE; 392 TO 395 INCLUSIVE; 398 TO 404 INCLUSIVE; 424 TO 429 INCLUSIVE; 390; AND,

AMB 2819-006-902
391; 412 TO 414 INCLUSIVE; 417; 418; AND

AMB 2819-007-901
433 TO 438 INCLUSIVE; 461; 497; 498; AND

AMB 2819-007-902
440; 442 TO 449 INCLUSIVE; 452; 453; 455 TO 459 INCLUSIVE; 467; 468; 472 TO 474 INCLUSIVE; 477 TO 482 INCLUSIVE; 484 TO 489 INCLUSIVE; 493 TO 495 INCLUSIVE; AND

AMB 2819-008-900
805; AND

AMB 2819-008-901
808; 499 TO 505 INCLUSIVE; 812; 814 TO 821 INCLUSIVE; 823 TO 825 INCLUSIVE; 827 TO 830 INCLUSIVE; 832 TO 860 INCLUSIVE; 2050; AND

AMB 2819-009-900
2049; 2052 TO 2064 INCLUSIVE; 2074; 2075; 2139 TO 2147 INCLUSIVE; AND

AMB 2819-010-901
2066 TO 2073 INCLUSIVE; 2077, EXCEPTING THEREFROM THE NORTHERLY 10 FT.; 2080 TO 2097 INCLUSIVE, EXCEPTING

THEREFROM THE NORTHERLY 10 FT. OF 2080, 2081, 2087, 2089, 2091, 2093, 2095, 2097; 2099 TO 2105 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 2099, 2101, 2103 AND 2105; 2131 TO 2138 INCLUSIVE; AND

AMB 2819-011-902
647 TO 649 INCLUSIVE; 657; 658; 667; 677; 771; 772; 780; 781; 783 TO 787 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 787; 790 TO 797 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 797; AND

AMB 2819-011-902
764 TO 767 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 767; AND

AMB 2819-012-901
646; 655; 656; AND

AMB 2819-012-902
641 TO 643 INCLUSIVE; 652; AND

AMB 2819-012-903
587 TO 596 INCLUSIVE; 670 TO 675 INCLUSIVE; AND

2819-013-900
688; 698; 699; 707 TO 709 INCLUSIVE; 717; 719; AND

AMB 2819-013-901
750; AND

AMB 2819-013-902
721 TO 727 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 727; 731 TO 737 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 737; 741 TO 747 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 747; 752 TO 754 INCLUSIVE; 756; 757 EXCEPTING THEREFROM THE NORTHERLY 10 FT.; AND

AMB 2819-014-900
579; AND

AMB 2819-014-901
582 TO 586 INCLUSIVE; 690; 691; AND

AMB 2819-014-902
682; 683; 693; AND

AMB 2819-014-903
695; AND

AMB 2819-014-904
704; 713; 714; AND

AMB 2819-015-900
340; AND

AMB 2819-015-901
376; AND

AMB 2819-017-900
373; AND

AMB 2819-017-901
313; AND

AMB 2819-017-902
317; AND

AMB 2819-018-900
307; AND

AMB 2819-018-901
219; 220; AND

AMB 2819-018-902 & 903
223 TO 225 INCLUSIVE; AND

AMB 2819-018-904
334; AND

AMB 2819-018-905
336 TO 338 INCLUSIVE;

AMB 2819-018-906
332; 346; AND

AMB -019-901
283 TO 289 INCLUSIVE; 298 TO 300 INCLUSIVE; 368; AND

AMB 2819-020-900
213; AND

AMB2819-020-901
218; AND

AMB 2819-020-902
290; AND

AMB 2819-020-903
278; 292; AND

AMB 2819-020-904
280 TO 282 INCLUSIVE; 294; 296; AND

AMB 2819-021-901
256; 257; 259; 261; 363; 269 TO 274 INCLUSIVE; AND

AMB 2819-021-902
361; AND

AMB 2819-022-901
200; AND

AMB 2819-022-902
202; 203; AND

AMB 2819-022-903
207 TO 211 INCLUSIVE; 231; WEST 10 FT' OF 206; AND

AMB 2819-022-904
263; AND

AMB 2819-022-905
250; 251; 266; AND

AMB 2819-022-906
253; AND

AMB 2816-007-902
614; AND

AMB 2816-007-903
619; AND

AMB 2816-007-904
634; AND

AMB 2816-007-905
874; AND

AMB 2816-007-906
897; 898; AND

AMB 2816-007-907
900; AND

AMB 2816-007-908
905; AND

AMB 2816-007-909
910; 911; AND

AMB 2816-007-911
918; 919; 938; 941, 943 AND 944, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 941, 943 AND 944; AND

AMB 2816-007-912
947 AND 948, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; AND

AMB 2816-007-913
950 AND 951, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; AND

AMB 2816-007-914
953; 954; 1026; AND

AMB 2816-007-915
932; 956 TO 959 INCLUSIVE; 1021 TO 1024 INCLUSIVE; AND

AMB 2816-007-916
1019; AND

AMB 2816-007-917
636 TO 639 INCLUSIVE; 861 TO 863 INCLUSIVE; 865; 869; 886 TO 894 INCLUSIVE; 896; 901 TO 903 INCLUSIVE; 907; 908; 921 TO 923 INCLUSIVE; 926 TO 928 INCLUSIVE; 961 TO 967 INCLUSIVE; 969 TO 977 INCLUSIVE; 979 TO 985 INCLUSIVE; 987 YO 989 INCLUSIVE; 992 TO 995 INCLUSIVE; 998 TO 1012 INCLUSIVE; 1014 TO 1017 INCLUSIVE; 1028; 1029; AND

AMB 2816-011-900
1118, EXCEPTING THEREFROM THE NORTHERLY 10 FT.; AND

AMB 2816-011-901
1120 AND 1121, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; AND

AMB 2816-011-902
1077; 1078; 1082 TO 1085 INCLUSIVE; 1087; 1088; 1097 TO 1111 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1108, 1109, 1110 AND 1111; 1147 TO 1157 INCLUSIVE; 1167; 1169; 1170; 1176; 1177; AND

AMB 2816-011-903
1095; AND

AMB 2816-012-902
1049; 1050; 1053; 1065; 1067; 1068; 1070; 1072; 1073; 1075; 1089 TO 1094 INCLUSIVE; 1134 TO 1138 INCLUSIVE; 1140; 1141; 1143 TO 1145 INCLUSIVE; 1159 TO 1165 INCLUSIVE; AND

AMB 2816-013-901
1030 TO 1038 INCLUSIVE; 1041 TO 1044 INCLUSIVE; 1054 TO 1063 INCLUSIVE; 1112 TO 1115 INCLUSIVE; 1122 TO 1126 INCLUSIVE; 1128; 1130 TO 1133 INCLUSIVE; AND

AMB 2816-014-900
1308; 1306 AND 1346, EXCEPTING THEREFROM THE SOUTHERLY 10 FT. OF EACH LOT; AND

AMB 2816-014-901

1268; AND

AMB 2816-014-902
1311 TO 1313 INCLUSIVE; AND

AMB 2816-014-903
1116; 1181; 1182; 1184 TO 1188 INCLUSIVE; 1190; 1224 TO 1227 INCLUSIVE, EXCEPTING THEREFROM THE SOUTHERLY 10 FT. OF 1227; 1229 TO 1238 INCLUSIVE; 1275; 1276; 1315 TO 1317 INCLUSIVE; AND

AMB 2816-015-900
1291; 1331; AND

AMB 2816-015-901
1200 TO 1203 INCLUSIVE; 1245; 1246; 1248; 1250; 1285 TO 1288 INCLUSIVE; 1323 TO 1329 INCLUSIVE; AND

AMB 2816-015-902
1280; AND

AMB 2816-015-903
1319; AND

AMB 2816-015-905
1195 TO 1198 INCLUSIVE; 1242; 1243; 1282; AND

AMB 2816-015-906
1193; 1194; 1239; AND

AMB 2816-016-903
1295; AND

AMB 2816-016-904
1334; AND

AMB 2816-016-905
1205 TO 1207 INCLUSIVE; 1252 TO 1254 INCLUSIVE; AND

AMB 2816-016-907
1209 TO 1211 INCLUSIVE; AND

AMB 2816-016-908
1213; 1216; 1218, 1219 AND 1220, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; 1258 TO 1266 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. 1264, 1265 AND 1266; 1297; 1298; 1304 AND 1305, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; 1337 TO 1344 INCLUSIVE, EXCEPTING THE NORTHERLY 10 FT. OF 1343 AND 1344; AND

AMB 2816-017-900
1345 EXCEPTING THEREFROM THE NORTHERLY 10 FT; AND

AMB 2816-017-901
1378; AND

AMB 2816-017-903
1470 AND 1471, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; AND

AMB 2816-018-901
1456; AND

AMB 2816-018-902
1452; AND

AMB 2816-018-903
1361 TO 1366 INCLUSIVE; 1368; 1369; 1401; 1403 TO 1409 INCLUSIVE; 1443; AND

AMB 2816-018-904
1411; AND

AMB 2816-019-901
1428 EXCEPTING THEREFROM THE SOUTHERLY 10 FT.; AND

AMB 2816-019-903
1358 TO 1360 INCLUSIVE; 1399; 1400; AND

AMB 2816-019-904
1430 EXCEPTING THEREFROM THE SOUTHERLY 10 FT.; AND

AMB 2816-019-905
1348 AND 1349 EXCEPTING THEREFROM THE SOUTHERLY 10 FT. OF EACH LOT; 1350; 1352 TO 1356 INCLUSIVE; 1388 EXCEPTING

THEREFROM THE SOUTHERLY 10 FT.; 1390; 1391; 1393; 1395 TO 1397 INCLUSIVE; AND

AMB 2816-020-901
1472 AND 1473 EXCEPTING THEREFROM THE SOUTHERLY 10 FT. OF EACH LOT; 1475 TO 1482 INCLUSIVE, EXCEPTING THEREFROM THE SOUTHERLY 10 FT. OF 1475; 1484; 1485; 1487; AND:

THOSE PORTIONS OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, SHOWN AS THE FOLLOWING LOTS ON LICENSED SURVEYORS MAPS FILED IN BOOK 24, PAGE 15; BOOK 28, PAGE 26; BOOK 23, PAGE 46 AND BOOK 28, PAGE 28, OF RECORD OF SURVEYS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER OF SAID COUNTY:

AMB 2816-020-901
1518 TO 1523 INCLUSIVE; 1525; 1603; 1605 TO 1629 INCLUSIVE, EXCEPTING THEREFROM THE SOUTHERLY 10 FT. OF 1614, 1615, 1616, 1617 AND 1618; AND

AMB 2816-021-901
1493; 1526 TO 1531 INCLUSIVE; 1567; 1569 TO 1574 INCLUSIVE; 1576 TO 1578 INCLUSIVE; 1602; AND

AMB 2816-021-903
1534; AND

AMB 2816-021-904
1565; 1581 TO 1586 INCLUSIVE; AND

AMB 2816-022-902
1553 TO 1559 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1553, 1554 AND 1555; 1561; 1562; 1564; 1587 TO 1592 INCLUSIVE; 1594 TO 1596 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1596; AND

AMB 2816-023-900
1597 TO 1601 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; 1631 TO 1634 INCLUSIVE,

EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1631; 1636 TO 1639 INCLUSIVE; 1701 TO 1714 INCLUSIVE; 1719 TO 1721 INCLUSIVE; 1723; 1724; 1726 TO 1739 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1732 AND 1733; 1757A, 1758A AND 1759A, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; 1794 TO 1802 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1802; A AND B, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF EACH LOT; AND

AMB 2816-024-902
1641 TO 1646 INCLUSIVE; 1649 TO 1656 INCLUSIVE; 1686 TO 1693 INCLUSIVE; 1695 TO 1697 INCLUSIVE; 1740 TO 1746 INCLUSIVE; 1748 TO 1756 INCLUSIVE; 1760; 1761; 1775 TO 1786 INCLUSIVE; 1788 TO 1793 INCLUSIVE; 1757B; 1758B; 1759B;AND

AMB 2816-025-900
1658; 1660 TO 1671 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1668, 1669, 1670 AND 1671; 1673 TO 1682 INCLUSIVE; 1762 TO 1774 INCLUSIVE; AND

AMB 2816-026-900
1832 TO 1837 INCLUSIVE; 1840 TO 1843 INCLUSIVE, EXCEPTING THEREFROM THE MOST SOUTHWESTERLY 10 FT. OF EACH LOT; 1672 EXCEPTING THEREFROM THE SOUTHERLY 10 FT.; AND

AMB 2816-026-901
1838 EXCEPTING THEREFROM THE MOST SOUTHWESTERLY 10 FT.; 1964 EXCEPTING THEREFROM THE MOST SOUTHWESTERLY 10 FT. AND THE WESTERLY 10 FT. BETWEEN THE MOST SOUTHEASTERLY CORNER LOT 1964 AND THE MOST SOUTHERLY CORNER OF LOT 1904; AND

AMB 2816-027-900
1821 TO 1828 INCLUSIVE; 1830; 1831; 1844 TO 1855 INCLUSIVE; 1857; 1858; 1898 TO 1904 INCLUSIVE, EXCEPTING THEREFROM THE MOST SOUTHWESTERLY 10 FT. OF 1904; 1910 AND 1911, EXCEPTING THEREFROM THE MOST SOUTHWESTERLY 10 FT. OF EACH LOT; 1961 TO 1963 INCLUSIVE; AND

AMB 2816-028-900
1814 TO 1820 INCLUSIVE; 1860; 1863 TO 1866 INCLUSIVE; 1877 TO 1884 INCLUSIVE; 1888 TO 1897 INCLUSIVE; 1912 TO 1919 INCLUSIVE; 1921; 1944 TO 1947 INCLUSIVE; AND

AMB 2816-029-900
1803 TO 1812 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1803, 1804, 1805 AND 1806; 1867 TO 1875; 1885 TO 1887 INCLUSIVE; 1922 TO 1943 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1927, 1928, 1929, 1933, 1934, 1935, 1936, 1937 AND 1938; C, EXCEPTING THEREFROM THE NORTHERLY 10 FT.; AND

AMB 2816-030-900
1905 TO 1909 INCLUSIVE, EXCEPTING THEREFROM THE SOUTHERLY 10 FT. OF THE WEST 1/2 OF 1905, AND ALSO EXCEPTING THEREFROM THE MOST SOUTHWESTERLY 10 FT. OF 1906, 1907, 1908 AND 1909; 1948 TO 1960 INCLUSIVE, EXCEPTING THEREFROM THE NORTHERLY 10 FT. OF 1960; AND:

THOSE PORTIONS OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, SHOWN AS THE FOLLOWING LOTS ON LICENSED SURVEYORS MAPS FILED IN BOOK 24, PAGE 16, BOOK 24, PAGE 17, BOOK 25, PAGE 38, AND BOOK 25, PAGE 37, OF RECORD OF SURVEYS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER OF SAID COUNTY:

AMB 2818-001-900
R.S. 24-16, LOTS 2518 TO 2524 INCLUSIVE; 2528 TO 2531 INCLUSIVE; 2533; AND

AMB 2818-001-901
R.S.24-16, 2505 TO 2508 INCLUSIVE; AND 2517; AND

AMB 2818-004-900
R.S. 24-17, LOT 122; AND

AMB 2818-004-901
R.S. 24-17, LOT 123; AND

AMB 2818-004-903
R.S. 24-17, LOT 139; AND

AMB 2818-004-903

R.S. 24-17, LOT 145; AND

AMB 2818-005-900
R.S. 24-17, LOT 118; AND

AMB 2818-006-900
R.S. 24-17, LOT 97; AND

AMB 2818-007-900
R.S. 24-17, LOT 58; AND

AMB 2818-007-902
R.S. 24-17, LOT 68; AND

AMB 2818-008-900
R.S. 24-17, LOTS 32 AND 33; AND

AMB 2818-009-900
R.S. 24-17, LOT 2; AND

AMB 2818-009-901
R.S. 24-17, LOTS 17 AND 22; AND

AMB 2818-009-902
R.S. 24-17, LOT 27; AND

AMB 2818-010-900
R.S. 25-38, LOTS 26 AND 27; AND

AMB 2818-012-900
R.S. 25-38, LOT 205; AND

AMB 2818-013-900
R.S. 25-38, LOTS 362 AND 365; AND

AMB 2818-019-900
R.S. 25-38, LOTS 401 AND 402; AND

AMB 2818-016-901
R.S. 25-37, LOTS 294 AND 295.

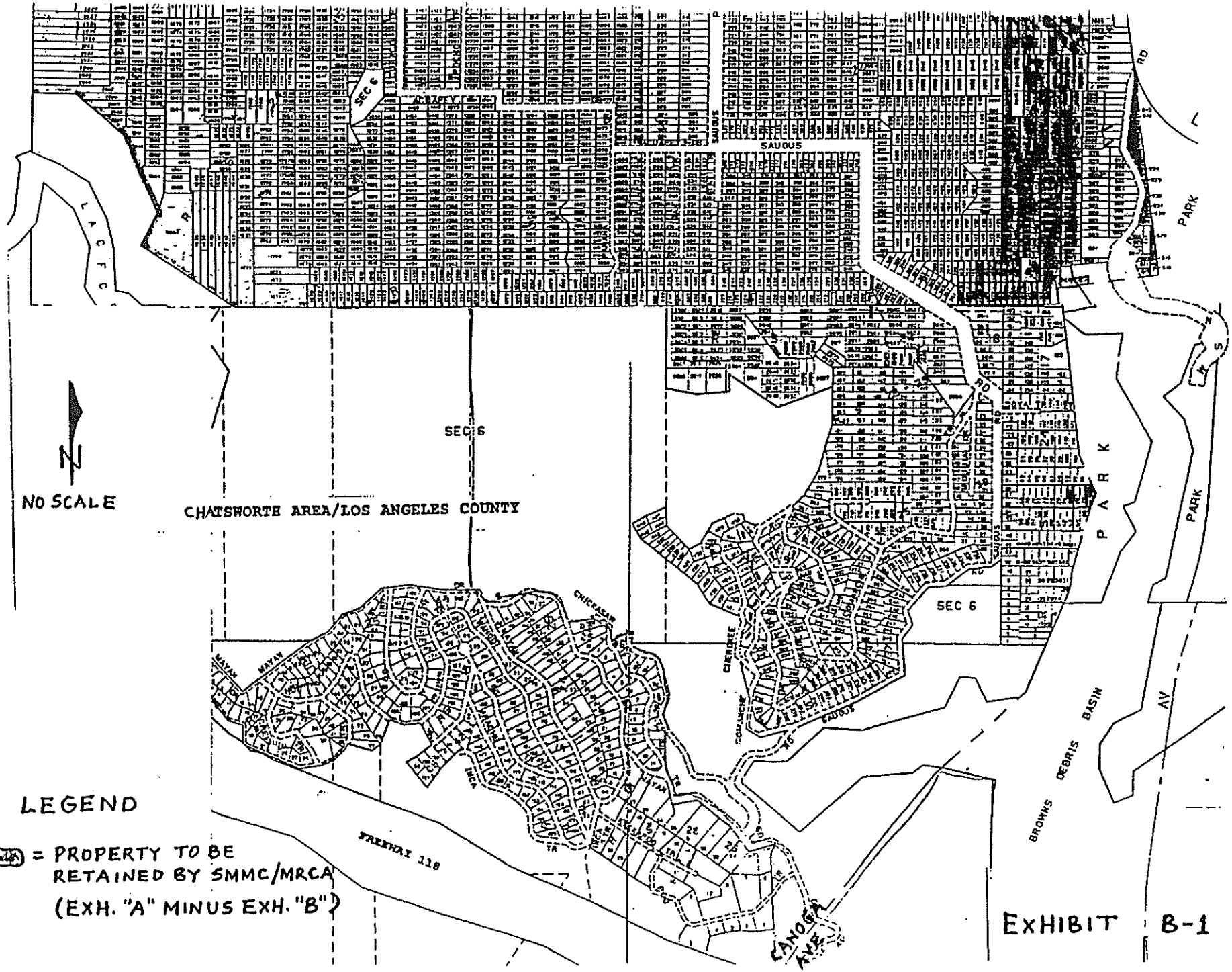
NO SCALE
CHATSWORTH AREA/LOS ANGELES COUNTY
SEC 6
SEC 6
SEC 6
SAUGUS
SAUGUS
PARK
PARK
PARK
BROWNS DEBRIS BASIN
FREEWAY 118
CANOGA AVE
MAYAN
CHICKASAW
CHEROKEE
COLUMBINE
INCA
LEGEND
= PROPERTY TO BE RETAINED BY SMMC/MRCA
(EXH. "A" MINUS EXH. "B")

EXHIBIT B-1

EXHIBIT B-1

LEGAL DESCRIPTION OF PROPERTIES TO BE RETAINED BY SMMC/MRCA

THOSE PORTIONS OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, SHOWN AS THE FOLLOWING LOTS ON LICENSED SURVEYORS MAPS FILED IN BOOK 24, PAGE 14; BOOK 22, PAGE 03; AND BOOK 24, PAGE 17 OF RECORD OF SURVEYS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER OF SAID COUNTY:

AMB 2819-001-901
2148 TO 2163 INCLUSIVE; 2111 TO 2120 INCLUSIVE; 2122 TO 2126 INCLUSIVE; AND

AMB 2819-002-901
2035B; 2036 TO 2044 INCLUSIVE; 2047; 2048; 2175 TO 2182 INCLUSIVE; AND

AMB 2819-002-902
539 TO 545 INCLUSIVE; AND

AMB 2819-003-900
569; AND

AMB 2819-003-901
533 TO 538 INCLUSIVE; AND

AMB 2819-003-902
510 TO 514 INCLUSIVE; 2167 TO 2174 INCLUSIVE; 2183 TO 2197 INCLUSIVE; AND

AMB 2819-004-900
518; 519; 528; AND

AMB 2819-004-901
531; 532; AND

AMB 2819-004-902
547; 548; AND

AMB 2819-005-900
168 TO 175 INCLUSIVE; 190 TO 199 INCLUSIVE; 396; 397; 431; 432; 506 TO 509 INCLUSIVE; 2164 TO 2166 INCLUSIVE; 2199 TO 2218 INCLUSIVE; AND

AMB 2819-006-901
176 TO 182 INCLUSIVE; 186 TO 189 INCLUSIVE;

AMB 2819-010-901
NORTHERLY 10 FT. OF 2077, 2080, 2081, 2087, 2089, 2091, 2093, 2095, 2097, 2099, 2101, 2103 AND 2105; 2107 TO 2110 INCLUSIVE; AND

AMB 2819-011-902
NORTHERLY 10 FT. OF 787 AND 797; AND

AMB 2819-011-903
NORTHERLY 10 FT. OF 767; AND

AMB 2819-013-902
NORTHERLY 10 FT. OF 727, 737, 747 AND 757; AND

AMB 2816-007-911
NORTHERLY 10 FT. OF 941, 943 AND 844; AND

AMB 2816-007-912
NORTHERLY 10 FT. OF 947 AND 948; AND

AMB 2816-007-913
NORTHERLY 10 FT. OF 950 AND 951; AND

AMB 2816-011-900
NORTHERLY 10 FT. OF 1118; AND

AMB 2816-011-901
NORTHERLY 10 FT. OF 1120 AND 1121; AND

AMB 2816-011-902
NORTHERLY 10 FT. OF 1108, 1109, 1110 AND 1111; AND

AMB 2816-014-900
SOUTHERLY 10 FT. OF 1346 AND 1306; AND

AMB 2816-014-903

SOUTHERLY 10 FT. OF 1227; AND

AMB 2816-016-908
NORTHERLY 10 FT. OF 1218, 1219, 1220, 1264, 1265, 1266, 1304, 1305, 1343 AND 1344; AND

AMB2816-017-900
NORTHERLY 10 FT. OF 1345; AND

AMB 2816-017-903
NORTHERLY 10 FT. OF 1470 AND 1471; AND

AMB 2816-019-901
SOUTHERLY 10 FT. OF 1428; AND

AMB 2816-019-904
SOUTHERLY 10 FT. OF 1430; AND

AMB 2816-019-905
SOUTHERLY 10 FT. OF 1348, 1349 AND 1388; AND

AMB 2816-020-901
SOUTHERLY 10 FT. OF 1472, 1473, 1475, 1614, 1615, 1616, 1617 AND 1618; AND

AMB 2816-022-902
NORTHERLY 10 FT. OF 1553, 1554, 1555 AND 1596; AND

AMB 2816-023-900
NORTHERLY 10 FT. OF 1597, 1598, 1599, 1600, 1601, 1631, 1732, 1733, 1757A, 1758A, 1759A, 1802, "A" AND "B"; AND

AMB 2816-025-900
SOUTHERLY 10 FT. OF 1668, 1669, 1670 AND 1671; AND

AMB 2816-026-900
SOUTHWESTERLY 10 FT. OF 1840, 1841, 1842 AND 1843; SOUTHERLY 10 FT. OF 1672; AND

AMB 2816-026-901
SOUTHWESTERLY 10 FT. OF 1838 AND 1964, AND THE WESTERLY 10 FT. OF 1964 BETWEEN THE MOST SOUTHEASTERLY CORNER OF 1964 TO THE MOST SOUTHERLY CORNER OF 1904; AND

AMB 2816-027-900
SOUTHWESTERLY 10 FT. OF 1904, 1910 AND 1911; AND

2816-029-900
NORTHERLY 10 FT. OF 1803, 1804, 1805, 1806, 1927, 1928, 1929, 1933, 1934, 1935, 1936, 1937, 1938 AND "C"; AND

AMB 2816-030-900
SOUTHERLY 10 FT. OF WEST 1/2 OF 1905; SOUTHWESTERLY 10 FT. OF 1906, 1907, 1908 AND 1909; NORTHERLY 10 FT. OF 1960; AND

AMB 2818-007-901
77 AND 78; AND

AMB 2818-007-903
80

EXHIBIT "C"

SHEET 1 OF 2

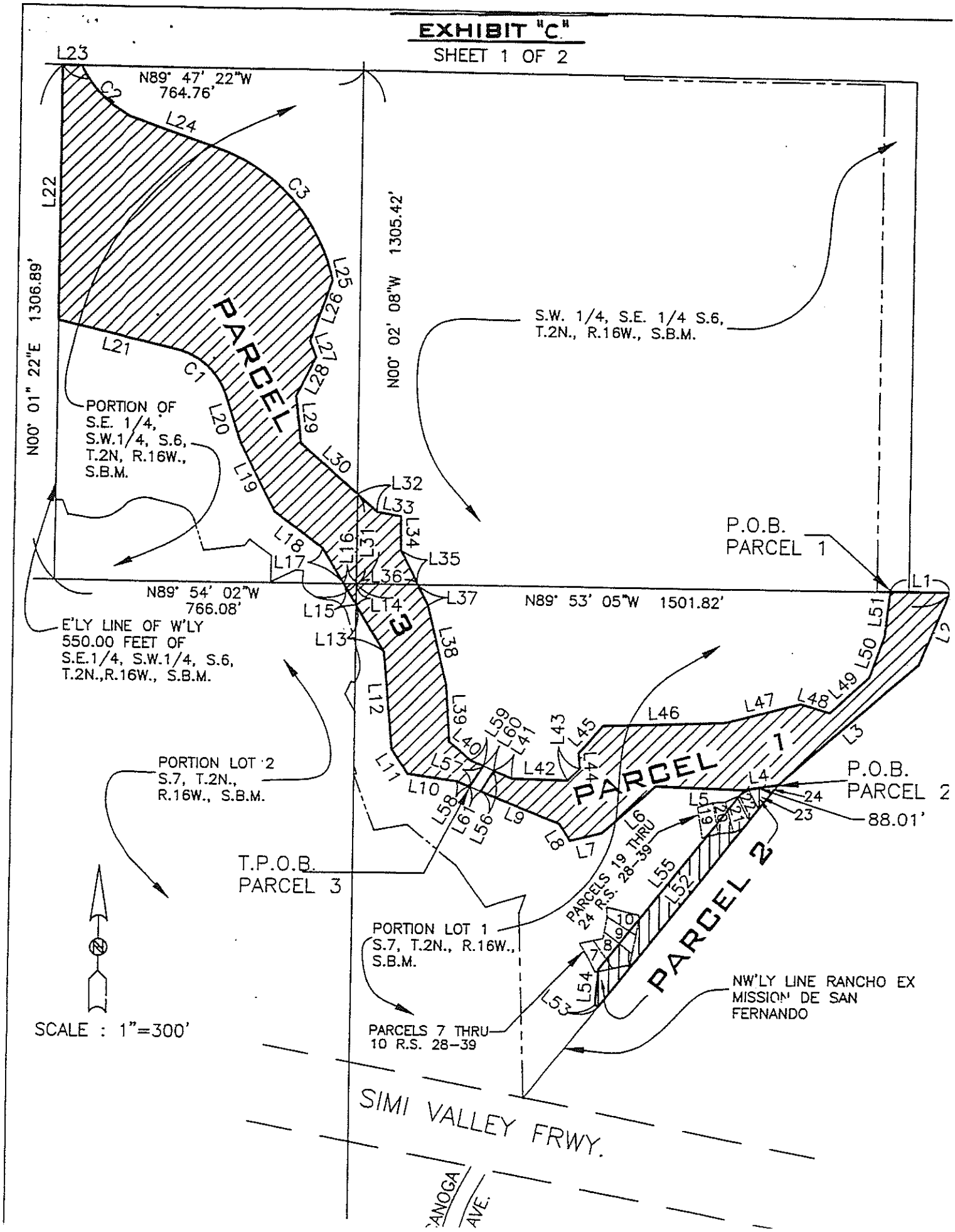

EXHIBIT "C"

SHEET 2 OF 2

LINE DATA

NUMBER	DIRECTION	DISTANCE
L1	N89°53'05"W	150.00'
L2	N22°34'52"E	199.82'
L3	N48°14'42"E	466.30'
L4	N80°56'30"E	88.68'
L5	N88°13'00"W	224.00'
L6	N47°49'00"E	183.00'
L7	N75°09'00"E	83.00'
L8	N32°12'00"W	52.00'
L9	N67°58'00"W	216.00'
L10	N81°50'00"W	126.00'
L11	N32°32'00"W	75.00'
L12	N05°20'00"W	248.00'
L13	N31°20'00"W	138.09'
L14	N00°01'44"E	53.03'
L15	N31°20'00"W	62.15'
L16	N89°54'02"W	32.34'
L17	N31°20'00"W	107.76'
L18	N53°16'00"W	152.00'
L19	N27°06'00"W	193.00'
L20	N18°06'00"W	126.89'
L21	N76°58'00"W	309.37'
L22	N00°01'22"E	646.89'
L23	N89°47'24"W	48.55'
L24	N70°42'00"W	220.00'
L25	N14°56'00"W	22.67'
L26	N19°13'00"E	163.68'
L27	N21°12'00"W	44.00'
L28	N26°45'00"E	111.00'
L29	N06°39'00"W	121.00'
L30	N48°46'00"W	194.18'
L31	N00°02'08"W	228.77'
L32	N48°46'00"W	66.82'
L33	N79°47'00"W	61.00'
L34	N01°06'00"W	87.00'

LINE DATA

NUMBER	DIRECTION	DISTANCE
L29	N06°39'00"W	121.00'
L30	N48°46'00"W	194.18'
L31	N00°02'08"W	228.77'
L32	N48°46'00"W	66.82'
L33	N79°47'00"W	61.00'
L34	N01°06'00"W	87.00'
L35	N26°54'00"W	97.83'
L36	N89°53'05"W	156.07'
L37	N26°54'00"W	57.17'
L38	N13°37'00"W	208.00'
L39	N03°32'00"W	145.00'
L40	N49°34'00"W	72.00'
L41	N66°42'00"W	51.01'
L42	N88°49'00"W	140.00'
L43	N45°40'00"E	44.00'
L44	N05°17'00"W	40.00'
L45	N40°52'00"E	93.00'
L46	N87°45'00"E	309.00'
L47	N75°26'00"E	199.00'
L48	N73°07'00"W	76.00'
L49	N46°31'00"E	134.00'
L50	N19°19'00"E	114.00'
L51	N06°14'15"E	111.17'
L52	N37°57'41"E	729.00'
L53	N52°09'19"W	10.00'
L54	N04°16'17"E	90.14'
L55	N37°57'41"E	589.61'
L56	N32°01'00"E	62.73'
L57	N32°01'00"E	63.42'
L58	N67°58'00"W	36.54'
L59	N66°42'00"W	35.65'
L60	N66°42'00"W	30.35'
L61	N67°58'00"W	30.46'

CURVE DATA

NUMBER	D=	R='	L='
C1	58°52'00"	175.00	179.80
C2	46°23'17"	250.00	202.41
C3	55°46'00"	450.00	437.99

EXHIBIT "C"

LEGAL DESCRIPTION

THOSE PORTIONS OF LOTS 1 AND 2 OF SECTION 7 AND PORTIONS OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 6 AND THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 6, ALL IN TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNANDINO BASE AND MERIDIAN AND PORTIONS OF PARCELS 7, 8, 9, 10, 19, 20, 21, 22, 23, AND 24 AS SHOWN ON LICENSED SURVEYORS MAP FILED IN BOOK 28 PAGE 39, RECORD OF SURVEY IN THE OFFICE OF THE COUNTY RECORDER OF THE COUNTY OF LOS ANGELES, ALL IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, DESCRIBED AS PARCELS 1, 2 AND 3 AS FOLLOWS:

PARCEL 1

BEGINNING AT A POINT ON THE NORTHERLY LINE OF SAID LOT 1, SAID POINT DISTANT THEREON 150.00 FEET WESTERLY OF THE NORTHWESTERLY LINE OF RANCHO EX MISSION DE SAN FERNANDO AS SHOWN ON R/S 119-24; THENCE ALONG SAID LINE SOUTH 89 DEGREES 53 MINUTES 05 SECONDS EAST, 150.00 FEET TO SAID RANCHO LINE; THENCE SOUTHWESTERLY ALONG SAID RANCHO LINE SOUTH 22 DEGREES 34 MINUTES 52 SECONDS WEST, 199.82 FEET TO AN ANGLE POINT IN SAID LINE; THENCE SOUTHWESTERLY ALONG SAID LINE SOUTH 48 DEGREES 14 MINUTES 42 SECONDS WEST, 466.30 FEET TO AN ANGLE POINT IN SAID LINE; THENCE LEAVING SAID LINE SOUTH 80 DEGREES 56 MINUTES 30 SECONDS WEST, 88.68 FEET; THENCE NORTH 88 DEGREES 13 MINUTES 00 SECONDS WEST, 224.00 FEET; THENCE SOUTH 47 DEGREES 49 MINUTES 00 SECONDS WEST, 183.00 FEET; THENCE SOUTH 75 DEGREES 09 MINUTES 00 SECONDS WEST, 83.00 FEET; THENCE NORTH 32 DEGREES 12 MINUTES 00 SECONDS WEST, 52.00 FEET; THENCE NORTH 67 DEGREES 58 MINUTES 00 SECONDS WEST, 216.00 FEET; THENCE NORTH 32 DEGREES 01 MINUTES

00 SECONDS EAST, 62.73 FEET; THENCE SOUTH 66 DEGREES 42 MINUTES 00 SECONDS EAST, 51.01 FEET; THENCE SOUTH 88 DEGREES 49 MINUTES 00 SECONDS EAST, 140.00 FEET; THENCE NORTH 45 DEGREES 40 MINUTES 00 SECONDS EAST, 44.00 FEET; THENCE NORTH 05 DEGREES 17 MINUTES 00 SECONDS WEST, 40.00 FEET; THENCE NORTH 40 DEGREES 52 MINUTES 00 SECONDS EAST, 93.00 FEET; THENCE NORTH 87 DEGREES 45 MINUTES 00 SECONDS EAST, 309.00 FEET; THENCE NORTH 75 DEGREES 26 MINUTES 00 SECONDS EAST, 199.00 FEET; THENCE SOUTH 73 DEGREES 07 MINUTES 00 SECONDS EAST, 76.00 FEET; THENCE NORTH 46 DEGREES 31 MINUTES 00 SECONDS EAST, 134.00 FEET; THENCE NORTH 19 DEGREES 19 MINUTES 00 SECONDS EAST, 114.00 FEET; THENCE NORTH 06 DEGREES 14 MINUTES 15 SECONDS EAST, 111.17 FEET TO THE POINT OF BEGINNING

SEE EXHIBIT "C" ATTACHED

THE ABOVE DESCRIBED PARCEL CONTAINS 4.01 ACRES OF LAND

PARCEL 2

BEGINNING AT THAT CERTAIN ANGLE POINT IN THE NORTHWESTERLY LINE OF RANCHO EX-MISSION DE SAN FERNANDO, SAID POINT BEING THE SOUTHWESTERLY TERMINUS OF THAT CERTAIN COURSE DESCRIBED IN PARCEL 1, HEREIN ABOVE AS BEARING SOUTH 48 DEGREES 14 MINUTES 42 SECONDS WEST AND HAVING A LENGTH OF 466.30 FEET; THENCE SOUTHWESTERLY ALONG SAID RANCHO LINE SOUTH 37 DEGREES 57 MINUTES 41 SECONDS WEST, 729.00 FEET; THENCE LEAVING SAID RANCHO LINE NORTH 52 DEGREES 09 MINUTES 19 SECONDS WEST, 10.00 FEET; THENCE NORTH 04 DEGREES 16 MINUTES 17 SECONDS EAST, 90.14 FEET TO A POINT IN A LINE PARALLEL AND DISTANT 60.00 FEET NORTHWESTERLY AT RIGHT ANGLES TO THAT CERTAIN COURSE DESCRIBED ABOVE AS BEARING SOUTH 37 DEGREES 57 MINUTES 41 SECONDS WEST HAVING A LENGTH OF 729.00 FEET; THENCE NORTHEASTERLY ALONG SAID PARALLEL LINE, NORTH 37 DEGREES 57 MINUTES 41 SECONDS EAST, 589.61 FEET TO A POINT IN A LINE WHICH BEARS NORTH 80 DEGREES 56 MINUTES 30 SECONDS EAST AND PASSES THROUGH THE POINT OF BEGINNING; THENCE NORTH 80 DEGREES 56 MINUTES 30 SECONDS EAST, 88.01 FEET TO THE POINT OF BEGINNING.

SEE EXHIBIT "C" ATTACHED.

THE ABOVE DESCRIBED PARCEL CONTAINS 0.92 ACRES OF LAND

PARCEL 3

COMMENCING AT THE NORTHWESTERLY TERMINUS OF THAT CERTAIN COURSE DESCRIBED IN PARCEL 1, HEREIN ABOVE AS BEARING NORTH 67 DEGREES 58 MINUTES 00 SECONDS WEST AND HAVING A LENGTH OF 216.00 FEET; THENCE NORTH 67 DEGREES 58 MINUTES 00 SECONDS WEST, 30.46 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 67 DEGREES 58 MINUTES 00 SECONDS WEST, 36.54 FEET; THENCE NORTH 81 DEGREES 50 MINUTES 00 SECONDS WEST, 126.00 FEET; THENCE NORTH 32 DEGREES 32 MINUTES 00 SECONDS WEST, 75.00 FEET; THENCE NORTH 05 DEGREES 20 MINUTES 00 SECONDS WEST, 248.00 FEET; THENCE NORTH 31 DEGREES 20 MINUTES 00 SECONDS WEST, 138.09 FEET TO A POINT IN THE WESTERLY LINE OF SAID LOT 1, SAID POINT DISTANT THEREON 53.03 FEET SOUTHERLY OF THE NORTHWEST CORNER OF SAID LOT; THENCE NORTH 31 DEGREES 20 MINUTES 00 SECONDS WEST, 62.15 FEET TO A POINT IN THE NORTHERLY LINE OF SAID LOT 2, SAID POINT DISTANT ALONG SAID LINE 32.34 FEET WESTERLY OF THE NORTHWEST CORNER OF SAID LOT; THENCE NORTH 31 DEGREES 20 MINUTES 00 SECONDS WEST, 107.76 FEET; THENCE NORTH 53 DEGREES 16 MINUTES 00 SECONDS WEST, 152.00 FEET; THENCE NORTH 27 DEGREES 06 MINUTES 00 SECONDS WEST, 193.00 FEET; THENCE NORTH 18 DEGREES 06 MINUTES 00 SECONDS WEST, 126.89 FEET TO THE BEGINNING OF A TANGENT CURVE, CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 175.00 FEET; THENCE NORTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 58 DEGREES 52 MINUTES 00 SECONDS AN ARC DISTANCE OF 179.80 FEET; THENCE TANGENT TO SAID CURVE NORTH 76 DEGREES 58 MINUTES 00 SECONDS WEST, 309.37 FEET TO A POINT ON THE EASTERLY LINE OF THE WESTERLY 550.00 FEET OF SAID SOUTHEAST QUARTER OF SOUTHWEST QUARTER OF SECTION 6, SAID POINT LYING NORTHERLY THERON NORTH 00 DEGREES 01 MINUTE 22 SECONDS EAST,660.00 FEET FROM THE SOUTHERLY LINE OF SAID SOUTHEAST

QUARTER OF SOUTHWEST QUARTER SECTION 6; THENCE NORTHERLY ALONG SAID EASTERLY LINE NORTH 00 DEGREES 01 MINUTES 22 SECONDS EAST, 646.89 FEET TO THE NORTHERLY LINE OF SAID SOUTHEAST QUARTER OF SOUTHWEST QUARTER OF SECTION 6; THENCE EASTERLY ALONG SAID NORTHERLY LINE SOUTH 89 DEGREES 47 MINUTES 22 SECONDS EAST, 48.55 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHEASTERLY HAVING A RADIUS OF 250.00 FEET, A RADIAL LINE OF SAID CURVE THROUGH SAID POINT BEARS SOUTH 65 DEGREES 41 MINUTES 17 SECONDS WEST; THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 46 DEGREES 23 MINUTES 17 SECONDS AN ARC DISTANCE OF 202.41 FEET; THENCE TANGENT TO SAID CURVE SOUTH 70 DEGREES 42 MINUTES 00 SECONDS EAST, 220.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 450.00 FEET; THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 55 DEGREES 46 MINUTES 00 SECONDS AN ARC DISTANCE OF 437.99 FEET; THENCE TANGENT TO SAID CURVE SOUTH 14 DEGREES 56 MINUTES 00 SECONDS EAST, 22.67 FEET; THENCE SOUTH 19 DEGREES 13 MINUTES 00 SECONDS WEST, 163.68 FEET; THENCE SOUTH 21 DEGREES 12 MINUTES 00 SECONDS EAST, 44.00 FEET; THENCE SOUTH 26 DEGREES 45 MINUTES 00 SECONDS WEST, 111.00 FEET; THENCE SOUTH 06 DEGREES 39 MINUTES 00 SECONDS EAST, 121.00 FEET; THENCE SOUTH 48 DEGREES 46 MINUTES 00 SECONDS EAST, 194.18 FEET TO THE WESTERLY LINE OF SAID SOUTHWEST QUARTER OF SOUTHEAST QUARTER OF SECTION 6, SAID POINT LYING DISTANT NORTHERLY THERON NORTH 00 DEGREES 02 MINUTES 08 SECONDS WEST, 228.77 FEET FROM THE SOUTHWEST CORNER OF SAID SOUTHWEST QUARTER OF SOUTHEAST QUARTER OF SECTION 6; THENCE SOUTH 48 DEGREES 46 MINUTES 00 SECONDS EAST, 66.82 FEET; THENCE SOUTH 79 DEGREES 47 MINUTES 00 SECONDS EAST, 61.00 FEET; THENCE

SOUTH 01 DEGREES 06 MINUTES 00 SECONDS EAST, 87.00 FEET; THENCE SOUTH 26 DEGREES 54 MINUTES 00 SECONDS EAST, 97.83 FEET TO A POINT IN THE SOUTH LINE OF SAID SOUTHWEST QUARTER OF SOUTHEAST QUARTER OF SECTION 6, SAID POINT DISTANT THEREON 156.07 FEET EASTERLY OF THE SOUTHWEST CORNER OF SAID SOUTHWEST QUARTER OF SOUTHEAST QUARTER OF SECTION 6; THENCE SOUTH 26 DEGREES 54 MINUTES 00 SECONDS EAST, 57.17 FEET; THENCE SOUTH 13 DEGREES 37 MINUTES 00 SECONDS EAST, 208.00 FEET; THENCE SOUTH 03 DEGREES 32 MINUTES 00 SECONDS EAST, 145.00 FEET; THENCE SOUTH 49 DEGREES 34 MINUTES 00 SECONDS EAST, 72.00 FEET; THENCE SOUTH 66 DEGREES 42 MINUTES 00 SECONDS EAST, 35.65 FEET; THENCE SOUTH 32 DEGREES 01 MINUTES 00 SECONDS WEST, 63.42 FEET TO THE TRUE POINT OF BEGINNING.

SEE EXHIBIT "C" ATTACHED.

THE ABOVE DESCRIBED PARCEL CONTAINS 12.56 ACRES OF LAND.

EXHIBIT C-1

LEGAL DESCRIPTION

THAT PORTION OF LOT 1 OF SECTION 7,TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNANDINO BASE AND MERIDIAN IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE TRUE POINT OF BEGINNING OF PARCEL 3 OF THE LEGAL DESCRIPTION CONTAINED IN INSTRUMENT NO._____ RECORDED _____ IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY; THENCE NORTH 32 DEGREES 01 MINUTES 00 SECONDS EAST 63.42 FEET; THENCE SOUTH 66 DEGREES 42 MINUTES 00 SECONDS EAST 30.35 FEET; THENCE SOUTH 32 DEGREES 01 MINUTES 00 SECONDS WEST 62.73 FEET; THENCE NORTH 67 DEGREES 58 MINUTES 00 SECONDS WEST 30.46 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 0.04 ACRES OF LAND

REF: LETTERS
97-142 LEGAL DESCRIPTION 12-18-97

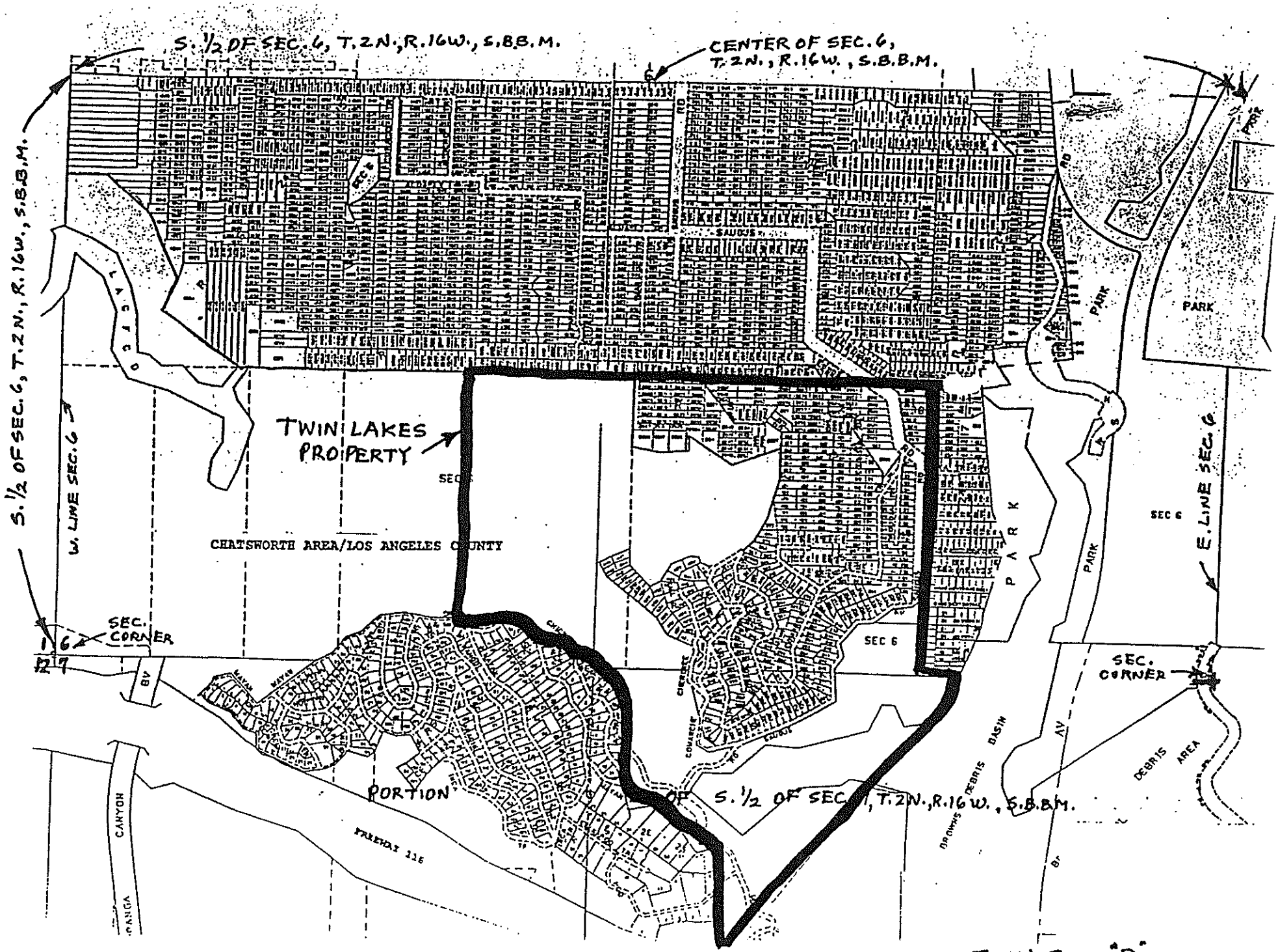
S. 1/2 OF SEC. 6, T.2N., R.16W., S.B.B.M.
CENTER OF SEC. 6, T.2N., R.16W., S.B.B.M.
S. 1/2 OF SEC. 6, T.2N., R.16W., S.B.B.M.
W. LINE SEC. 6
TWIN LAKES PROPERTY
CHATSWORTH AREA/LOS ANGELES COUNTY
SEC. CORNER
PARK
SEC 6
E. LINE SEC. 6
SEC. CORNER
PORTION OF S. 1/2 OF SEC. 1, T.2N., R.16W., S.B.B.M.
FREEWAY 118
CANYON
DEBRIS BASIN
DEBRIS AREA

EXHIBIT "D"

PARCEL 3: (APN 2818-2)

LOTS 2535 TO 2552 INCLUSIVE, 2555 TO 2597 INCLUSIVE AND LOTS 2600 TO 2606 INCLUSIVE AND LOTS 2609 TO 2624 INCLUSIVE ALL OF RECORD OF SURVEYS SHOWN ON LICENSED SURVEYOR'S MAP FILED IN BOOK 24 PAGE 16 OF RECORD OF SURVEYS OF LOS ANGELES COUNTY.

EXCEPT THEREFROM LOTS 2567, 2581, 2582, 2597, 2600, 2610 AND 2611 THAT PORTION LYING ABOVE A LINE 1300 NORTHERLY OF THE SOUTHERLY LINE OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, AND EASTERLY OF A LINE MEASURED AT RIGHT ANGLES TO SAID SOUTHERLY LINE THAT IS DISTANT THEREON 660 FEET FROM THE SOUTH 1/4 CORNER OF SAID SECTION 6.

PARCEL 4: (APN 2818-3)

PARCELS 86, 87, 88, 113, 114, 115, 116, 117, 118, 121, 122, 123, 124, 125, 126, 127, 142, 143, 144, 145, 165, AND 184 AS SHOWN ON A LICENSED SURVEYOR'S MAP OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 23, PAGE 39 OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF MAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14,1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 IN BOOK 41893 PAGE 411, OFFICIAL RECORDS, AND BY DECREE OF DISTRIBUTION RECORDED JULY 16, 1969 IN BOOK D 4437 PAGE 390, OFFICIAL RECORDS.

THE INTEREST OF W.E. LAWRENCE, IN THE SURFACE AND SUBSURFACE RIGHTS TO A DEPTH OF 100 FEET WERE QUITCLAIMED TO ROLLS ROYCE CONSTRUCTION CO., INC, BY DEED RECORDED MARCH 24, 1978 AS INSTRUMENT NO. 78-311218. IT BEING THE INTENTION OF W.E. LAWRENCE TO RETAIN ALL SUBSURFACE WATER, OIL AND MINERAL RIGHTS AND THE RIGHT TO MINE, DRILL, DIG OR BORE AT DEPTHS BELOW 100 FEET.

PARCEL 5: (APN 2818-10)

PARCELS 24, 25, 28 TO 37 INCLUSIVE, AND 40 TO 51 INCLUSIVE, AND 54 TO 56 INCLUSIVE, AS SHOWN ON LICENSED SURVEYOR'S MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGES 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

EXHIBIT "D"

THE INTEREST OF I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 IN BOOK 41893 PAGE 411, OFFICIAL RECORDS, AND BY DECREE OF DISTRIBUTION RECORDED JULY 16, 1969 IN BOOK D 4437 PAGE 390, OFFICIAL RECORDS.

THE INTEREST OF W.E. LAWRENCE, IN THE SURFACE AND SUBSURFACE RIGHTS TO A DEPTH OF 100 FEET WERE QUITCLAIMED TO ROLLS ROYCE CONSTRUCTION CO., INC., BY DEED RECORDED JUNE 8, 1978 AS INSTRUMENT NO. 78-617477, IT BEING THE INTENTION OF W.E. LAWRENCE TO RETAIN ALL SUBSURFACE WATER, OIL AND MINERAL RIGHTS AND THE RIGHT TO MINE, DRILL, DIG OR BORE AT DEPTHS BELOW 100 FEET.

PARCEL 6: (APN 2818-11)

PARCELS 89 TO 98 INCLUSIVE, 100, 101, 103 TO 112 INCLUSIVE, AND 226 TO 230 INCLUSIVE, AS SHOWN ON LICENSED SURVEYOR'S MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGES 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 IN BOOK 41893 PAGE 411, OFFICIAL RECORDS, AND BY DECREE OF DISTRIBUTION RECORDED JULY 16, 1969 IN BOOK D 4437 PAGE 390, OFFICIAL RECORDS.

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PARCEL 7: (APN 2818-12)

PARCELS 128 TO 141 INCLUSIVE, 201 TO 204 INCLUSIVE, 206 TO 210 INCLUSIVE, AND 221 TO 224 INCLUSIVE, AS SHOWN ON LICENSED SURVEYORS MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGES 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 IN BOOK 41893 PAGE 411, OFFICIAL RECORDS, AND BY DECREE OF DISTRIBUTION RECORDED JULY 16, 1969 IN BOOK D 4437 PAGE 390, OFFICIAL RECORDS.

THE INTEREST OF W.E. LAWRENCE, IN THE SURFACE AND SUBSURFACE RIGHTS TO A DEPTH OF 100 FEET WERE QUITCLAIMED TO ROLLS ROYCE CONSTRUCTION CO., INC., BY DEED RECORDED JUNE 8, 1978 AS INSTRUMENT NO. 78-617477, IT BEING THE INTENTION OF W.E. LAWRENCE TO RETAIN ALL SUBSURFACE WATER, OIL AND MINERAL RIGHTS AND THE RIGHT TO MINE, DRILL, DIG

OR BORE AT DEPTHS BELOW 100 FEET.

PARCEL 8: (APN 2818-13)

PARCELS 168 TO 171 INCLUSIVE, 172 TO 181 INCLUSIVE, 196 TO 200 INCLUSIVE, 211 TO 217 INCLUSIVE, 219, 220, 355, 357 TO 361 INCLUSIVE, 363, 364, 366 TO 372 INCLUSIVE, AS SHOWN ON LICENSED SURVEYOR'S MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGES 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

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THE INTEREST OF W.E. LAWRENCE, IN THE SURFACE AND SUBSURFACE RIGHTS TO A DEPTH OF 100 FEET WERE QUITCLAIMED TO ROLLS ROYCE CONSTRUCTION CO., INC., BY DEED RECORDED JUNE 8, 1978 AS INSTRUMENT NO. 78-617477, IT BEING THE INTENTION OF W.E. LAWRENCE TO RETAIN ALL SUBSURFACE WATER, OIL AND MINERAL RIGHTS AND THE RIGHT TO MINE, DRILL, DIG OR BORE AT DEPTHS BELOW 100 FEET.

PARCEL 9: (APN 2818-14)

PARCELS 268, 270 TO 281 INCLUSIVE, 316 TO 319 INCLUSIVE, AND 344 TO 352 INCLUSIVE AND 354, AS SHOWN ON LICENSED SURVEYORS MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGE 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

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PARCEL 10: (APN 2818-15)

PARCELS 38, 39, 99, 102, 225, 231 TO 249 INCLUSIVE, 251 TO 267 INCLUSIVE, AND 269 AS SHOWN ON LICENSED SURVEYOR'S MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGES 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

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PARCEL 11: (APN 2818-16)

PARCELS 282 TO 287 INCLUSIVE, 289, 290 TO 293 INCLUSIVE, 296 TO 298 INCLUSIVE, AND 309 TO 311 INCLUSIVE, AS SHOWN ON LICENSED SURVEYOR'S MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGE 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

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PARCEL 12: (APN 2818-18)

PARCELS 325, 326, 373 TO 379 INCLUSIVE, AND 383 TO 393 INCLUSIVE AS SHOWN ON LICENSED SURVEYORS MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGES 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

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PARCEL 13: (APN 2818-019)

PARCELS 327, 394 TO 397 INCLUSIVE, AND 408 TO 420 INCLUSIVE, AS SHOWN ON LICENSED SURVEYOR'S MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGES 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

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PARCEL 14: (APN 2818-20)

PARCELS 421 TO 447 INCLUSIVE, AS SHOWN ON LICENSED SURVEYOR'S MAP OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS PER MAP FILED IN BOOK 25 PAGE 37 AND 38 OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, THE DEED RECORDED JUNE 14, 1927 IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

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THE INTEREST OF W.E. LAWRENCE, IN THE SURFACE AND SUBSURFACE RIGHTS TO A DEPTH OF 100 FEET WERE QUITCLAIMED TO ROLLS ROYCE CONSTRUCTION CO., INC., BY DEED RECORDED JUNE 8, 1978 AS INSTRUMENT NO. 78-617477, IT BEING THE INTENTION OF W.E. LAWRENCE TO RETAIN ALL SUBSURFACE WATER, OIL AND MINERAL RIGHTS AND THE RIGHT TO MINE, DRILL, DIG OR BORE AT DEPTHS BELOW 100 FEET.

PARCEL 15: (APN 2818-21)

PARCELS 1 TO 24 INCLUSIVE AND PARCELS 46 TO 53 INCLUSIVE, AS SHOWN ON THE LICENSED SURVEYOR'S MAP FILED IN BOOK 28 PAGE 39 OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THEREFROM THAT PORTION OF SAID PARCELS 21 TO 24 INCLUSIVE LYING SOUTHEASTERLY OF THE SOUTHEAST LINE OF LOT 1, SECTION 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, AS SAID SOUTHEAST LINE IS SHOWN ON SAID RECORD OF SURVEY.

ALSO EXCEPT THEREFROM ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY, AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LANDS, AS RESERVED BY I. M. HAIGHT, IN DEED RECORDED IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I. M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS BEEN PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 AS INSTRUMENT NO. 2569, AND BY DECREE OF DISTRIBUTION FILED IN SUPERIOR COURT, CASE NO. P-519651, A CERTIFIED COPY OF WHICH WAS RECORDED SEPTEMBER 11, 1970 AS INSTRUMENT NO. 3493.

THE INTEREST IN AND TO SURFACE-ENTRY AND SUB-SURFACE ENTRY RIGHTS TO A DEPTH OF 300 FEET BENEATH THE SURFACE OF SAID LAND, AS WELL AS THE RIGHT TO MINE, DRILL, DIG OR BORE FOR OIL AND/OR MINERALS ABOVE A DEPTH OF 300 FEET BENEATH THE SURFACE THEREOF WAS QUITCLAIMED TO P.D.C. HOUSING GROUP, A CALIFORNIA LIMITED PARTNERSHIP, BY DEED DATED JULY 25, 1989 EXECUTED BY AMERICAN DEFERRED EXCHANGE CORP., A CALIFORNIA CORPORATION, RECORDED AUGUST 1, 1989 AS INSTRUMENT NO. 89-1232375, AND BY OTHER CONVEYANCES OF RECORD.

PARCEL 16:

THAT PORTION OF LOT 1 OF SECTION 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID LOT AS SHOWN ON THE LICENSED SURVEYOR'S MAP FILED IN BOOK 28 PAGE 23 OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, THENCE SOUTH ALONG THE WEST LINE OF SAID LOT, AS SHOWN ON SAID MAP, 484.00 FEET, THENCE SOUTH 20° 31' EAST TO THE NORTH LINE OF PARCEL NO. 30, AS SHOWN ON SAID LAST MENTIONED MAP, THENCE EASTERLY, SOUTHEASTERLY, NORTHEASTERLY AND SOUTHERLY ALONG THE EXTERIOR BOUNDARIES OF THE LAND SHOWN ON SAID MAP TO THE SOUTHEAST CORNER OF PARCEL NO. 1 AS SHOWN ON SAID MAP, THENCE SOUTHERLY ALONG THE SOUTHERLY PROLONGATION OF THE EAST LINE OF SAID PARCEL 1 TO THE SOUTHEAST LINE OF SAID LOT 1, SECTION 7, AS SHOWN ON THE LICENSED SURVEYOR'S MAP FILED IN BOOK 28 PAGE 39 OF RECORD OF SURVEYS, THENCE NORTHEASTERLY ALONG SAID SOUTHEASTERLY LINE TO THE NORTHEAST CORNER OF SAID LOT 1, THENCE WESTERLY ALONG THE NORTH LINE OF SAID LOT TO THE POINT OF BEGINNING.

EXCEPT THEREFROM THAT PORTION OF SAID LAND INCLUDED WITHIN THE BOUNDARIES EXCEPT THE LANDS SHOWN ON THE LICENSED SURVEYOR'S MAP FILED IN BOOK 24 PAGE 25, IN BOOK 25 PAGES 37, 38 AND 46 AND IN BOOK 28 PAGE 39 OF RECORD OF SURVEYS.

"ALSO EXCEPT THAT PORTION OF LICENSED SURVEYOR'S MAP FILED IN BOOK 23 PAGE 39 OF RECORD OF SURVEYS LYING NORTHERLY OF THE NORTHERLY LINE OF LICENSED SURVEYOR'S MAP FILED IN BOOK 25 PAGES 37 AND 38 OF RECORD OF SURVEYS".

ALSO EXCEPT THEREFROM ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY, AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LANDS, AS RESERVED BY I. M. HAIGHT, IN DEED RECORDED IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I. M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS BEEN PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 AS INSTRUMENT NO. 2569, AND BY DECREE OF DISTRIBUTION FILED IN SUPERIOR COURT, CASE NO. P-519651, A CERTIFIED COPY OF WHICH WAS RECORDED SEPTEMBER 11, 1970 AS INSTRUMENT NO. 3493.

THE INTEREST IN AND TO SURFACE-ENTRY AND SUB-SURFACE ENTRY RIGHTS TO A DEPTH OF 300 FEET BENEATH THE SURFACE OF SAID LAND, AS WELL AS THE RIGHT TO MINE, DRILL, DIG OR BORE FOR OIL AND/OR MINERALS ABOVE A DEPTH OF 300 FEET BENEATH THE SURFACE THEREOF WAS QUITCLAIMED TO P.D.C. HOUSING GROUP, A CALIFORNIA LIMITED PARTNERSHIP, BY DEED DATED JULY 25, 1989 EXECUTED BY AMERICAN DEFERRED EXCHANGE CORP., A CALIFORNIA CORPORATION, RECORDED AUGUST 1, 1989 AS INSTRUMENT NO. 89-1232375, AND BY OTHER CONVEYANCES OF RECORD.

PARCEL 17: (APN 2818-3)

THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND FILED IN THE DISTRICT LAND OFFICE OCTOBER 9, 1986.

EXCEPT THEREFROM THOSE PORTIONS INCLUDED WITHIN THE BOUNDARIES OF THE LANDS SHOWN ON THE LICENSED SURVEYOR'S MAP FILED IN BOOK 23 PAGES 39 AND 47, IN BOOK 25 PAGES 37 AND 38 AND 46 AND IN BOOK 24 PAGE 16, ALL OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

ALSO EXCEPT THEREFROM ANY PORTION OF SAID PARCEL LYING EASTERLY OF THE EASTERLY LINE OF LICENSED SURVEYOR'S MAP FILED IN BOOK 24 PAGE 16 OF RECORD OF SURVEYS, AND THE EASTERLY LINE, AND IT'S SOUTHERLY PROLONGATION, OF LICENSED SURVEYOR'S MAP FILED IN BOOK 25 PAGE 37 OF RECORDS OF SURVEY, ALL IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

ALSO EXCEPT THEREFROM ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME AND ALSO ALL CONVENIENT RIGHTS OF WAY, AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LANDS, AS RESERVED BY I. M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, IN DEED RECORDED IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I. M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS BEEN PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 AS INSTRUMENT NO. 2569, AND BY DECREE OF DISTRIBUTION FILED IN SUPERIOR COURT, CASE NO. P-519651, A CERTIFIED COPY OF WHICH WAS RECORDED SEPTEMBER 11, 1970 AS INSTRUMENT NO. 3493.

THE INTEREST IN AND TO SURFACE-ENTRY AND SUB-SURFACE ENTRY RIGHTS TO A DEPTH OF 300 FEET BENEATH THE SURFACE OF SAID LAND, AS WELL AS THE RIGHT TO MINE, DRILL, DIG OR BORE FOR OIL AND/OR MINERALS ABOVE A DEPTH OF 300 FEET BENEATH THE SURFACE THEREOF WAS QUITCLAIMED TO P.D.C. HOUSING GROUP, A CALIFORNIA LIMITED PARTNERSHIP, BY DEED DATED JULY 25, 1989 EXECUTED BY AMERICAN DEFERRED EXCHANGE CORP., A CALIFORNIA CORPORATION, RECORDED AUGUST 1, 1989 AS INSTRUMENT NO. 89-1232375, AND BY OTHER CONVEYANCES OF RECORD.

PARCEL 18: (APN 2818-15)

THAT CERTAIN UNNUMBERED 20 FOOT LOT LYING EASTERLY AND ADJACENT TO LOTS 20 TO 38 INCLUSIVE AND LOT 231, AS SHOWN ON LICENSED SURVEYOR'S MAP FILED IN BOOK 23 PAGE 39 OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 20: (APN 2818-24-5)

THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND FILED IN THE DISTRICT LAND OFFICE OCTOBER 9, 1856.

EXCEPT THE WESTERLY 550 FEET THEREOF.

ALSO EXCEPT THEREFROM THOSE PORTIONS INCLUDED WITHIN THE BOUNDARIES OF THE LANDS SHOWN ON LICENSED SURVEYOR'S MAP FILED IN BOOK 24 PAGE 25, BOOK 25 PAGES 37 AND 38, BOOK 25 PAGE 44, AND IN BOOK 25 PAGE 46, OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

ALSO EXCEPT ALL WATER, MINERALS AND RIGHTS IN RELATION THERETO AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I. M. HAIGHT, KNOWN AS ICADORA M. HAIGHT, IN THE DEED RECORDED IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I. M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS BEEN PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 AS INSTRUMENT NO. 2569, AND BY DECREE OF DISTRIBUTION FILED IN SUPERIOR COURT, CASE NO. P-519651, A CERTIFIED COPY OF WHICH WAS RECORDED SEPTEMBER 11, 1970 AS INSTRUMENT NO. 3493.

THE INTEREST IN AND TO SURFACE-ENTRY AND SUB-SURFACE ENTRY RIGHTS TO A DEPTH OF 300 FEET BENEATH THE SURFACE OF SAID LAND, AS WELL AS THE RIGHT TO MINE, DRILL, DIG OR BORE FOR OIL AND/OR MINERALS ABOVE A DEPTH OF 300 FEET BENEATH THE SURFACE THEREOF WAS QUITCLAIMED TO P.D.C. HOUSING GROUP, A CALIFORNIA LIMITED PARTNERSHIP, BY DEED DATED JULY 25, 1989 EXECUTED BY AMERICAN DEFERRED EXCHANGE CORP., A CALIFORNIA CORPORATION, RECORDED AUGUST 1, 1989 AS INSTRUMENT NO. 89-1232375, AND BY OTHER CONVEYANCES OF RECORD.

PARCEL 21: (PTN APN 2818-21-1)

THAT PORTION OF LOT 2 OF SECTION 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, AS SHOWN ON THE SURVEYOR'S MAP FILED IN BOOK 24 PAGE 25 OF RECORD OF SURVEYS, LYING EAST OF THE EAST LINE OF THE 20 FOOT ROAD SHOWN ON SAID MAP LYING EASTERLY OF PARCELS 158 TO 163 INCLUSIVE OF SAID LICENSED SURVEYOR'S MAP .

EXCEPT THEREFROM ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY, AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LANDS, AS RESERVED BY I. M. HAIGHT, IN DEED RECORDED IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I. M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS BEEN PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 AS INSTRUMENT NO. 2569, AND BY DECREE OF DISTRIBUTION FILED IN SUPERIOR COURT, CASE NO. P-519651, A CERTIFIED COPY OF WHICH WAS RECORDED SEPTEMBER 11, 1970 AS INSTRUMENT NO. 3493.

THE INTEREST IN AND TO SURFACE-ENTRY AND SUB-SURFACE ENTRY RIGHTS TO A DEPTH OF 300 FEET BENEATH THE SURFACE OF SAID LAND, AS WELL AS THE RIGHT TO MINE, DRILL, DIG OR BORE FOR OIL AND/OR MINERALS ABOVE A DEPTH OF 300 FEET BENEATH THE SURFACE THEREOF WAS QUITCLAIMED TO P.D.C. HOUSING GROUP, A CALIFORNIA LIMITED PARTNERSHIP, BY DEED DATED JULY 25, 1989 EXECUTED BY AMERICAN DEFERRED EXCHANGE CORP., A CALIFORNIA CORPORATION, RECORDED AUGUST 1, 1989 AS INSTRUMENT NO. 89-1232375, AND BY OTHER CONVEYANCES OF RECORD.

PARCEL 22: (PTN APN 2818-21-1)

THAT PORTION OF LOT 2 OF SECTION 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BOUNDED WESTERLY AND SOUTHERLY BY THE EASTERLY LINES OF PARCELS 184 AND 185, AS SHOWN ON THE SURVEYOR'S MAP FILED IN BOOK 25 PAGE 46 OF RECORD OF SURVEYS, BOUNDED NORTHERLY BY THE EASTERLY PROLONGATION OF THAT CERTAIN COURSE SHOWN ON THE NORTHERLY LINE OF SAID PARCEL 184 AS HAVING A BEARING AND LENGTH OF "SOUTH 66°. 15' 20" EAST 10 FEET", AND BOUNDED EASTERLY BY THE EASTERLY LINE OF SAID LOT 2.

EXCEPT THEREFROM ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY, AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LANDS, AS RESERVED BY I. M. HAIGHT, IN DEED RECORDED IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I. M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS BEEN PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED JUNE 4, 1953 AS INSTRUMENT NO. 2569, AND BY DECREE OF DISTRIBUTION FILED IN SUPERIOR COURT, CASE NO. P-519651, A CERTIFIED COPY OF WHICH WAS RECORDED SEPTEMBER 11, 1970 AS INSTRUMENT NO. 3493.

THE INTEREST IN AND TO SURFACE-ENTRY AND SUB-SURFACE ENTRY RIGHTS TO A DEPTH OF 300 FEET BENEATH THE SURFACE OF SAID LAND, AS WELL AS THE RIGHT TO MINE, DRILL, DIG OR BORE FOR OIL AND/OR MINERALS ABOVE A DEPTH OF 300 FEET BENEATH THE SURFACE THEREOF WAS QUITCLAIMED TO P.D.C. HOUSING GROUP, A CALIFORNIA LIMITED PARTNERSHIP, BY DEED DATED JULY 25, 1989 EXECUTED BY AMERICAN DEFERRED EXCHANGE CORP., A CALIFORNIA CORPORATION, RECORDED AUGUST 1, 1989 AS INSTRUMENT NO. 89-1232375, AND BY OTHER CONVEYANCES OF RECORD.

PARCEL 23: (APN 2818-17):

PARCEL 400 AS SHOWN ON A LICENSED SURVEYOR'S MAP ON PORTIONS OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, FILED IN BOOK 25 PAGES 37 AND 38 OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THEREFROM ALL WATER AND ALL MINERALS AND RIGHTS IN RELATION THERETO, AND THE RIGHT TO MINE, DIG OR BORE FOR THE SAME, AND ALSO ALL CONVENIENT RIGHTS OF WAY AND ALL STORAGE OVER AND WITHIN THE SURFACE OF SAID LAND, AS RESERVED BY I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, IN THE DEED RECORDED IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

THE INTEREST OF I.M. HAIGHT, ALSO KNOWN AS ICADORA M. HAIGHT, AS DESCRIBED ABOVE, HAS BEEN PASSED TO WILLIAM ELLWOOD LAWRENCE BY DEED RECORDED 6-4-53 AS INSTRUMENT NO. 2569 IN BOOK 41893 PAGE 411, OFFICIAL RECORDS, AND BY DECREE OF DISTRIBUTION FILED IN SUPERIOR COURT, CASE NO. P-519651, A CERTIFIED COPY OF WHICH WAS RECORDED 9-11-70 AS INSTRUMENT NO. 3493.

THE INTEREST IN AND TO SURFACE ENTRY AND SUB-SURFACE ENTRY RIGHTS TO A DEPTH OF 200 FEET BENEATH THE SURFACE OF SAID LAND, AS WELL AS THE RIGHT TO MINE, DRILL, DIG OR BORE FOR OIL AND/OR MINERALS ABOVE A DEPTH OF 300 FEET BENEATH THE SURFACE THEREOF WAS QUITCLAIMED TO P.D.C. HOUSING GROUP, A CALIFORNIA LIMITED PARTNERSHIP, BY DEED DATED 7-25-89 EXECUTED BY AMERICAN DEFERRED EXCHANGE CORP., A CALIFORNIA CORPORATION, RECORDED 8-1-89 AS INSTRUMENT NO. 89-1232375, AND BY OTHER CONVEYANCES OF RECORD.

PARCEL 30:

THAT PORTION OF SECTION 6, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS FOLLOWS:

PARCELS 2503, 2504 AND 2512 TO 2516 INCLUSIVE OF LICENSED SURVEYORS MAP, FILED IN BOOK 24 PAGE 16 RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT FROM PORTION OF SAID LAND 2/3 OF ALL OIL RIGHTS AS RESERVED BY WILLARD MARBLE AND PEGGY MARBLE IN A DEED RECORDED IN BOOK 4646 PAGE 60 OFFICIAL RECORDS.

ALSO EXCEPT FROM PARCEL 2516 TWO-THIRDS OF THE OIL RIGHTS, AS RESERVED IN DEED RECORDED IN BOOK 9405 PAGE 194 OFFICIAL RECORDS.

PARCEL 31:

PARCEL 122 AS SHOWN ON A LICENSED SURVEYOR'S MAP OF PORTIONS OF SECTIONS 6 AND 7, TOWNSHIP 2 NORTH, RANGE 16 WEST, SAN BERNARDINO MERIDIAN, FILED IN BOOK 24 PAGE 25 OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THEREFROM ALL OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES LYING BELOW THE SURFACE OF SAID PROPERTY, BUT WITH NO RIGHT OF SURFACE ENTRY AS PROVIDED IN DEED RECORDED IN BOOK 6647 PAGE 360, OFFICIAL RECORDS.

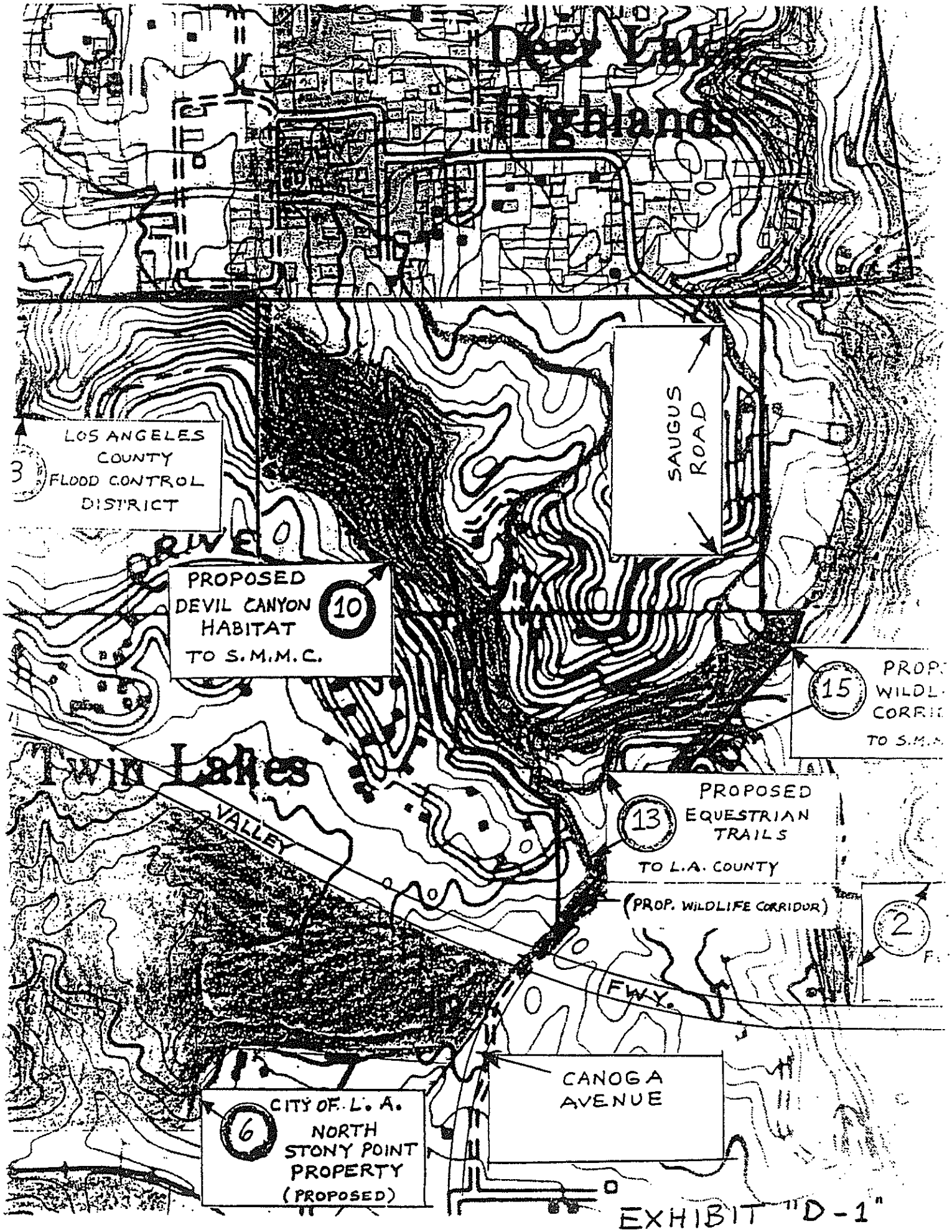

Deer Lake Highlands
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
3
SAUGUS ROAD
PROPOSED DEVIL CANYON HABITAT TO S.M.M.C.
10
15
PROP. WILDL. CORRI. TO S.M.
Twin Lakes
VALLEY
13
PROPOSED EQUESTRIAN TRAILS TO L.A. COUNTY
(PROP. WILDLIFE CORRIDOR)
2
FWY.
CANOGA AVENUE
6
CITY OF L.A. NORTH STONY POINT PROPERTY (PROPOSED)

EXHIBIT "D-1"

EXHIBIT 'E'

MEMORANDUM OF UNDERSTANDING

This Agreement is executed this _____ day of _____, 1998 by and among the following: Chatsworth Ridge Estates, Inc. (CRE) and successors and assignees ("Developer"), and Santa Susana Mountain Park Association ("SSMPA"). This Agreement shall be recorded with the Los Angeles County Recorder in the chain of title by CRE, after which it shall constitute an Amendment to the Agreement executed on October 6, 1993, between David A. Gill, the Chapter 11 Trustee for the Estate of Indian Wells Estates, Inc., and the Santa Susana Mountain Park Association, and shall supersede all provisions of said Agreement executed on October 6, 1993. The Developer and the SSMPA hereby express their mutual and individual intent that this Agreement be binding upon all successive owners of the Conservation Easements and, in furtherance thereof, and in satisfaction of California Civil Code Section 815.5, agree that this Agreement shall be recorded in the offices of the County Recorder of Los Angeles County upon execution by the parties hereto. Any notice, demand, request, consent, approval or communication that either party desires or is required to give to the other shall be in writing and delivered by personal, overnight express or courier service, with a written receipt, or sent by registered or certified mail in a sealed envelope, postage prepaid, return receipt requested and addressed to the respective parties to this Agreement.

Recitals:

a. Developer is the owner of the property which is subject to Los Angeles County Tentative Tract Map Number 44327 and certain other entitlements for Project 86-070, sometimes referred to as "Indian Springs Phase II" (the "Project").

b. SSMPA objected to the original Tentative Tract Map and proposed numerous changes to that Map.

c. Developer has revised the original Tentative Tract Map to accommodate the objections of the SSMPA.

d. In consideration for such changes, all parties have agreed to support the processing of a vesting tentative tract map for the Project and a development agreement to be submitted in connection therewith pursuant to the terms and conditions of this Agreement.

Now, therefore, in consideration of the Agreements contained herein, the parties do hereby agree as follows:

1.0 SSMPA, its counsel, and any of its members speaking on behalf of or as representatives of SSMPA, shall support the administrative processing of Vesting Tentative Tract Map number 44327 and its corresponding Oak Tree Report, attached hereto as Exhibit "A" and Exhibit "B," respectively, and made a part hereof (the "Tract Map" and "Report", respectively). SSMPA shall support the processing of the Tract Map as a vesting tentative tract map and any agreed to extension of such Tract Map, and shall support any development agreement submitted to the appropriate governmental authorities in connection with the Project so long as such development agreement conforms to the provisions of the Tract Map and other terms of this Agreement.

2.0 In furtherance of the terms set forth in paragraph 1 above, SSMPA, its counsel, and any of its members speaking on behalf of or as representatives of SSMPA, agree that it shall not file any comments on the Environmental Impact Report, the relationship of the Project to the

general plan, a development agreement or other permit applications or processing documents so long as such documents are consistent with the provisions of the Tract Map and the terms of this Agreement.

3.0 Developer shall process the Tract Map as a vesting tentative tract map and shall apply for all extensions or renewals of that map, or process a substantially identical tract map, for a period of at least ten (10) years, where the ten-year review shall start upon approval of the vesting tentative tract map.

4.0 Upon recordation of the final Tract Map, Developer shall deed to the Santa Monica Mountains Conservancy (the "Conservancy") or its designee, the open space lot shown as Lot 53 ("open space lot") on the Tract Map without cost or obligation on the part of the public entity subject to the conditions described below. If the open space lot is refused by the Conservancy, it shall be offered to other relevant governmental agencies that are willing to accept the deed under the terms and conditions of this agreement. After recordation of the Project entitlements, including the vesting tentative tract map, Developer shall offer to the Conservancy, SSMPA, or such other public entity described above, the right to lease the open space lot for a nominal sum, consistent with the provisions of this Agreement, until the final tract map is recorded using vesting title to such open space lot in some other entity or for a period of ten (10) years, whichever shall occur first. Such public entity, or the Conservancy, SSMPA, or its designee, shall assume all liability for the use of the open space lot during such rental period and indemnify Developer from same. The developer shall survey the top northwestern corner of Lot 53 (northwest corner of Section 1) and the northeastern corner of Lot 53. Each corner shall be permanently marked with a heavy duty metal stake prior to map recordation. Each metal stake

shall be cemented no less than 2 feet into the ground with minimum of 3 feet above ground level.

5.0 Developer shall prepare conditions, covenants, and restrictions ("CC&R") applicable to the Project, which upon approval by the SSMPA shall be enforceable by lot owners and SSMPA, which shall provide, among other things:

5.1 The open space lot, whether held in title by the Conservancy or any other entity, shall be maintained in perpetuity as open space, subject to the provisions of these CC&R's. No structure, permanent recreational facilities, parking areas, infrastructure (including water tanks, pumps, and utility lines) or other improvements of any kind shall be permitted on the open space lot, other than trail-related signage and improvements. The one exception to this condition is the allowance, or provision for, the water tank, access road, and appurtenant under grounded utilities shown in Exhibit "C" attached hereto and made a part hereof.

5.2 The conveyance of the open space lot shall be subject to the right of access to the open space lot by Developers and subsequent owners of Tract 44327 for development and maintenance of their property including, but not limited to, encroachments for the stabilization of hillsides, placing of fencing, demarcation of boundaries, brush clearance, and other entries for purposes of repair and maintenance. Motorized vehicles shall not be permitted within any portion of the open space without prior approval from the Santa Monica Mountains Conservancy or its designee. Such rights shall include a right of access for persons and nonvehicular equipment through the open space lot in the area adjacent to the exterior boundaries of any lot as necessary for the maintenance and safety of such lots. Developers and subsequent owners shall have 24 hour administrative access to the open space parcel for such purposes, subject to notification of the Conservancy, SSMPA, or designees. Such access shall be done in a manner reasonably

calculated to avoid or minimize any degradation of the open space character of the parcel, including sensitive plant species or their habitat; intact predominantly native vegetation communities; and basic soil integrity and stability.

5.2 a. The conveyance of the open space lot shall be subject to the transfer of title to the Las Virgenes Municipal Water District (LVMWD) of the water tank site and access road as a separate parcel of land as shown in Exhibit "C" attached hereto. The LVMWD shall have access to the water tank via said access road over Indian Springs roads via Iverson Road.

5.3 The homeowners association created for Tract 44327 or owners of specified lots shall be obligated to pay for all permitted and required brush clearance and fuel modification in both the conservation easements and the open space to the extent that brush clearance is required by government regulations or orders in connection with houses or other structures abutting said open space area. It is contemplated that county fire officials shall require brush clearance on various portions of the open space lot.

5.4 Prior to any development of the Tract, an architectural review committee composed of five members, which shall include a representative of SSMPA, shall formulate, record in appropriate CC&Rs and apply architectural standards for all homes, fences, bridges and other structures to be developed on Tract 44327 so as to provide for compatibility between the design of the structures and the natural terrain and open space character of the property. Details concerning the standards to be applied by the architectural committee in this connection shall be included in the CC&Rs.

5.5 Lots 31 to 37 and Lots 11 to 19 as shown on the Tract Map [those lots adjacent to Fern Ann Falls Creek and Hialeah Springs Creek] shall have a recorded 100-foot

conservation easement ("conservation easement"), measured from the water surface elevation for a 50 year frequency storm, to be held by the public entity with title to the open space lot. The exact boundaries of the conservation easements shall be surveyed and marked with metal stakes, and given a legal description prior to map recordation. The conservation easements will transfer to the new owner of the open space lot upon map recordation. Each intersection point between the inner (closest to the proposed development) easement boundary and the lines dividing lots 11-19 and 30-37 shall be permanently marked with a metal stake cemented no less than 2 feet into the ground with minimum of 3 feet above ground level. Where such conservation easement as specified would result in small remainder areas between the outside boundary of a lot and the easement boundary, separated from the principal unburdened portion of the lot, the 100-foot boundary of the easement shall be expanded to coincide with the outside boundary of the lot. The holder of the easement shall be empowered to enforce the following easement restrictions as stipulated in this Agreement and provided in the CC&R's: (1) the fuel modification plan as approved by the Santa Monica Mountains Conservancy, its designee, or other public agency holding the easement, and by Los Angeles County; (2) the defined fence location limits. For these purposes, the definition of a non-native, or non-locally indigenous plant is a species, or hybrid, that did not occur in the Santa Susana Mountains, the Simi Hills, or the Santa Monica Mountains prior to the occupation of people of European origin. Any reputable, up to date, published flora that includes these three mountain ranges would include all relevant native plant species. (3) no planting of non-locally indigenous plants within the easement; (4) no allowance of drainage infrastructure which directs flows from any portion of the lots into the easement area; (5) no locating of any structures of any type other than fencing as defined; (6) no cutting of

access pathways or installation of stairs; (7) the capability to eliminate any non-locally indigenous (non-native) plants and to leave any cut plant materials in place. For these purposes, the definition of a non-native, or non-locally indigenous plant is a species, or hybrid, that did not occur in the Santa Susana Mountains, the Simi Hills, or the Santa Monica Mountains prior to the occupation of people of European origin. Any reputable, up to date, published flora that includes these three mountain ranges would include all relevant native plant species. (8) no placement of organic or inorganic material of any nature; (9) no violations of Fuel Modification Plan.

5.5.1 The only development or other land alteration permissible within this conservation easement area shall be:

a. reasonable non-flammable fencing located 25 feet or more from the 50 year floor water surface elevation for Lots 11 to 19 [Hialeah Springs Creek] and 90 feet or more for Lots 31 to 37 [Fern Ann Falls Creek] and reasonable unpaved, ungraded access ways to construct and maintain such fencing; and

b. stabilization measures to preserve the structural integrity of any adjacent structure with approval of the Conservancy, which shall not be unreasonably withheld; and

c. brush clearance or other safety measures as ordered in writing by any public regulatory body with jurisdiction over the Project, or as explicitly defined in the Fuel Modification Plan as approved by the Santa Monica Mountains Conservancy, its designee, or other public agency holding the easement, and by Los Angeles County. Guest houses, garages, and other structures ancillary to the residences or main houses shall be sited so as to insure that no additional brush clearance or fuel modification practices required by the Fire

Department or other regulatory agency shall be required beyond what is defined in the aforementioned Fuel Modification Plan. The remedy for any such conflict must be geographically located outside of the two conservation easements and the open space lot.

The following absolute limits to any brush clearance, fuel modification, and irrigation (Absolute Fuel Modification Limits) override any interpretation of the Fuel Modification Plan or order by any public agency with jurisdiction over the project. The remedy for any perceived conflict to violate these limits must be geographically located outside of the open space lot, unless otherwise permitted in writing by the Executive Director of the Santa Monica Mountains Conservancy, his or her designee, or the assigned person of another public agency holding the two easements or title to the open space lot.

Absolute Fuel Modification Limits

All lot numbers, lines and markings referred to are as they are shown on the vesting tentative tract map.

1. The 50-years storm water mark line for lots 11-19. This line is also defined by the limits of the conservation easement furthest from the proposed development.

2. The 50-years storm water mark line lots 31-37. This line is also defined by the limits of the conservation easement furthest from the proposed development.

3. 100 feet from the edge of the flat pads for the northern and western sides of lot 11 and the western side of lot 10.

4. No brush clearance or fuel modification allowed

within 20 feet of Hialeah Spring in any direction.

5. The boundary of the open space lot for lots 4, 5, 6, 8 and 9.

6. 125 feet from the edge of the flat pad for lots 37 and 38, or where more restrictive the limits of number 1 above apply to lot 37.

7. The boundary of the open space lot for lots 44 and 45.

The fifty years storm water mark line associated with each easement shall be surveyed and permanently marked with metal stakes at a maximum interval of 75 feet between stakes prior to map recordation. Each heavy duty metal stake shall be cemented no less than 2 feet into the ground with minimum of 3 feet above ground level.

d. Irrigation equipment within the 50-foot-wide portion closest to the proposed development areas.

5.5.2 No development or land alteration of any kind shall take place on Lot 11 until a supplemental report is prepared concerning underground hydrology for that area, and distributed, and is approved by Los Angeles County. Notwithstanding any other provisions of this Agreement, SSMPA reserves the right to comment on or object in public to development of Lot 11 if, in its discretion, it determines the hydrological conditions present a danger to public health or safety or would potentially lead to degradation of Hialeah Springs.

5.5.3 An access easement through the street network of the tract and for foot travel off the western portion of Zaltana Avenue shall be provided to the public entity holding title to the open space lot, in order to access the open space lot for essential maintenance

and supervision, not to exceed four times per month, or for normal, maintenance, monitoring, enforcement, and supervision or emergency purposes.

5.5.4 Other than as provided above, any alteration of the easement area shall be prohibited, including, without limitation, drainage to the creek from pools, patios, driveways, and structures; structures of any kind; and stairs, paths, or other access ways to the creeks.

5.6 The Developer shall construct a metered, buried, one-inch-diameter water pipe and wildlife drinking mechanisms in the portion of the conservation easement between lots 36 and 37. The drinking mechanisms and pipe material shall be constructed to the specifications of the SSMPA and the Conservancy and shall be completed within 3 months after the following three events have occurred: 1) finished grading on lots 36 and 37; 2) a water meter is available from the Las Virgenes Municipal Water District; 3) detailed construction drawings have been submitted to the Developer, or his successors. The wildlife drinker and adequate water shall be provided at the cost of the homeowners association, in perpetuity, and shall be reserved as an easement for access to the open space lot by the public entity holding title to it for the limited purpose of inspection or maintenance of the pipe and wildlife drinking area.

5.7 The water tank presently proposed to be placed on Lot 16 of Tract 33622 may be placed as shown on Exhibit "C" attached hereto, provided that the tank, pump, ancillary equipment, and fencing shall be screened consistent with the "Water Tank Access Road Revegetation and Screening Plan" attached hereto to prevent its being viewed from residential areas and the 118 Freeway.

5.8 No development on any lot may alter any natural stream bed, and such

stream beds shall be crossed only by a bridge reasonably designed to be compatible with the natural terrain.

5.9 No sound wall shall be erected on the south end of the property adjacent to the Simi Valley Freeway.

5.10 Any improvement on any lot shall be subject to architectural standards set forth in the CC&R's to insure the greatest practical compatibility between the improvements and the open space character of the area.

5.11 SSMPA shall be simultaneously provided two full sets of any grading plans that are submitted to either the Los Angeles County Departments of Regional Planning or Public Works.

5.12 There shall be no road access or other easements across Lots 25, 26, 30 or 31 to any adjacent parcel to the north or east.

6.0 Developer shall not remove any oak trees on the Project as part of the development except for some or all of the approximately 62 trees, identified in the current Oak Tree Report attached as Exhibit B, which are diseased or otherwise marginal. The number and location of such diseased trees which may be removed shall be provided to SSMPA and the Conservancy prior to any removal. Developer shall replace any removed trees on an two-to-one ratio. To the extent feasible, no colonies or clusters of endangered tar weed plants shall be removed.

7.0 Developer agrees to removal of all portions of existing mesh fence and poles (from one inch above existing ground level) that courses through the open space lot prior to map recordation.

8.0 Developer shall construct a metered, one-inch-diameter water pipe and wildlife

drinking mechanisms within either the unfenced portion of land described by Exhibit "C" or within immediately surrounding portions of the open space lot. The exact location of the drinking mechanism and pipe material shall be determined by the SSMPA and the Conservancy. Its distance from the water tank shall not exceed 150 feet. The drinking mechanisms shall be constructed to the specifications of the SSMPA and the Conservancy and shall be completed within 3 months after the following two events have occurred: 1) either a water meter or permanent water source from the tank is available from the Las Virgenes Municipal Water District, and 2) detailed construction drawings have been submitted to the Developer, or his successors. The wildlife drinker and adequate water shall be provided at the cost of the homeowners association, in perpetuity. Use of the water tank access road shall be reserved as an easement for access to the wildlife drinker by employees of the public entity holding title to it for the limited purpose of inspection or maintenance of the pipe and wildlife drinking area.

9.0 If the SSMPA or Conservancy determine that the Developer is in violation of the terms of this Agreement, or that a violation is threatened, the SSMPA or the Conservancy shall give at least thirty (30) days written notice to Developer of such violation and demand corrective action sufficient to cure or to prevent the violation and, where the violation involves injury to the Conservation Easements resulting from any use or activity inconsistent with the purpose of this Agreement, to restore the portion of the Conservation Easements so injured. If Developer fails to cure the violation within thirty (30) days after receipt of notice from SSMPA or Conservancy, or under circumstances where the violation cannot reasonably be cured within a thirty (30) day period, fail to begin curing such violation within the thirty (30) day period, or fail to continue diligently to cure such violation until finally cured, SSMPA or Conservancy may

bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Agreement, to enjoin the violation by temporary or permanent mandatory or prohibitory injunction (including, without limitation, preliminary *ex parte* relief; but, if application is made *ex parte*, then with at least 72 (seventy two) hours advance written notice given by fax during normal business hours to Developer, to recover any damages to which it may be entitled for violation of the terms of this Agreement or for injury to any ecological values protected by this Agreement and to require the restoration of the Conservation Easements to the condition that existed prior to any such injury. Without limiting Developer's liability therefore, SSMPA or Conservancy, in its sole discretion, may apply any damages recovered to the cost of undertaking any corrective action on the Conservation Easements consistent with the provisions of this Agreement. If the SSMPA or Conservancy, in its reasonable judgment based on a preponderance of evidence, determines that seriously deteriorating, or about to deteriorate, circumstances of substantial impact to the ecology of the Conservation Easements require remedial of preventive action within less than thirty (30) days to prevent or to mitigate significant damage to the ecological values of the Conservation Easements and it reasonably appears to the SSMPA or Conservancy based on a preponderance of evidence that Developer is unwilling, unable or unmotivated to take such faster action (or to stop its own actions; if such actions are the cause of the harm), then, and only then, the SSMPA or Conservancy may pursue its legal and equitable remedies under this Section with only ten (10) days prior written notice to Developer rather than the normal thirty (30) days notice. The SSMPA or Conservancy's rights and remedies under this Section apply equally in the event of both actual and threatened violation of the terms, covenants, conditions and provisions of this Agreement, and Developer agrees that the SSMPA or

Conservancy's remedies at law for any violation of the terms, covenants, conditions and provisions of this Agreement are inadequate and that the SSMPA or Conservancy shall be entitled to the injunctive relief described in this Section, both prohibitive and mandatory, in addition to such other relief to which the SSMPA or Conservancy may be entitled, including specific performance of the terms, conditions, covenants and provisions of this Agreement, without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies. The SSMPA or Conservancy's rights and remedies described in this Section shall be cumulative and shall be in addition to all rights and remedies now or hereafter existing at law or in equity.

9.1 The prevailing party in any action or proceeding brought by either party to enforce the provisions of this Agreement shall be entitled to reimbursement of its costs and expenses (including, without limitation, experts' fees) and reasonable attorneys' fees from the other party.

9.2 The exercise of any right or remedy by either party hereunder is at the sole discretion of said party and the failure to exercise or delay in the exercise of any right or remedy shall not impair the right or remedy nor act as a future waiver of said right or remedy with respect to the claimed breach, with respect to subsequent identical breaches or with respect to any other breaches, and the only limitation on the exercise of said right or remedy shall be the applicable statutory limitations period, defenses of laches being specifically waived, or the agreed upon limitations period set forth in the next sentence. If no set period of time is set forth in any statute for limiting the exercise of any legal or equitable remedy, then the parties agree that no such remedy, whether legal or equitable, shall be exercisable more than five (5) years after the

party claiming such right or remedy actually did or could have, by means of ordinary diligence, discovered the breach giving rise to such right or remedy.

9.3 Nothing contained in this Agreement shall be construed to entitle the SSMPA or Conservancy to bring an action against Developer for any injury to or change in the Conservation Easements resulting from causes beyond Developer's reasonable control (even when Developer is ordinarily but not grossly negligent) including, without limitation, fire, flood, storm and earth movement, or resulting from any action (even when Developer is ordinarily but not grossly negligent) taken by Developer under the provisions of this Agreement to preserve health or safety or to restore or to prevent injury to the Conservation Easements.

9.4 Except as otherwise provided in this Agreement with respect to indemnification for certain matters, Developer retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership of the Conservation Easements including, without limitation, maintenance of reasonable amounts of comprehensive general liability insurance coverage. Developer and the SSMPA and Conservancy shall each keep the Conservation Easements free of any mechanics and/or material persons' liens with respect to work performed on or materials supplied to the Conservation Easements by or on their respective behalfs.

9.5 Developer shall be solely responsible for all property taxes assessed against the Conservation Easements.

10.0 The parties hereto agree that it may be in their best interests to amend this Agreement from time to time in order to comply with changed governmental regulations, or to adapt the provisions of this Agreement to changed physical conditions, or for any other purpose

which the Parties hereto agree would facilitate the intent and provisions of this Agreement.

11.0 The Exhibits attached hereto, and made a part hereof by reference, are as follows:

11.1 Exhibit "A": Vesting Tentative Tract Map No. 44327, dated 8/24/93, as initialed on 10/6/93 by Robert McMurry and Carlyle Hall.

11.2 Exhibit "B": Oak Tree Report No. T-44327, dated 1/15/92, by Poly Associates.

11.3 Exhibit "C": Map dated 8/1/97, titled "Proposed Water Tank Site and Access Road For Vesting Tentative Tract No. 44327."

In witness whereof the parties hereto have executed this Agreement the day and year in first above-written.

Colleen C. Welter

Colleen C. Welter
for Chatsworth Ridge Estates, Inc.

SANTA SUSANA MOUNTAIN PARK ASSOCIATION

By: Dorian Keyser

Dorian Keyser
for Santa Susana Mountain Park Association

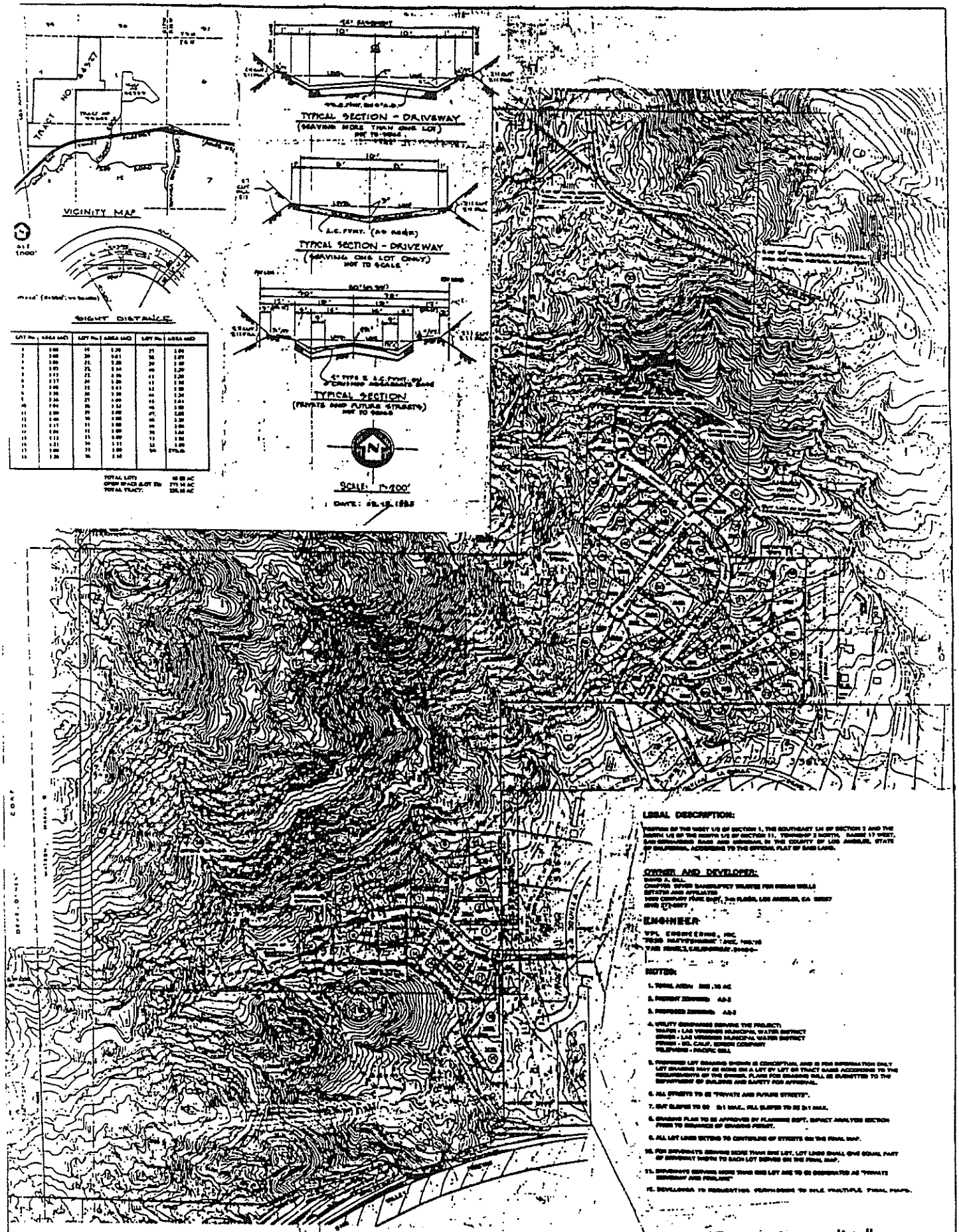
Approved as to form and content:

_____

By:_____
Attorneys for Developer

_____

By:_____
Attorneys for SSMPA



NOTE: A FULL COPY OF THE VESTING TENTATIVE TRACT MAP NO. 44327, APPROVED BY THE LOS ANGELES COUNTY BOARD OF SUPERVISORS IS AVAILABLE FOR INSPECTION AT THE OFFICE OF THE COUNTY DEPARTMENT OF REGIONAL PLANNING.

EXHIBIT "A"

VESTING TENTATIVE TRACT MAP No. 44327

EXHIBIT "A"

Exhibit "A" consists of Vesting Tentative Tract Map No. 44327, as approved by the Los Angeles County Board of Supervisors on August 24, 1993. A full copy of this approved Vesting Tentative Tract Map is on file for public review at the office of the Los Angeles County Department of Regional Planning, 320 West Temple Street, 13th Floor, Los Angeles, California 90012.

EXHIBIT "B"

OAK TREE REPORT

INDIAN WEELS ESTATES
T-44327

Prepared for:

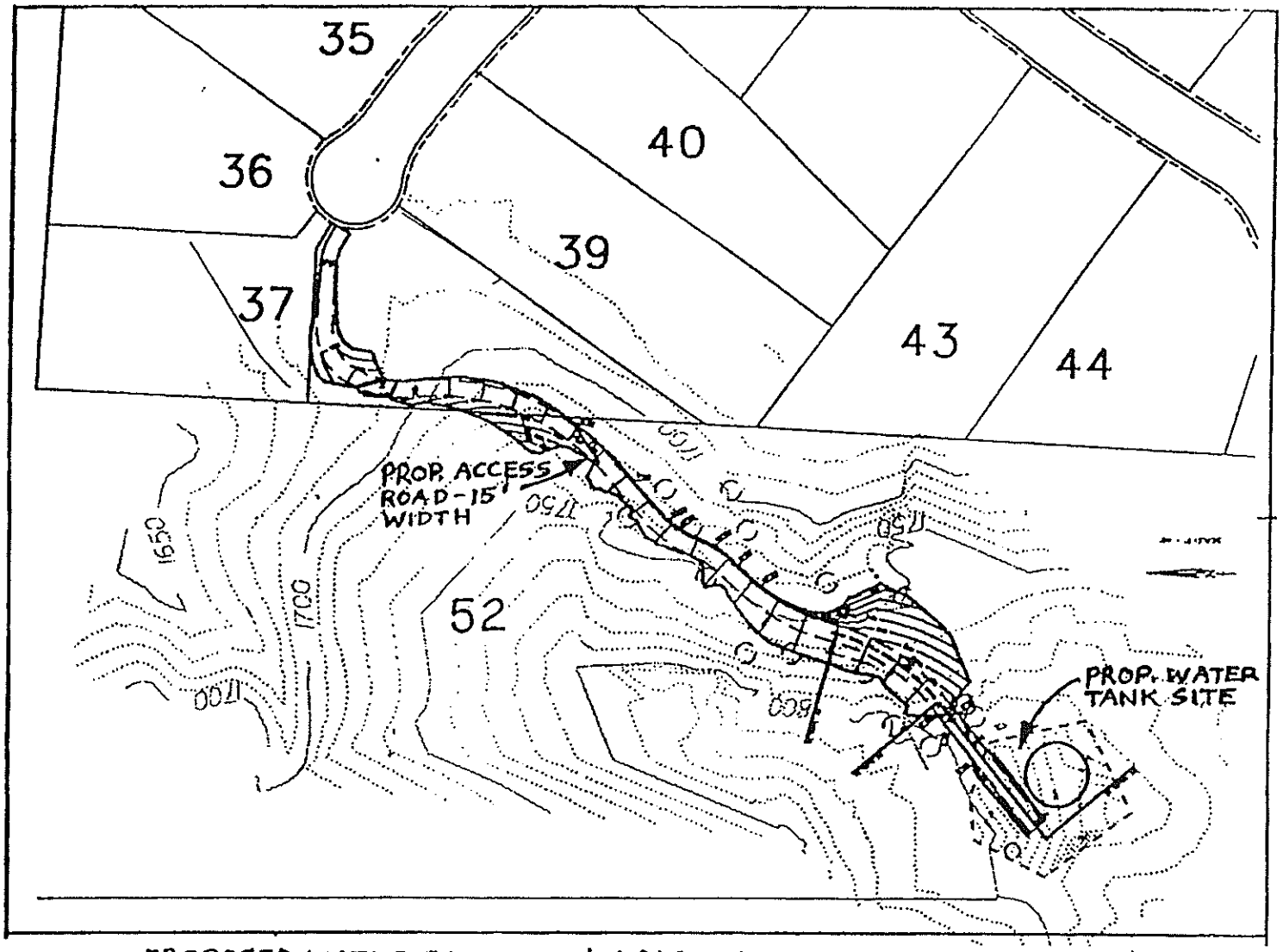
Indian Wells Estates
11211 Iverson Road
Chatsworth, CA 91311

Prepared by:

PAUL A. ROGERS
POLY ASSOCIATES
P.O. Box 861
Ojai, California 93023

January 15, 1992

(Note: Full copies of this report are available for inspection at the offices of the Los Angeles County Department of Regional Planning, the Santa Susana Mountains Homeowners Association, the Santa Monica Mountains Conservancy, and Chatsworth Ridge Estates LLC)



PROPOSED WATER TANK SITE & ACCESS RD. FOR VESTING TENT. TR. 44327

EXHIBIT "C"

EXHIBIT F

Recording Requested by
and when recorded mail to:

Santa Monica Mountains
Conservancy
5750 Ramirez Canyon Road
Malibu, California 90265
Attn: Paul Edelman

MEMORANDUM OF AGREEMENT RE ACQUISITION OF REAL PROPERTY

THIS MEMORANDUM OF AGREEMENT RE ACQUISITION OF REAL PROPERTY "Memorandum of Agreement") is made and entered into as of the 29th day of December, 1997, by and among between THE SANTA MONICA MOUNTAINS CONSERVANCY ("Conservancy"), the Conservancy's Designee, MOUNTAIN RECREATION CONSERVATION AUTHORITY ("Designee") CHATSWORTH RIDGE ESTATES, LLC, a California limited liability company. ("CRE") and CHATSWORTH RIDGE ESTATES, INC. a California Corporation (CRE Corp.)

Conservancy, Designee, and CRE have entered into that certain "Agreement Re Acquisition of Real Property", dated December 29, 1997, which related to real property, in the County of Los Angeles, State of California, legally described on **Exhibit "A"**; **Exhibit B**; **Exhibit B-1**, **Exhibit C**; **Exhibit C-1**, **Exhibit D**, **Exhibit D-1** and **Exhibit G**. At such time as this Memorandum of Agreement no longer effects a particular parcel of property attached hereto as an exhibit, then the parties hereto agree to release such parcel of property from the terms of such Agreement in a form suitable for recording.

IN WITNESS WHEREOF, the parties have executed this Memorandum of Agreement as of the date above.

SANTA MONICA MOUNTAINS CONSERVANCY

By: Belinda Faustinos
Belinda Faustinos, Deputy Director

MOUNTAINS RECREATION CONSERVATION AUTHORITY

By: Belinda Faustinos
Belinda Faustinos, Deputy Executive Officer

CHATSWORTH RIDGE ESTATES, A Limited Liability Company

By: Chatsworth Ridge Estates, Inc.
A California Corporation

By: _____
Colleen C. Welter, President

W.E.

Chatsworth Ridge Estates, Inc.,
A California Corporation

By: _____
Colleen C. Welter, President

STATE OF CALIFORNIA }
}ss.
COUNTY OF LOS ANGELES }

On December 30, 1997, before me, Cynthia L. Silverman the undersigned Notary Public in and for said State, personally appeared Belinda Faustinos, personally known to me or proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal

Cynthia L. Silverman
Signature of Notary Public

CYNTHIA L. SILVERMAN
Comm. # 1156746
NOTARY PUBLIC - CALIFORNIA
Los Angeles County
My Comm. Expires Sept. 26, 2001

STATE OF _____ }
}ss.
COUNTY OF _____ }

On _____, before me, _____ the undersigned Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal

_____
Signature of Notary Public

W.E

EXHIBIT "G"

LEGAL DESCRIPTION

THOSE PORTIONS OF LOTS 3,4,5,6,7,8,46,47,52 AND 53 IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA AS SHOWN ON LICENSED SURVEYOR'S MAP FILED IN BOOK 23 PAGE 39, RECORDS OF SURVEY, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY DESCRIBED AS PARCELS 1 AND 2 AS FOLLOWS:

PARCEL 1

COMMENCING AT THE SOUTHERLY TERMINUS OF THAT CERTAIN COURSE SHOWN ON RECORD OF SURVEY FILED IN BOOK 119 PAGE 24 OF RECORDS OF SURVEY, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY AS HAVING A BEARING OF NORTH 02° 17′ 14″ WEST AND A LENGTH OF 474.04 FEET, SAID BEARING FOR PURPOSES OF THIS DESCRIPTION BEING NORTH 02° 16′ 54″ WEST; THENCE NORTHERLY ALONG SAID COURSE NORTH 02° 16′ 54″ WEST, 202.00 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 67° 43′ 06″ EAST, 37.00 FEET TO THE BEGINNING OF A TANGENT CURVE, CONCAVE NORTHWESTERLY HAVING A RADIUS OF 100.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 38° 00′ 00″ AN ARC DISTANCE OF 66.32 FEET; THENCE TANGENT TO SAID CURVE NORTH 29° 43′ 06″ EAST, 57.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE WESTERLY, HAVING A RADIUS OF 330.00 FEET, A RADIAL LINE OF SAID CURVE THROUGH SAID POINT

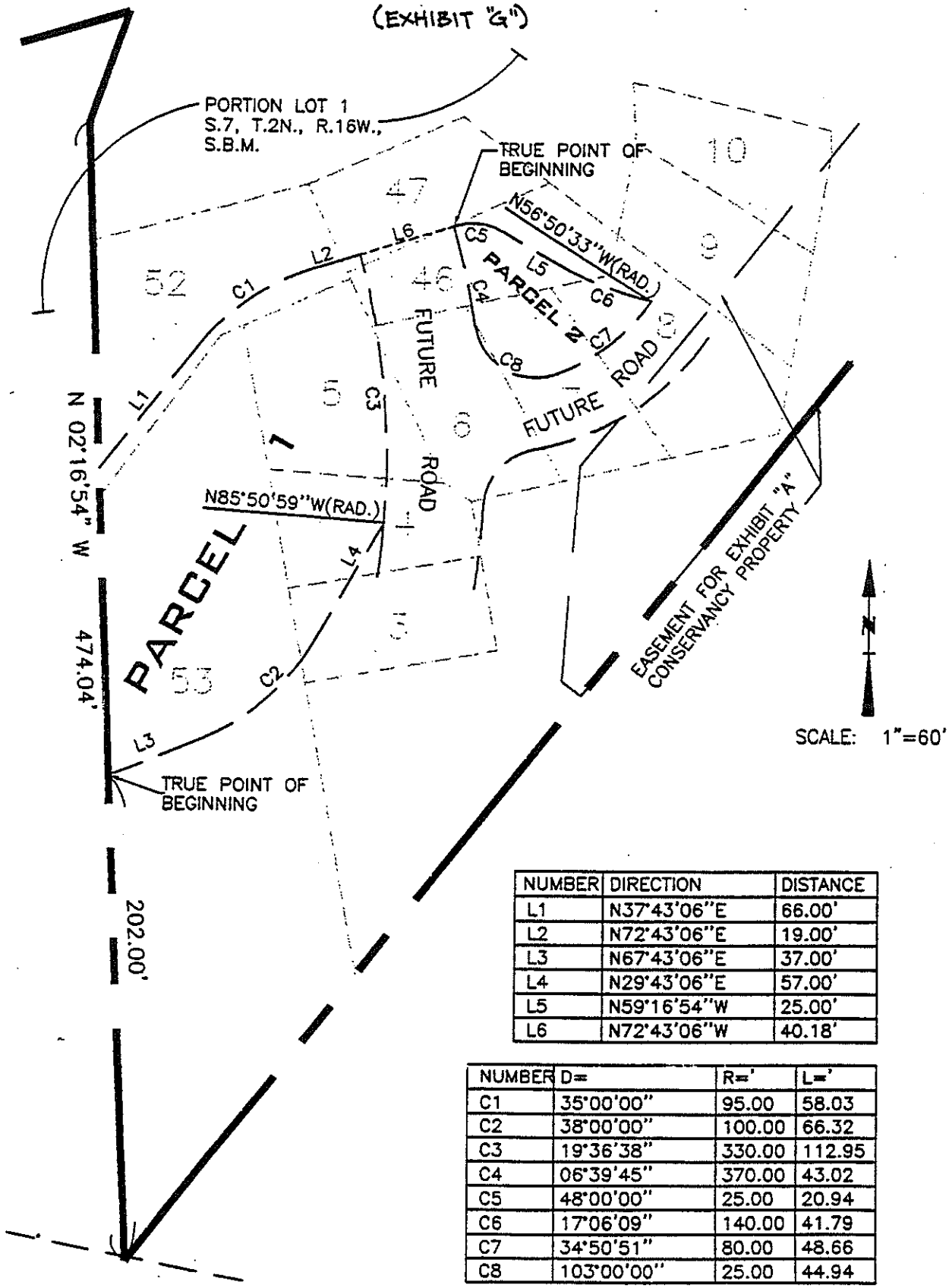
BEARS SOUTH 85° 50′ 59″ EAST; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19° 36′ 38″ AN ARC DISTANCE OF 112.95 FEET; THENCE SOUTH 72° 43′ 06″ WEST, 19.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 95.00 FEET; THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 35° 00′ 00″ AN ARC DISTANCE OF 58.03 FEET; THENCE TANGENT TO SAID CURVE SOUTH 37° 43′ 06″ WEST, 66.00 FEET; THENCE SOUTH 02° 16′ 54″ EAST, 128.00 FEET TO THE TRUE POINT OF BEGINNING.

PARCEL 2

COMMENCING AT THE EASTERLY TERMINUS OF THAT CERTAIN COURSE DESCRIBED IN PARCEL 1, HEREIN ABOVE AS BEARING SOUTH 72° 43′ 06″ WEST AND HAVING A LENGTH OF 19.00 FEET; THENCE NORTH 72° 43′ 06″ EAST 40.18 FEET TO THE TRUE POINT OF BEGINNING, SAID POINT BEING THE BEGINNING OF A TANGENT CURVE, CONCAVE SOUTHERLY HAVING A RADIUS OF 25.00 FEET; THENCE EASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 48° 00′ 00″ AN ARC DISTANCE OF 20.94 FEET; THENCE TANGENT TO SAID CURVE SOUTH 59° 16′ 54″ EAST, 25.00 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHEASTERLY HAVING A RADIUS OF 140.00 FEET; THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 17° 06′ 09″ AN ARC DISTANCE OF 41.79 FEET TO

THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 80.00 FEET, A RADIAL LINE OF SAID CURVE THROUGH SAID POINT BEARS SOUTH 56° 50′ 33″ EAST; THENCE SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 34° 50′ 51″ AN ARC DISTANCE OF 48.66 FEET TO THE BEGINNING OF A COMPOUND CURVE CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 25.00 FEET; THENCE NORTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 103° 00′ 00″ AN ARC DISTANCE OF 44.94 FEET TO THE BEGINNING OF A REVERSE CURVE, CONCAVE WESTERLY HAVING A RADIUS OF 370.00 FEET; THENCE NORTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 06° 39′ 45″ AN ARC DISTANCE OF 43.02 FEET TO THE TRUE POINT OF BEGINNING.

SKETCH TO ACCOMPANY
LEGAL DESCRIPTION
(EXHIBIT "G")



NUMBER	DIRECTION	DISTANCE
L1	N37°43'06"E	66.00'
L2	N72°43'06"E	19.00'
L3	N67°43'06"E	37.00'
L4	N29°43'06"E	57.00'
L5	N59°16'54"W	25.00'
L6	N72°43'06"W	40.18'

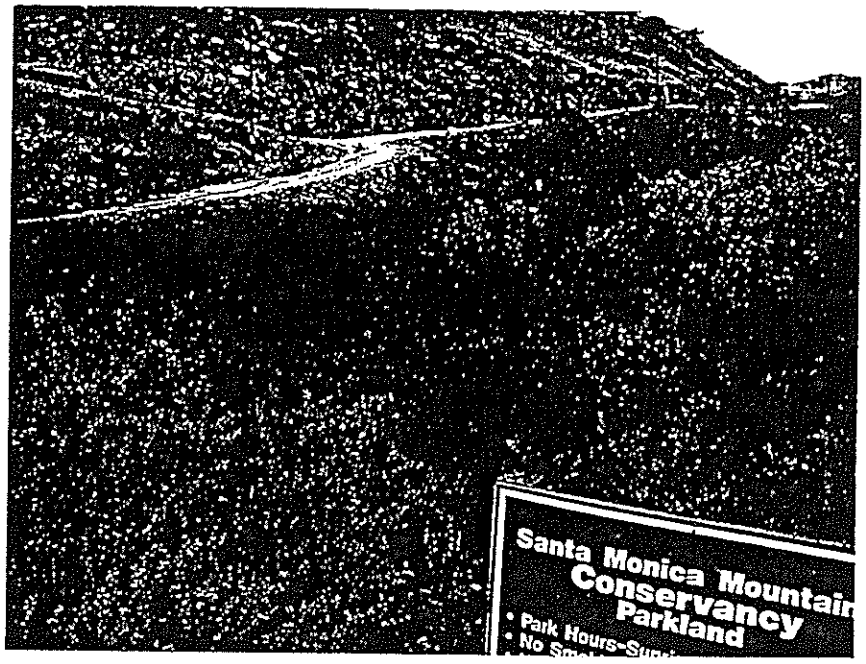
NUMBER	D=	R='	L='
C1	35°00'00"	95.00	58.03
C2	38°00'00"	100.00	66.32
C3	19°36'38"	330.00	112.95
C4	06°39'45"	370.00	43.02
C5	48°00'00"	25.00	20.94
C6	17°06'09"	140.00	41.79
C7	34°50'51"	80.00	48.66
C8	103°00'00"	25.00	44.94

APPENDIX D

BRIDGE STUDIES

B&E Engineers
24 W. Saint Joseph Street
Arcadia, CA 91007

Chatsworth/Deer Ridge Project
Tract No. 53138
County of Los Angeles



Advance Planning Studies Report for
Devil Canyon Creek Bridge at "A" Street (3-span bridge)
Devil Canyon Creek Bridge at "Other" Street (single-span bridge)

Submitted by:

Eli M. Aramouni, P.E.
Imbsen & Associates, Inc.
9912 Business Park Drive, Suite 130
Sacramento, CA 95827
(916) 366-0632
(916) 366-1501 FAX

REGISTERED PROFESSIONAL ENGINEER
ELIE M. ARAMOUNI
Eli Aramouni
No. C 041712
EXP 03/31/04
CIVIL
STATE OF CALIFORNIA

April 27, 2000

IMBSEN & ASSOCIATES, INC.
Engineering Consultants

EXECUTIVE SUMMARY

Imbsen & Associates, Inc. (Imbsen) was retained by B& E Engineers to perform Advance Planning Studies on two structures within the Chatsworth/Deer Ridge Project, funded by the Presidio Group, and located in the greater Los Angeles County. Imbsen submitted a Draft Report on March 24, 2000 and a revised Draft Report on April 13, 2000 in which cast-in-place, precast, and steel superstructures were considered for both the Devil Canyon Creek bridge at "A" Street (3-span bridge) and the Devil Canyon Creek Bridge at "other" Street (single span bridge). The Draft Reports also highlighted the associated construction costs and sequences for both bridges.

A meeting was held at B& E Engineers on April 13, 2000 to discuss alternatives and special considerations, including the Santa Monica Mountains Conservancy Property in the vicinity of the structures. Present at this meeting were Eli Aramouni, Imbsen, Richard Garlinghouse, Presidio Group, and Hans Girard and Ramy Awad from B& E Engineers. Attendees discussed the different bridge alternatives, construction sequences and access, costs and schedule.

The following alternatives were considered for the study:

"A" Street Bridge (3-Span Bridge) Alternatives

			Construction Cost (including 10% Mobilization & 0% Contingency)
Current Alignment as presented by B&E Engineers	Bridge Length = 397'0" Bridge Width = 47'9"	Cast-in-Place Superstructure	$1,972,000*
		Precast Prestressed Superstructure	$2,116,000*
		Steel Superstructure	$3,308,000
	Bridge Length = 397'0" Bridge Width = 64'0"	Cast-in-Place Superstructure	$2,334,000
		Precast Prestressed Superstructure	$2,505,000
		Steel Superstructure	
	Bridge Length = 295'0" Bridge Width = 64'0"	Cast-in-Place Superstructure	$2,543,000
		Precast Prestressed Superstructure	$2,669,000
		Steel Superstructure	
Revised "A" Street Alignment	Bridge Length = 380'0" Bridge Width = 47'9"	Cast-in-Place Superstructure	$1,755,000
		Precast Prestressed Superstructure	$1,883,000
		Steel Superstructure	$2,804,000

*Recommended by Imbsen & Associates, Inc.

"Other" Street Bridge (Single-Span Bridge) Alternatives

			Construction Cost (including 10% Mobilization & 0% Contingency)
Current Alignment as presented by B& E Engineers	Bridge Length = 111'0"	Cast-in-Place Superstructure	$971,000*
	Bridge Width = 43'9"	Precast Prestressed Superstructure	$990,000*
		Steel Superstructure	
	Bridge Length = 168'0"	Cast-in-Place Superstructure	$756,000
	Bridge Width = 43'-9"	Precast Prestressed Superstructure	
		Steel Superstructure	
	Bridge Length = 168'0"	Cast-in-Place Superstructure	$808,000
	Bridge Width = 51'0"	Precast Prestressed Superstructure	
		Steel Superstructure	
	Bridge Length = 111'0"	Cast-in-Place Superstructure	$1,065,000
	Bridge Width = 51'0"	Precast Prestressed Superstructure	$1,155,000
		Steel Superstructure	

*Recommended by Imbsen & Associates, Inc.

RECOMMENDATION

Cast-in-place, post-tensioned, box girder superstructures in California are the most economical types of bridges built in the State. About 80 percent of all bridges built in the State of California are box girders because of ease of construction by contractors, cost to construct, appearance, high torsional resistance and adaptability to curved alignments. Box girders also conceal and protect utilities, pipes and conduits. However, extensive falsework and formwork are required to build box girder bridges, making them undesirable when crossing a water body, viaduct, or an environmentally sensitive habitat.

The Santa Monica Mountains Conservancy Property (SMMC), located in the vicinity of the structures, is an environmentally sensitive habitat. Precast Prestressed Concrete Girders are an excellent choice of construction to span over the SMMC property lines, thus reducing or eliminating the construction impact on the site. Precast fabrication plants are located in Long Beach, Perris, Lathrop, and Rialto, California. However, Precast Girders generally cost more than cast-in-place reinforced or prestressed box girders and require careful handling after fabrication.

Imbsen recommends the Precast Prestressed Girders alternative if the goal is to reduce the construction impact on the SMMC, and the Cast-in-Place Prestressed Box Girder alternative if access is provided on the SMMC property.

1. DEVIL CANYON CREEK BRIDGE AT "A" STREET

1.1 Proposed Structure

A three-span structure will be the most economical configuration given the provided site conditions and geometry of this location. An Advance Planning Study (APS) sheet has been prepared for the more feasible bridge length and to compare cost estimates between two different structure types. Option A uses precast prestressed concrete bulb-tee girders and Option B uses a cast-in-place prestressed concrete box girder. Other alternatives previously investigated were a shorter length bridge with taller abutments and longer and higher retaining walls. In addition, an alternative alignment was also explored to shorten the main span length, but at the expense of three residential lots. A third structure type consisting of steel plate girders was also considered and the estimated cost was much higher than the precast and cast-in-place options.

The proposed bridge width consists of a 40' travel way (20' for each direction). A Concrete Barrier Type 26 has been assumed on the south side to provide a 5' raised sidewalk and a 1' wide concrete barrier with a pedestrian handrail on top. In addition, a Concrete Barrier Type 25 with a Tubular Handrailing Type 25 has been assumed on the north side to meet bicycle requirements.

1.1.1 Construction Sequence

Construction sequence for cast-in-place concrete box girder bridges is well understood and practiced by bridge contractors in California. Erection of precast girders is also a common bridge construction practice, but not as frequent as the cast-in-place technique in California.

The first order of work for the bridge construction is to provide an access ramp down to the bent locations. It is assumed these ramps will begin near the abutment locations and provide access for the drill rig, erection crane, concrete pump truck, and concrete trucks. Large cranes may require as many as seven trucks legally loaded for over-the-road service for delivery to the project site. Typically, the larger the crane is the less "agile" it may be on sloping or unstable ground.

Substructure (abutment) construction usually involves backhoes or hydraulic excavators to make excavations for the spread footings and involves:

- Excavate for the placement of footings

- Form footing
- Place footing and some abutment wall reinforcing steel
- Place footing concrete
- Form abutment stem wall
- Place remaining stem reinforcing steel and close up forms
- Place stem concrete up to bearing seat

Construction of cast-in-drilled-hole (CIDH) concrete piling (in dry stable ground) usually involves crane-mounted drilling equipment and a service crane to handle the rebar cage. The process usually is:

- Drill hole and prepare reinforcing bar "cage" to be inserted into the drilled hole
- Place reinforcing cage (usually extending to top of future column)
- Place concrete to pile cut-off elevation
- Form column (extension of the pile above ground)
- Place concrete to 1" above; the future structure soffit or the drop cap soffit

Construction of the drop bent cap for Option A (PC/PS Bulb-Tee girder) usually involves a crane and falsework to provide a form to cast the cap as follows:

- Erect falsework between and around both columns to provide a working platform
- Erect forms for cap on platform
- Place reinforcing steel in cap and reinforcing steel to be used later in the bent diaphragm
- Place bent cap concrete
- Remove falsework after concrete strength has been reached

Superstructure construction for precast girders **(Option A)** can begin as soon as the concrete strength has been reached at both the abutment stems and the drop bent cap, maximum 28-days after placing. Precast prestressed concrete bulb-tee girders (that were cast in the manufacturers yards months before) are brought to the job site and laid down on the approach fill to each abutment. The lengths of these girders will likely be 60' to 90' and the process will be:

- Post-tension the girders together at the job site to arrive at the final span lengths, usually done in the approach roadway.
- Erect the end span girders (span 1 and span 3) by using two cranes one up on the approach road and the other likely to be down on the access ramp provided for the bent construction

- Erect the main span girders (span 2) by using two cranes placed on the approach road or by using high lines also placed (supported) in the approach road.
- Erect forms for bent cap diaphragms, abutment diaphragms and intermediate diaphragms
- Place reinforcing steel in diaphragms
- Place concrete in diaphragms (may be done later with "deck pour")
- Erect form for deck or use precast deck panels
- Place reinforcing steel for the deck
- Place "deck pour" concrete
- When the concrete meets the design strength, the bulb-tee girders are post-tensioned together using prestressing strands for the entire length of bridge (performed from abutments)
- The bridge is finished by filling prestressing blockouts and placing the abutment backwalls while forms, reinforcing, and concrete are placed for the concrete barriers
- The backfill is placed and compacted behind the abutments, final cleanup is done, and the structure is ready to open to traffic.

Superstructure (falsework) construction, for cast-in-place concrete **(Option B)**, is often started simultaneously with the substructure construction since it takes more time for most sites. When both are complete the following progression occurs:

- Place reinforcing steel for the soffit slab and girder stems (post-tensioning ducts are also placed in the girder stems)
- Erect girder stem forms
- Place concrete in soffit and stem pour (a little over half of the superstructure concrete is placed)
- Place utilities (or casings for the utilities) to be carried inside the box girder superstructure and then the girder stem forms are stripped and flipped to be used as "lost-deck" forms for the bottom of the deck slab
- Place reinforcing steel for the rest of the superstructure
- Place "deck pour" concrete
- When the concrete meets the design strength, the box girder is post-tensioned with prestressing strands from the abutments
- The bridge is finished by filling prestressing blockouts and placing the abutment backwalls while forms, reinforcing, and concrete are placed for the concrete barriers
- The backfill is placed and compacted behind the abutments, final cleanup is done, and the structure is ready to open to traffic.

1.1.2 Types of Foundations

The presence of groundwater will be a major consideration in design and construction of the large diameter CIDH piling at the bents and in turn will affect the cost. When groundwater is anticipated, the CIDH piling will be designed to accommodate construction inspection pipes. Additionally, if soft cohesive soils or loose sands are expected then a temporary or permanent steel casing will be used during construction. Conversely, if a rock or hard material stratum is encountered where conventional CIDH methods are not feasible then pier columns are used. The term pier column is used to describe the construction method where a large diameter pile is cored vs. drilled into the hard material. The cost of this construction technique is usually higher than for drilling, but the length of pile is usually reduced so the net effect is minor.

At the abutments spread footing type foundations have been assumed for cost estimating; however, if the existing ground is not capable of supporting the loads from the proposed high-cantilevered abutments other alternatives are available. Driven piles can be used to transfer load through a weak soil stratum into a stronger stratum by either end bearing at the pile tip or through side friction into the surrounding soil, or a combination of both. Typically, precast concrete piles or steel piles are used. Often times a precast concrete pile is specified, while the Special Provisions may provide for the substitution of steel piles. For locations where boulders may be present in the stratum steel piles would be chosen and concrete piles precluded. In addition, where soil stratum contains corrosive properties concrete piles using special cement are selected and steel piles are normally not acceptable.

Another option is to use drilled piles. If noise is a concern at a construction site, usually in an urban setting, then construction of drilled piles is preferred over driven piles. When groundwater is anticipated, 24" or greater diameter CIDH piles must be specified. Furthermore, if boulders are expected then the size of the boulders will have a direct effect in specifying the size of the CIDH piles. Soft soil conditions also require special construction techniques just as they do for large diameter CIDH piles described above.

1.1.3 Superstructure

The two proposed types are presented in the following table.

Option	Structure Type	Bridge Length	Span Lengths	Superstructure Depth
A	PC/PS Conc Bulb-Tee Girder	397'-0"	130'-185'-82'	8'-6"
B	CIP/PS Conc Box Girder	397'-0"	130'-185'-82'	7'-6"

1.1.4 Substructure

All abutments and retaining walls have been assumed to be on spread footing foundations. High-cantilevered seat type abutments have been assumed for both options. The bents have been assumed to consist of circular columns (two-column bents) on large 72" diameter cast-in-drilled-hole (CIDH) piles. The only difference between the two options is a drop cap (reinforced concrete beam) will be used at the bents for Option A (PC/PS Bulb-Tee Girders).

1.1.5 Construction Cost Estimate

Alternatives and estimates are based upon the following assumptions:

- Construction processes and completed structures must meet Los Angeles County requirements.
- Access for "normal" construction equipment is available from both ends at each site (rough grading will be done to "A" Street site).
- In-situ Geotechnical materials are adequate for the loads imposed (*Geotechnical Report* will make site-specific foundation recommendations). Estimated costs for cast-in-drilled-hole concrete piling and spread footings are based on stable, dry ground conditions (i.e., no casings, slurry, or other special measures will be required for substructure design or construction).
- Environmentally sensitive area(s), if any, will not change span length or bent spacing shown or dictate falsework design.

The two construction cost estimates are presented below, which includes 10% for mobilization and no contingencies. Contingencies will be included with the overall infrastructure project estimate.

Option	Structure Type	Bridge Length	Retaining Walls Total Length	Cost Estimate*
A	PC/PS Conc Bulb-Tee Girder	397'-0"	106'	$2,116,000
B	CIP/PS Conc Box Girder	397'-0"	106'	$1,972,000

*No contingencies included

DIST	COUNTY	ROUTE	POST MILES
07	LA		

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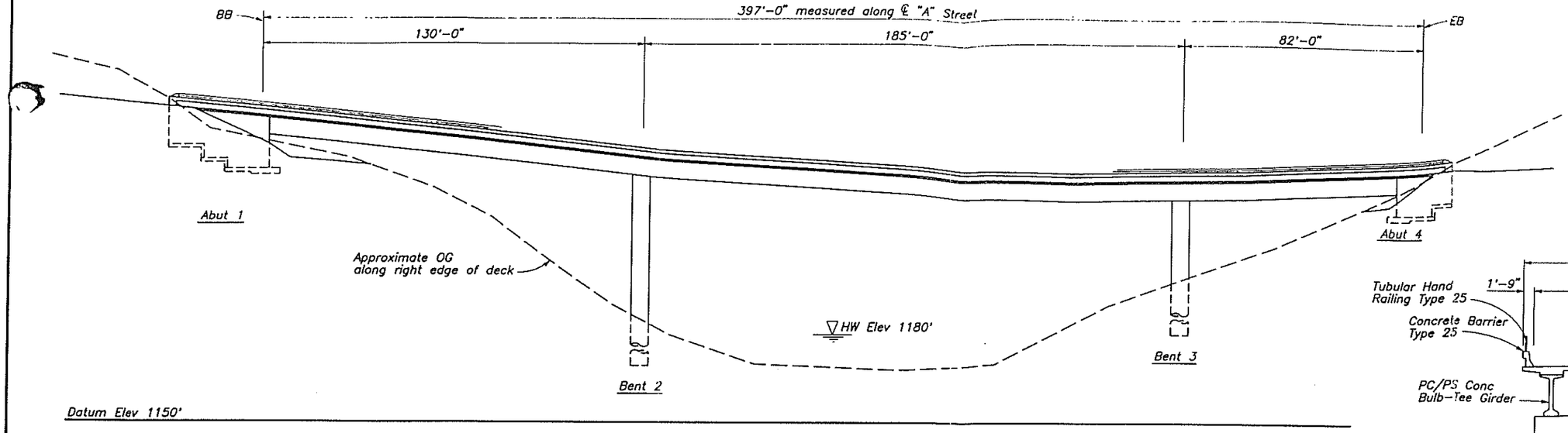
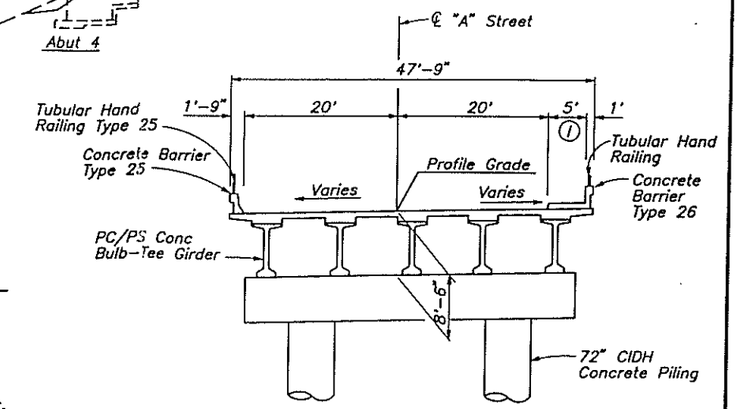
Sacramento, California 95827

B & E ENGINEERS
24 W. Saint Joseph Street
Arcadia, CA 91007



ELEVATION
1"=20'

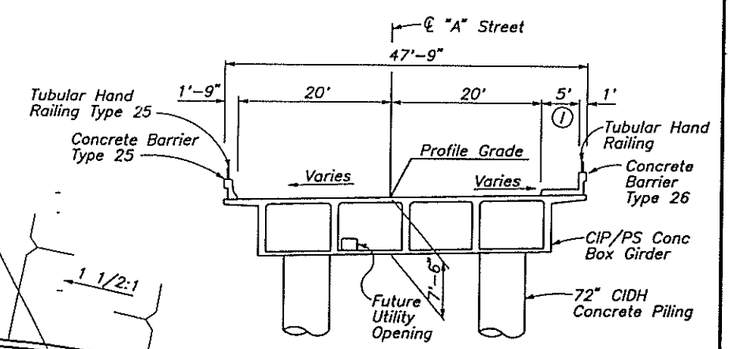
		OPTION A	OPTION B
Date of Estimate	=	4-19-00	4-19-00
Str Depth	=	8'-6"	7'-6"
Length	=	397'-0"	397'-0"
Width	=	47'-9"	47'-9"
Area	=	18957 sq ft	18957 sq ft



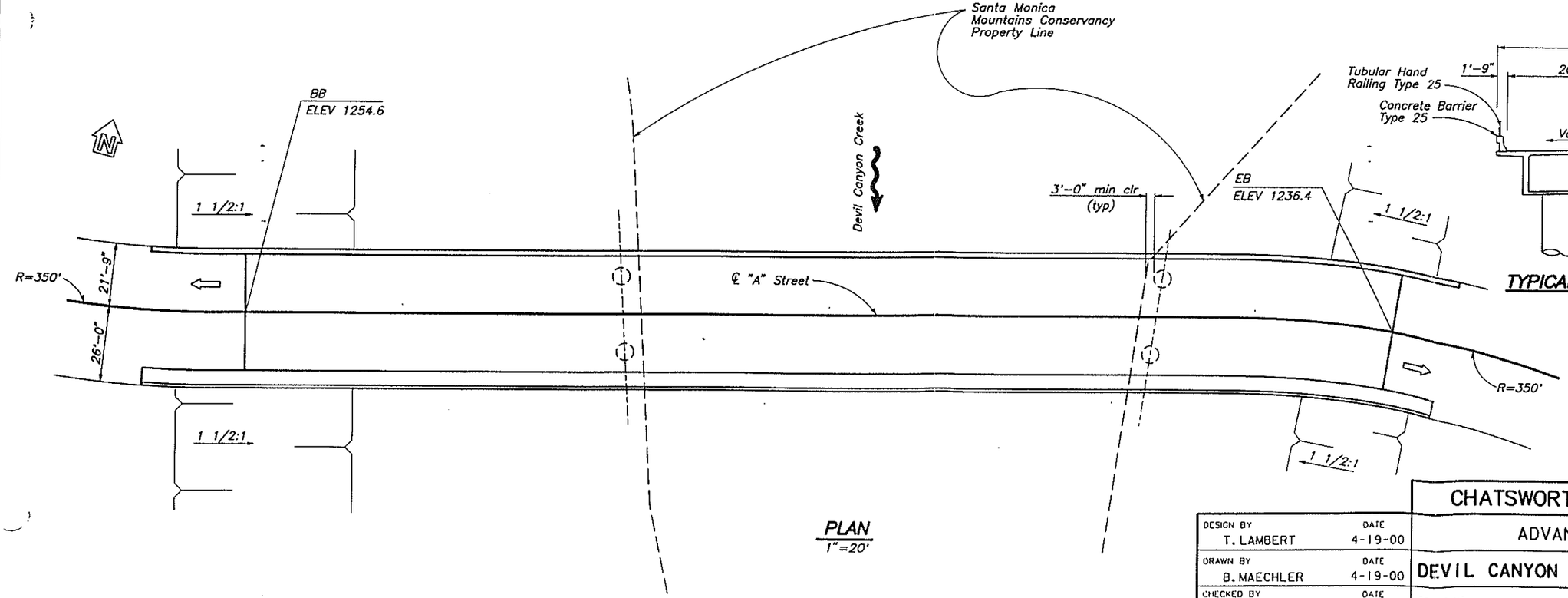
TYPICAL SECTION-OPTION A
1"=10'

NOTE:

(1) Sidewalk



TYPICAL SECTION-OPTION B
1"=10'



PLAN
1"=20'

DESIGN BY T. LAMBERT	DATE 4-19-00	CHATSWORTH/DEER RIDGE PROJECT	
DRAWN BY B. MAECHLER	DATE 4-19-00	ADVANCE PLANNING STUDY	
CHECKED BY E. ARAMOUNI	DATE 4-19-00	DEVIL CANYON CREEK BRIDGE @ "A" STREET	
APPROVED	DATE	BRIDGE NO. 53CXXXX	CU 07
		SCALE As Shown	EA

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2. DEVIL CANYON CREEK BRIDGE AT "OTHER" STREET

2.1.1 Proposed Structure

A simple span structure will be the most economical configuration given the provided site conditions and geometry of this location. Advance Planning Study (APS) sheets have been prepared for two different bridge lengths to compare cost estimates and their relation between providing a longer bridge and shorter and lower retaining walls vs. a shorter bridge with taller abutments and longer and higher retaining walls.

The proposed bridge width consists of a 36' travel way (18' for each direction). A Concrete Barrier Type 26 has been assumed on the east side to provide a 5' raised sidewalk and a 1' wide concrete barrier with a pedestrian handrail on top. In addition, a Concrete Barrier Type 25 with a Tubular Handrailing Type 25 has been assumed on the north side to meet bicycle requirements.

2.1.2 Construction Sequence

See Bridge at "A" Street description. The main difference is that no CIDH piling (bent construction) will be required for the simple span bridge at "Other" Street.

2.1.3 Superstructure

The two alternatives investigated are presented in the following table.

Alternative	Option	Structure Type	Bridge Length	Superstructure Depth
1	A	PC/PS Conc Bulb-Tee Girder	111'-0"	6'-6"
1	B	CIP Reinforced Conc Box Girder	111'-0"	6'-6"
2		CIP/PS Conc Box Girder	168'-0"	7'-9"

2.1.4 Substructure

All abutments and retaining walls have been assumed to be on spread footing foundations. High-cantilevered seat type abutments have been assumed for all alternatives. The table below summarizes the differences between the alternatives.

Alternative	Bridge Length	Abutment Heights	Retaining Wall Heights	Retaining Wall Total Length
1	111'-0"	28'-36'	12'-36'	200'
2	168'-0"	18'-20'	10'-20'	85'

2.1.5 Construction Cost Estimate

Alternatives and estimates are based upon the following assumptions:

- Construction processes and completed structures must meet Los Angeles County requirements.
- Access for "normal" construction equipment is available from both ends at each site.
- In-situ Geotechnical materials are adequate for the loads imposed (*Geotechnical Report* will make site-specific foundation recommendations). Estimated costs for spread footings are based on stable, dry ground conditions.
- Environmentally sensitive area(s) if any, will not change span length shown or dictate falsework design.

The construction cost estimates are presented below, which includes 10% for mobilization and no contingencies. Contingencies will be included with the overall infrastructure project estimate.

Alternative	Option	Structure Type	Bridge Length	Retaining Wall Total Length	Cost Estimate*
1	A	PC/PS Conc Bulb-Tee Girder	111'-0"	200'	$990,000
1	B	CIP Reinforced Conc Box Girder	111'-0"	200'	$971,000
2		CIP/PS Conc Box Girder	168'-0"	85'	$756,000

* No contingencies included

DIST	COUNTY	ROUTE	POST MILES
07	LA		

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24 W. Saint Joseph Street
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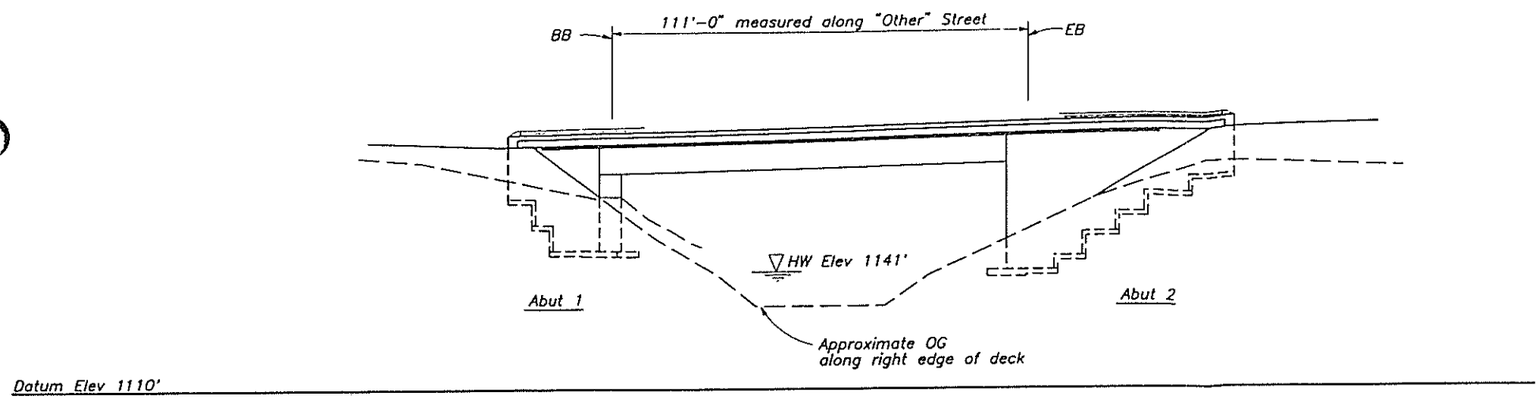
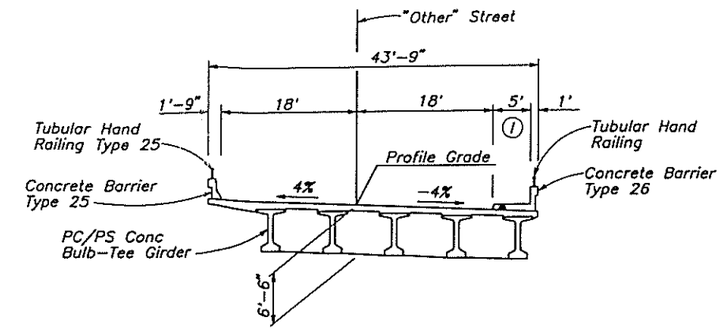
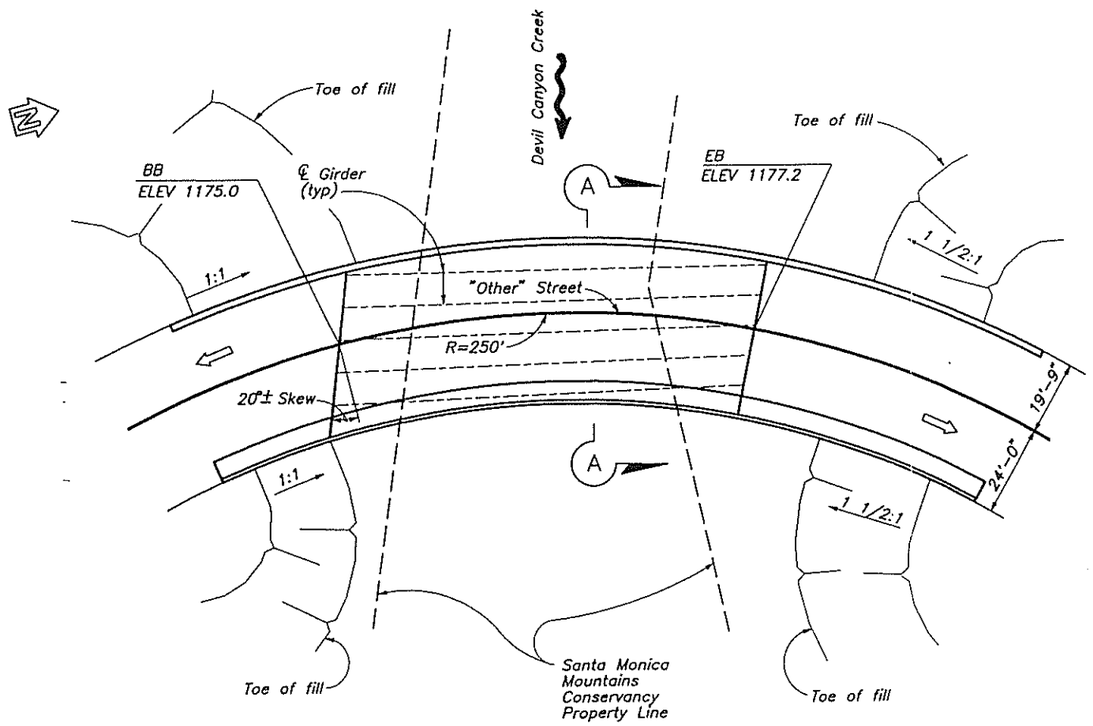


ELEVATION
1"=20'



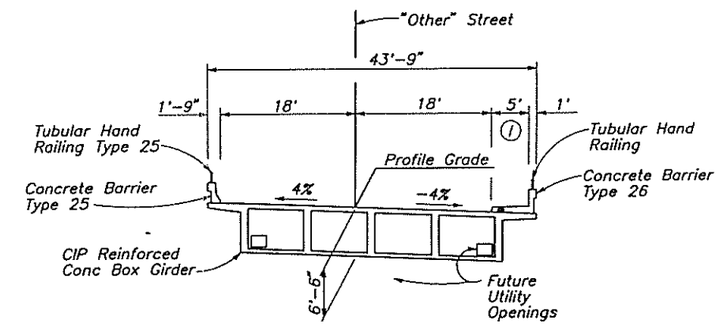
SECTION A-A-OPTION A
1"=10'

NOTE:
1 Sidewalk



Note: Straight girders on curved alignment for Option A

PLAN
1"=20'



TYPICAL SECTION-OPTION B
1"=10'

		OPTION A & B
Date of Estimate	=	4-19-00
Str Depth	=	6'-6"
Length	=	111'-0"
Width	=	43'-9"
Area	=	4856 sq ft

DESIGN BY T. LAMBERT	DATE 4-19-00	CHATSWORTH/DEER RIDGE PROJECT
DRAWN BY B. MAECHLER	DATE 4-19-00	ADVANCE PLANNING STUDY-ALTERNATIVE I
CHECKED BY E. ARAMOUNI	DATE 4-19-00	DEVIL CANYON CREEK BRIDGE @ "OTHER" ST
APPROVED	DATE	BRIDGE NO. 53CXXXX / CU 07
		SCALE As Shown / EA

18 APR 2000 6:12:52 **monitor vnc:0.0*1152*8200_pal4.dgn

DIST	COUNTY	ROUTE	POST MILES
07	LA		

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Sacramento, California 95827

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24 W. Saint Joseph Street
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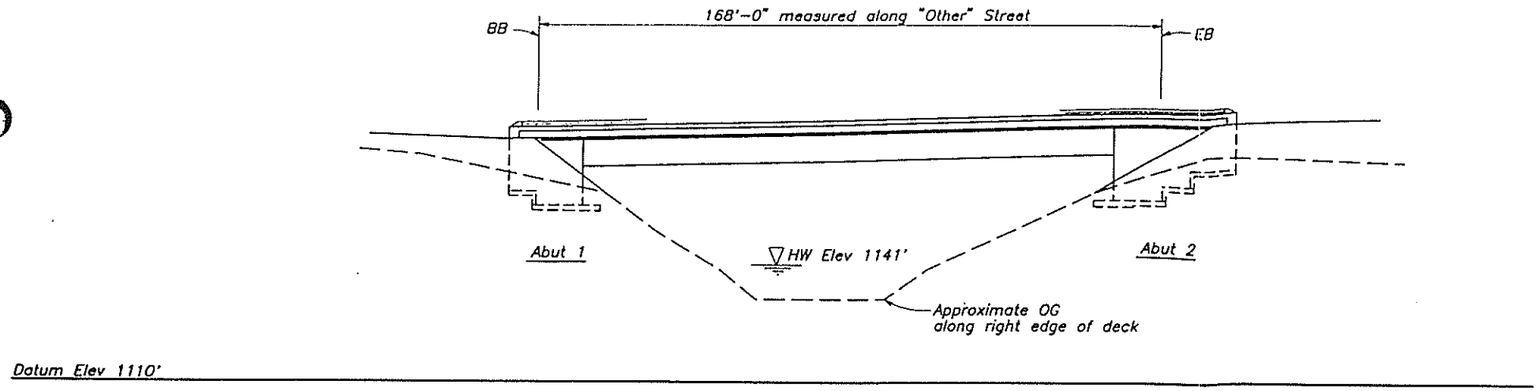
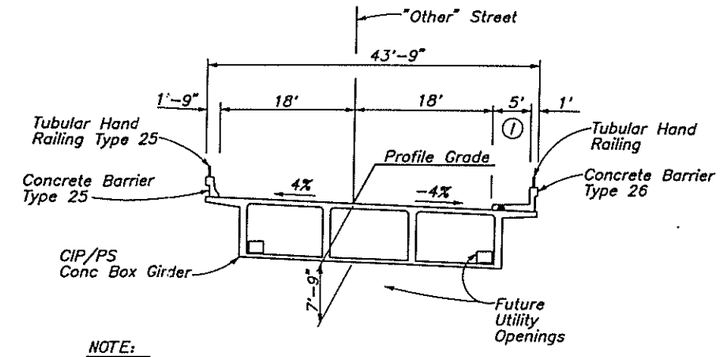
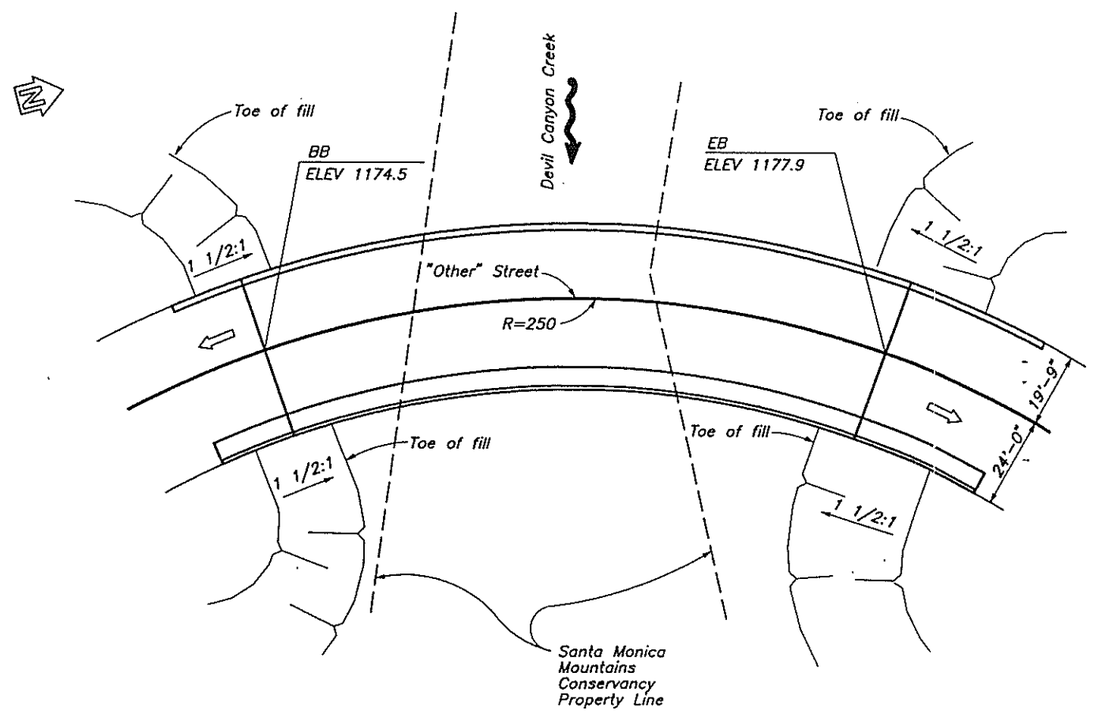


ELEVATION
1"=20'



NOTE:
(1) Sidewalk

TYPICAL SECTION
1"=10'



PLAN
1"=20'

Date of Estimate		4-19-00
Str Depth	=	7'-9"
Length	=	168'-0"
Width	=	43'-9"
Area	=	7350 sq ft

DESIGN BY T. LAMBERT	DATE 4-19-00	CHATSWORTH/DEER RIDGE PROJECT	
DRAWN BY B. MAECHLER	DATE 4-19-00	ADVANCE PLANNING STUDY-ALTERNATIVE 2	
CHECKED BY E. ARAMOUNI	DATE 4-19-00	DEVIL CANYON CREEK BRIDGE @ 'OTHER' ST	
APPROVED	DATE	BRIDGE NO. 53CXXXX	CU 07
		SCALE As Shown	EA

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APPENDIX A

BRIDGE ADVANCE PLANNING ESTIMATE

COMPARISON SUMMARY SHEET

DEVIL CANYON CREEK BRIDGE AT "A" STREET
OPTION A
OPTION B

DEVIL CANYON CREEK BRIDGE AT "OTHER" STREET
ALTERNATIVE 1 – OPTION A
ALTERNATIVE 1 – OPTION B
ALTERNATIVE 2

	"A" Street Bridge (3-Span Structure)		"Other " Street Bridge (single-span structure)		
	Option A	Option B	Alternative 1 - Option A	Alternative 1 - Option B	Alternative 2
	Precast	Cast-in-Place	Precast	Cast-in-Place	
	Longer Bridge	Longer Bridge	Shorter Bridge	Shorter Bridge	Longer Bridge
Bridge Deck Area sq. ft.	18,957	18,957	4,856	4,856	7,350
Raw Construction Cost	$1,904,036	$1,773,911	$890,109	$873,409	$679,887
Raw $/sq. ft.	$100.44	$93.58	$183.30	$179.86	$92.50
Construction Cost with 10% Mobilization	$2,116,000	$1,972,000	$990,000	$971,000	$756,000
$/sq. ft.	$111.60	$103.97	$203.67	$199.85	$102.78

"A" STREET - OPTION A

BRIDGE ESTIMATE

x Advance Planning Estimate
General Plan Estimate
EQ Retrofit Estimate

IAI PROJECT NO. 1162-00

Est. By T. LAMBERT 04/19/2000
Chk. By

Imbsen & Associates, Inc.
9912 Business Park Drive, Suite 130
Sacramento, CA 95827
Phone (916) 366-0632 Fax (916) 366-1501

BRIDGE: Devil Canyon Creek Bridge at "A" Street
TYPE: QG Precast Prestressed Girder not described elsewhere

CALTRANS BR NO.: 53CXXXX
COUNTY BR NO.:

DISTRICT: 07
COUNTY: LA

ROUTE:
PM:

CU: 07
EA:

DEPTH:	LENGTH:	WIDTH:		AREA:
8.50 ft	397.00 ft	47.75 ft	=	18,957 sq ft

ITEM NO.		CONTRACT ITEMS	UNIT	QUANTITY	UNIT COST	ADJ	PRICE	AMOUNT
1	192003	Structure Excavation (Bridge)	CY	386	$45.00	1.00	$45.00	$17,370
2	192020	Structure Excavation (Type D)	CY	22	$90.00	1.00	$90.00	$1,980
3	192037	Structure Excavation (Retaining Wall)	CY	413	$35.00	1.14	$40.00	$16,520
4	193003	Structure Backfill (Bridge)	CY	384	$30.00	1.00	$30.00	$11,520
5	193013	Structure Backfill (Retaining Wall)	CY	630	$30.00	1.17	$35.00	$22,050
6	490611	72" Cast-In-Drilled-Hole Concrete Piling	LF	288	$400.00	1.50	$600.00	$172,800
7	500001	Prestressing Cast-In-Place Concrete	LS	1	$100,000.00	0.46	$46,000.00	$46,000
8	510051	Structural Concrete, Bridge Footing	CY	65	$260.00	1.35	$350.00	$22,750
9	510053	Structural Concrete, Bridge	CY	1,283	$450.00	1.33	$600.00	$769,800
10	510060	Structural Concrete, Retaining Wall	CY	141	$230.00	1.52	$350.00	$49,350
11	512207	Furnish PC/PS Concrete Girder (80'-90')	EA	5	$12,000.00	1.17	$14,000.00	$70,000
12	512211	Furnish PC/PS Concrete Girder (120'-130')	EA	5	$22,000.00	1.00	$22,000.00	$110,000
13	512217	Furnish PC/PS Concrete Girder (180'-190')	EA	5	$34,000.00	1.00	$34,000.00	$170,000
14	512500	Erect PC/PS Concrete Girder	EA	15	$1,400.00	3.21	$4,500.00	$67,500
15	519092	Joint Seal Assembly (MR 2 1/2")	LF	92	$95.00	1.11	$105.00	$9,660
16	520102	Bar Reinforcing Steel (Bridge)	LB	389,000	$0.60	1.00	$0.60	$233,400
17	520103	Bar Reinforcing Steel (Retaining Wall)	LB	13,300	$0.65	1.08	$0.70	$9,310
18	681132	Geocomposite Drain	SQYD	389	$9.00	1.00	$9.00	$3,501
19	833084	Tubular Handrailing (Type 25)	LF	460	$45.00	1.00	$45.00	$20,700
20	833088	Tubular Handrailing	LF	455	$35.00	1.00	$35.00	$15,925
21	833125	Concrete Barrier (Type 25)	LF	460	$35.00	1.14	$40.00	$18,400
22	833140	Concrete Barrier (Type 26)	LF	455	$110.00	0.91	$100.00	$45,500
						1.00		
						1.00		
						1.00		
						1.00		
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						1.00		
						1.00		
						1.00		
						1.00		
						1.00		
						1.00		

NOTES:
Three spans with 185' main span.
Option A - PC/PS Bulb-Tee girders for all three spans.

SUBTOTAL		$1,904,036
MOBILIZATION	(@ 10%)	$211,560
SUBTOTAL BRIDGE ITEMS		$2,115,596
CONTINGENCIES	(@ 25%)	$528,899
BRIDGE TOTAL COST		$2,644,494
COST PER SQ. FT.	18,957 sq ft	$139.50
BRIDGE REMOVAL (CONTINGENCIES INCL.)		
WORK BY RAILROAD, UTILITY FORCES, OR OTHERS		
GRAND TOTAL		$2,644,494
FOR BUDGET PURPOSES - USE		**$2,650,000**

"A" STREET - OPTION B

BRIDGE ESTIMATE

x Advance Planning Estimate
____ General Plan Estimate
____ EQ Retrofit Estimate

IAI PROJECT NO. 1162-00

Est. By T. LAMBERT 04/19/2000
Chk. By

Imbsen & Associates, Inc.
9912 Business Park Drive, Suite 130
Sacramento, CA 95827
Phone (916) 366-0632 Fax (916) 366-1501

BRIDGE: Devil Canyon Creek Bridge at "A" Street
TYPE: QB Cast-In-Place Prestressed Concrete Box Girder

CALTRANS BR NO.: 53CXXXX
COUNTY BR NO.:

DISTRICT: 07
COUNTY: LA

ROUTE:
PM:

CU: 07
EA:

DEPTH:	LENGTH:	WIDTH:		AREA:
7.50 ft	397.00 ft	47.75 ft	=	18,957 sq ft

ITEM NO.		CONTRACT ITEMS	UNIT	QUANTITY	UNIT COST	ADJ	PRICE	AMOUNT
1	192003	Structure Excavation (Bridge)	CY	386	$45.00	1.00	$45.00	$17,370
2	192020	Structure Excavation (Type D)	CY	22	$90.00	1.00	$90.00	$1,980
3	192037	Structure Excavation (Retaining Wall)	CY	413	$35.00	1.14	$40.00	$16,520
4	193003	Structure Backfill (Bridge)	CY	384	$30.00	1.00	$30.00	$11,520
5	193013	Structure Backfill (Retaining Wall)	CY	630	$30.00	1.17	$35.00	$22,050
6	490611	72" Cast-In-Drilled-Hole Concrete Piling	LF	288	$400.00	1.50	$600.00	$172,800
7	500001	Prestressing Cast-In-Place Concrete	LS	1	$100,000.00	0.87	$87,000.00	$87,000
8	510051	Structural Concrete, Bridge Footing	CY	65	$260.00	1.35	$350.00	$22,750
9	510053	Structural Concrete, Bridge	CY	1,803	$450.00	1.17	$525.00	$946,575
10	510060	Structural Concrete, Retaining Wall	CY	141	$230.00	1.52	$350.00	$49,350
11	519092	Joint Seal Assembly (MR 2 1/2")	LF	92	$95.00	1.11	$105.00	$9,660
12	520102	Bar Reinforcing Steel (Bridge)	LB	505,000	$0.60	1.00	$0.60	$303,000
13	520103	Bar Reinforcing Steel (Retaining Wall)	LB	13,300	$0.65	1.08	$0.70	$9,310
14	681132	Geocomposite Drain	SQYD	389	$9.00	1.00	$9.00	$3,501
15	833084	Tubular Handrailing (Type 25)	LF	460	$45.00	1.00	$45.00	$20,700
16	833088	Tubular Handrailing	LF	455	$35.00	1.00	$35.00	$15,925
17	833125	Concrete Barrier (Type 25)	LF	460	$35.00	1.14	$40.00	$18,400
18	833140	Concrete Barrier (Type 26)	LF	455	$110.00	0.91	$100.00	$45,500
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NOTES:
Three spans with 185' main span.
Option B - CIP/PS concrete box girder for all three spans.

SUBTOTAL		$1,773,911
MOBILIZATION	(@ 10%)	$197,101
SUBTOTAL BRIDGE ITEMS		$1,971,012
CONTINGENCIES	(@ 25%)	$492,753
BRIDGE TOTAL COST		$2,463,765
COST PER SQ. FT.	18,957 sq ft	$129.97
BRIDGE REMOVAL (CONTINGENCIES INCL.)		
WORK BY RAILROAD, UTILITY FORCES, OR OTHERS		
GRAND TOTAL		$2,463,765
FOR BUDGET PURPOSES - USE		**$2,470,000**

"OTHER" STREET - ALTERNATIVE 1 - OPTION A

BRIDGE ESTIMATE

x Advance Planning Estimate
____ General Plan Estimate
____ EQ Retrofit Estimate

IAI PROJECT NO. 1162-00

Est. By T. LAMBERT 04/19/2000
Chk. By

Imbsen & Associates, Inc.
9912 Business Park Drive, Suite 130
Sacramento, CA 95827
Phone (916) 366-0632 Fax (916) 366-1501

BRIDGE: Devil Canyon Creek Bridge at "Other" Street
TYPE: QG Precast Prestressed Girder not described elsewhere

CALTRANS BR NO.: 53CXXXX
COUNTY BR NO.:

DISTRICT: 07
COUNTY: LA

ROUTE:
PM:

CU: 07
EA:

DEPTH:	LENGTH:	WIDTH:		AREA:
6.50 ft	111.00 ft	43.75 ft	=	4,856 sq ft

ITEM NO.		CONTRACT ITEMS	UNIT	QUANTITY	UNIT COST	ADJ	PRICE	AMOUNT
1	192003	Structure Excavation (Bridge)	CY	763	$45.00	1.00	$45.00	$34,335
2	192037	Structure Excavation (Retaining Wall)	CY	775	$35.00	1.14	$40.00	$31,000
3	193003	Structure Backfill (Bridge)	CY	949	$30.00	1.00	$30.00	$28,470
4	193013	Structure Backfill (Retaining Wall)	CY	1,585	$30.00	1.17	$35.00	$55,475
5	510051	Structural Concrete, Bridge Footing	CY	134	$260.00	1.25	$325.00	$43,550
6	510053	Structural Concrete, Bridge	CY	436	$450.00	1.33	$600.00	$261,600
7	510060	Structural Concrete, Retaining Wall	CY	476	$230.00	1.41	$325.00	$154,700
8	512210	Furnish PC/PS Concrete Girder (110'-120')	EA	5	$15,000.00	1.33	$20,000.00	$100,000
9	512500	Erect PC/PS Concrete Girder	EA	5	$1,400.00	2.50	$3,500.00	$17,500
10	519085	Joint Seal (Type B-MR 1")	LF	84	$35.00	1.00	$35.00	$2,940
11	520102	Bar Reinforcing Steel (Bridge)	LB	113,000	$0.60	1.00	$0.60	$67,800
12	520103	Bar Reinforcing Steel (Retaining Wall)	LB	57,000	$0.65	1.08	$0.70	$39,900
13	681132	Geocomposite Drain	SQYD	776	$9.00	1.00	$9.00	$6,984
14	833084	Tubular Handrailing (Type 25)	LF	225	$45.00	1.00	$45.00	$10,125
15	833088	Tubular Handrailing	LF	198	$35.00	1.00	$35.00	$6,930
16	833125	Concrete Barrier (Type 25)	LF	225	$35.00	1.14	$40.00	$9,000
17	833140	Concrete Barrier (Type 26)	LF	198	$110.00	0.91	$100.00	$19,800
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NOTES:
Alternative 1 - simple span of 111'.
Option A - PC/PS Bulb-Tee girders.

SUBTOTAL		$890,109
MOBILIZATION	(@ 10%)	$98,901
SUBTOTAL BRIDGE ITEMS		$989,010
CONTINGENCIES	(@ 25%)	$247,253
BRIDGE TOTAL COST		$1,236,263
COST PER SQ. FT.	4,856 sq ft	$254.57
BRIDGE REMOVAL (CONTINGENCIES INCL.)		
WORK BY RAILROAD, UTILITY FORCES, OR OTHERS		
GRAND TOTAL		$1,236,263
FOR BUDGET PURPOSES - USE		**$1,240,000**

"OTHER" STREET - ALTERNATIVE 1 - OPTION B

BRIDGE ESTIMATE

x Advance Planning Estimate
General Plan Estimate
EQ Retrofit Estimate

IAI PROJECT NO. 1162-00

Est. By T. LAMBERT 04/19/2000
Chk. By

Imbsen & Associates, Inc.
9912 Business Park Drive, Suite 130
Sacramento, CA 95827
Phone (916) 366-0632 Fax (916) 366-1501

BRIDGE: Devil Canyon Creek Bridge at "Other" Street
TYPE: CB Cast-In-Place Reinforced Concrete Box Girder

CALTRANS BR NO.: 53CXXXX
COUNTY BR NO.:

DISTRICT: 07
COUNTY: LA

ROUTE:
PM:

CU: 07
EA:

DEPTH:	LENGTH:	WIDTH:		AREA:
6.50 ft	111.00 ft	43.75 ft	=	4,856 sq ft

ITEM NO.		CONTRACT ITEMS	UNIT	QUANTITY	UNIT COST	ADJ	PRICE	AMOUNT
1	192003	Structure Excavation (Bridge)	CY	763	$45.00	1.00	$45.00	$34,335
2	192037	Structure Excavation (Retaining Wall)	CY	775	$35.00	1.14	$40.00	$31,000
3	193003	Structure Backfill (Bridge)	CY	949	$30.00	1.00	$30.00	$28,470
4	193013	Structure Backfill (Retaining Wall)	CY	1,585	$30.00	1.17	$35.00	$55,475
5	510051	Structural Concrete, Bridge Footing	CY	134	$260.00	1.25	$325.00	$43,550
6	510053	Structural Concrete, Bridge	CY	588	$450.00	1.22	$550.00	$323,400
7	510060	Structural Concrete, Retaining Wall	CY	476	$230.00	1.41	$325.00	$154,700
8	519085	Joint Seal (Type B-MR 1")	LF	84	$35.00	1.00	$35.00	$2,940
9	520102	Bar Reinforcing Steel (Bridge)	LB	178,000	$0.60	1.00	$0.60	$106,800
10	520103	Bar Reinforcing Steel (Retaining Wall)	LB	57,000	$0.65	1.08	$0.70	$39,900
11	681135	Geocomposite Drain	SQYD	776	$9.00	1.00	$9.00	$6,984
12	833084	Tubular Handrailing (Type 25)	LF	225	$45.00	1.00	$45.00	$10,125
13	833088	Tubular Handrailing	LF	198	$35.00	1.00	$35.00	$6,930
14	833125	Concrete Barrier (Type 25)	LF	225	$35.00	1.14	$40.00	$9,000
15	833140	Concrete Barrier (Type 26)	LF	198	$110.00	0.91	$100.00	$19,800
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NOTES:
Alternative 1 - simple span of 111'.
Option B - CIP reinforced concrete box girder.

SUBTOTAL		$873,409
MOBILIZATION	(@ 10%)	$97,045
SUBTOTAL BRIDGE ITEMS		$970,454
CONTINGENCIES	(@ 25%)	$242,614
BRIDGE TOTAL COST		$1,213,068
COST PER SQ. FT.	4,856 sq ft	$249.80
BRIDGE REMOVAL (CONTINGENCIES INCL.)		
WORK BY RAILROAD, UTILITY FORCES, OR OTHERS		
GRAND TOTAL		$1,213,068
FOR BUDGET PURPOSES - USE		**$1,220,000**

"OTHER" STREET - ALTERNATIVE 2

BRIDGE ESTIMATE

x Advance Planning Estimate
General Plan Estimate
EQ Retrofit Estimate

IAI PROJECT NO. 1162-00

Est. By T. LAMBERT 04/19/2000
Chk. By

Imbsen & Associates, Inc.
9912 Business Park Drive, Suite 130
Sacramento, CA 95827
Phone (916) 366-0632 Fax (916) 366-1501

BRIDGE: Devil Canyon Creek Bridge at "Other" Street
TYPE: QB Cast-In-Place Prestressed Concrete Box Girder

CALTRANS BR NO.: 53CXXXX
COUNTY BR NO.:

DISTRICT: 07
COUNTY: LA

ROUTE:
PM:

CU: 07
EA:

DEPTH:	LENGTH:	WIDTH:		AREA:
7.75 ft	168.00 ft	43.75 ft	=	7,350 sq ft

ITEM NO.		CONTRACT ITEMS	UNIT	QUANTITY	UNIT COST	ADJ	PRICE	AMOUNT
1	192003	Structure Excavation (Bridge)	CY	306	$45.00	1.00	$45.00	$13,770
2	192037	Structure Excavation (Retaining Wall)	CY	307	$35.00	1.14	$40.00	$12,280
3	193003	Structure Backfill (Bridge)	CY	329	$30.00	1.00	$30.00	$9,870
4	193013	Structure Backfill (Retaining Wall)	CY	458	$30.00	1.17	$35.00	$16,030
5	500001	Prestressing Cast-In-Place Concrete	LS	1	$100,000.00	0.43	$43,000.00	$43,000
6	510051	Structural Concrete, Bridge Footing	CY	54	$260.00	1.35	$350.00	$18,900
7	510053	Structural Concrete, Bridge	CY	715	$450.00	1.22	$550.00	$393,250
8	510060	Structural Concrete, Retaining Wall	CY	101	$230.00	1.52	$350.00	$35,350
9	519086	Joint Seal (Type B-MR 1 1/2")	LF	84	$40.00	1.00	$40.00	$3,360
10	520102	Bar Reinforcing Steel (Bridge)	LB	132,000	$0.60	1.00	$0.60	$79,200
11	520103	Bar Reinforcing Steel (Retaining Wall)	LB	8,800	$0.65	1.08	$0.70	$6,160
12	681132	Geocomposite Drain	SQYD	318	$9.00	1.00	$9.00	$2,862
13	833084	Tubular Handrailing (Type 25)	LF	225	$45.00	1.00	$45.00	$10,125
14	833088	Tubular Handrailing	LF	198	$35.00	1.00	$35.00	$6,930
15	833125	Concrete Barrier (Type 25)	LF	225	$35.00	1.14	$40.00	$9,000
16	833140	Concrete Barrier (Type 26)	LF	198	$110.00	0.91	$100.00	$19,800
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NOTES:
Alternative 2 - simple span of 168'.
CIP/PS concrete box girder.

SUBTOTAL		$679,887
MOBILIZATION	(@ 10%)	$75,543
SUBTOTAL BRIDGE ITEMS		$755,430
CONTINGENCIES	(@ 25%)	$188,858
BRIDGE TOTAL COST		$944,288
COST PER SQ. FT.	7,350 sq ft	$128.47
BRIDGE REMOVAL (CONTINGENCIES INCL.)		
WORK BY RAILROAD, UTILITY FORCES, OR OTHERS		
GRAND TOTAL		$944,288
FOR BUDGET PURPOSES - USE		**$950,000**

APPENDIX B

STRUCTURE TYPE SELECTION FORM

DEVIL CANYON CREEK BRIDGE AT "A" STREET
DEVIL CANYON CREEK BRIDGE AT "OTHER" STREET

DEPARTMENT OF TRANSPORTATION

STRUCTURE TYPE SELECTION

PREPARED BY:

IMBSEN & ASSOCIATES, INC.

PROJECT IDENTIFICATION	DATE
Chatsworth/Deer Ridge Development – Devil Canyon Creek	4/19/00

DIST	CO	RTE	PM	CU	EA	DESIGN GROUP
07	LA			07		IAI

BRIDGE NAME (S)	BR NO (S)	PM	CONSTRUCTION COST - $
Devil Canyon Creek Bridge at "A" Street	53CXXXX		$2,116,000 *

* Includes 10% mobilization only; no contingencies included

TYPES CONSIDERED:

1. 397' long 3-span structure with 106' of retaining walls.
2. 295' long 3-span structure with 327' of retaining walls.
3. 380' long 3-span structure with 106' of retaining walls on a different alignment.

For most alternatives, three structure types were considered.

A. Precast prestressed concrete bulb-tee girder
B. Cast-in-place prestressed concrete box girder
C. Steel plate girder

PREVIOUS COMMUNITY AESTHETIC OR ECOLOGICAL COMMITMENTS:

Presently unaware of any previous community aesthetic commitments.
The Santa Monica Mountains Conservancy Property Line is an ecological concern.

ARCHITECTURAL RECOMMENDATIONS:

No architectural recommendations were provided.
The Advance Planning Study sheet shows vertical exterior girders for the cast-in-place option.
Alternative 1 (preferred) uses round columns and CIDH piles of 72" diameter for all structure types.
High-cantilevered concrete abutments on spread footings were assumed for all alternatives.
Concrete Barrier Type 26 was provided on the south side of the bridge for pedestrian access.
Concrete Barrier Type 25 was provided on the north side of the bridge.

ENGINEERING AND ARCHITECTURAL SUMMARY:

The precast prestressed concrete bulb-tee girder was selected because the construction methods are better suited to the concerns over the Santa Monica Mountains Conservancy Property Line.

(1)	DESIGN ENGR	_____	PROJECT ENGINEER
(2)	BR DES SUPV	_____	Todd Lambert and Eli Aramouni/Project Manager
(3)	BR ARCH PLNR	_____	
(4)	CHIEF STRUCT DES	_____	PROJECT ARCHITECT
(5)	FILE	_____	

DEPARTMENT OF TRANSPORTATION

STRUCTURE TYPE SELECTION

PREPARED BY:

IMBSEN & ASSOCIATES, INC.

PROJECT IDENTIFICATION	DATE
Chatsworth/Deer Ridge Development – Devil Canyon Creek	4/19/00

DIST	CO	RTE	PM	CU	EA	DESIGN GROUP
07	LA			07		IAI

BRIDGE NAME (S)	BR NO (S)	PM	CONSTRUCTION COST - $
Devil Canyon Creek Bridge at "Other" Street	53CXXXX		$990,000 *

* Includes 10% mobilization only; no contingencies included

TYPES CONSIDERED:

1. 111' long simple-span structure with 200' of retaining walls.
2. 168' long simple-span structure with 85' of retaining walls.

For Alternative 1 – Option A, precast prestressed concrete bulb-tee girder.
For Alternative 1 – Option B, cast-in-place reinforced concrete box girder.
For Alternative 2, cast-in-place prestressed concrete box girder.

PREVIOUS COMMUNITY AESTHETIC OR ECOLOGICAL COMMITMENTS:

Presently unaware of any previous community aesthetic commitments.
The Santa Monica Mountains Conservancy Property Line is an ecological concern.

ARCHITECTURAL RECOMMENDATIONS:

No architectural recommendations were provided.
The Advance Planning Study sheets show vertical exterior girders for the cast-in-place alternatives.
High-cantilevered concrete abutments on spread footings were assumed for both alternatives.
Concrete Barrier Type 26 was provided on the east side of the bridge for pedestrian access.
Concrete Barrier Type 25 was provided on the west side of the bridge.

ENGINEERING AND ARCHITECTURAL SUMMARY:

The precast prestressed concrete bulb-tee girder was selected because the construction methods are better suited to the concerns over the Santa Monica Mountains Conservancy Property Line.

(1)	DESIGN ENGR	_____	PROJECT ENGINEER
(2)	BR DES SUPV	_____	Todd Lambert and Eli Aramouni/Project Manager
(3)	BR ARCH PLNR	_____	PROJECT ARCHITECT
(4)	CHIEF STRUCT DES	_____	
(5)	FILE	_____	

APPENDIX E

FUEL MODIFICATION PLAN

LEGEND

ZONE A - 20' WET ZONE:

This zone extends 20' from the edge of any combustible structure and may include pad or graded slope.

General Requirements:
Maximum of 20' beyond the edge of combustible structures, attached accessory structures, or appendages and projections. Except for dwarf varieties or mature trees small in stature, trees are generally not recommended within Zone A (for reasons which go beyond fire issues such as possible maintenance and safety liabilities) and are therefore not included in the planting guide (as provided by The County of Los Angeles Fire Department). For purposes of the fuel modification plan, all combustible accessory structures, appendages, or projections within 20' of the combustible structure will be considered as attached.
Vegetation on the pads is limited to Los Angeles County approved ground covers, green lawns, and an approved variety of ornamental plants.
Vegetation on the slopes is limited to native shrubbery and approved ornamental plant species.
All graded slopes, planting and irrigation are to conform to the grading ordinances.

Special Requirements:
The areas are to be irrigated. The manufactured slopes are to be planted and irrigated in accordance to County of Los Angeles grading ordinances. Irrigation by automatic or manual sprinkler systems to maintain healthy vegetation with high moisture content. Irrigation shall be designed to establish and maintain planted natives and ornamentals. Irrigate away from native Oak trees and outside the dripline.
Regular pruning of foliage and removal of plant litter and dead wood to reduce fuel load and vertical continuity once the vegetation is established.
Target trees are not allowed within 10' of the combustible structures. Other tree species may be allowed pursuant to the Fire Code but it is not recommended.
Special consideration will be given to rare or endangered species, geological hazards, tree ordinances, or other conflicting restrictions.

Maintenance - Annual Basis:
Required continual removal and/or thinning of undesirable combustible vegetation, replacement of dead/dying fire resistant plantings. Regular trimming to prevent ladder fuels.
Maintenance of the operational integrity and programming of the irrigation system.

ZONE B - IRRIGATED ZONE:

General Requirements:
Irrigation of plant materials located on remanufactured slopes, with manual or automatic irrigation systems, to maintain healthy vegetation with high moisture content.

Zone B extends from the edge of Zone A, (located a minimum of 20' from any combustible structure), and consists of a variable length not to exceed 180'. The combined distances of Zone A (as listed in this text as 20' from any combustible structure) and Zone B (as listed in this text as 180' outside of Zone A) add up to a total of 200' from any structure. Within Zone B, native or existing vegetation shall be removed. Individual plantings are to be thinned to reduce the fuel load.
Any County approved single specimen of tree, shrub or groundcover is permissible provided that they do not form a means of rapidly transmitted fire from the native growth to any structure. (See 'Fuel Modification Plan Guidelines' publication available from the County of Los Angeles Fire Department for a complete list of plant materials and further information.)

Special Requirements:
Special consideration will be given for rare or endangered species, geologic hazards, tree ordinances, or other conflicting restrictions as identified in the environmental documentation.

Maintenance - Annual Basis:
Requires continual removal and/or thinning of undesirable combustible vegetation, replacement of dead/dying fire resistant plantings.
Maintenance of the operational integrity and programming of the irrigation system.

ZONE C - THINNING ZONE

Extends from outermost edge of Zone B to 200' or property line.
Predominantly existing vegetation with removal of the majority of undesirable plant speciesincluding chamise, red shank, California sage brush, common buckwheat and sage (Appendix I).
Reduce fuel loading by reducing the fuel in each remaining shrub or tree without substantial decreased in the canopy cover or removal of soil holding root systems.
Some replacement planting with ornamental or less flamable native species to meet minimum slope coverage requirements of the city or county public works, landscape or hillside ordinances.
Natural vegetation is thinned by reduced amounts as the zone moves away from the development.
Removal of all dead vegeation, all fin fuels reduced to 3 inches in height.
Any plans selected for planting in this zone will be chosen from the approved plant list for the setback, irrigated, or thinning zone and given geographical arera (see Appendix II).

Access Road:
Clear and remove flammable growth for a minimum, of 10 feet on each side of access road. (F.C. 1117.10).
Fire access roads, driveways and turnarounds shall be maintained in accordance with the Fire Code.
Fire access road shall have unobstructed vertical clearance to the sky.. (F.C. 902.2.2.1)
Within the 10 foot clearance zone it is recommended that proposed surface fuels be appropriately spaced and maintained at a height not to exceed 18 inches. Proposed trees should be planted outside the 10 foot clearance zone.

Oak Trees:
Contact Deputy Forester Keith Deagon of the County of Los Angeles Fire Department Forestry Division at (818) 890-5719 for any oak issues or for any issues related to oaks within the project.

Maintenance

Requires annual removal and/or thinning of undesirable combustible vegetation, replacement of dead dying fire resistant plantings, maintenance o/ the operational integrity and programming of the irrigation system.
Pruning of foliage to reduce fuel load, vertical continuity, and removal of plant litter and dead wood.
Regular trimming to prevent ladder fuels, Prune lower branches of trees and tree-form shrubs up to 1/3 of their height (up to a maximum of 6' above the ground).
Debris and trimmings produced by thinning and pruning shall be removed flom the site or chipped and evenly dispersed in the same area to a maximum depth of 5 inches.
Recommended minimum spacing is 20-30 feet between canopies for trees and 15 feet or three times the diameter of the individual crowns for large shrubs.
Ground covers shall be maintained at a height not to exceed 5 inches.
All grasses shall be maintained at a he'ght not to exceed 3 inches.
Compliance with the Fire Code is a year round responsibility. Enforcement will occur following inspection by the Fire Department annually or as needed. Annual inspections are generally conducted following natural drying of fine fuels. This occurs between the months of April and June. All future plantings shall be in accordance with the County of Los Angeles Fire Department Fuel Modification Guidelines.

Long Term Maintenance Agreement

The homeowner(s) agree to be responsible for the long-term maintenance of this fuel modification plan, as described herein.

Homeowner	Date
Homeowner	Date

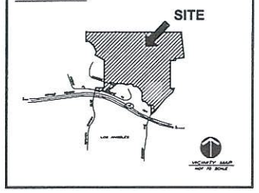
EXHIBIT 'B'

SUBMITTED TO THE LOS ANGELES COUNTY FIRE DEPARTMENT 6-14-00
FUEL MODIFICATION NUMBER 852
(REVISED 9-27-00)

LINETYPE LEGEND:

Tract Boundary
Property Lines
200' Fuel Modification Zone Line
6' High Concrete Wall

LOCATION MAP



PLANS WERE DERIVED FROM ENGINEERING PLANS RECEIVED FROM B & E ENGINEERS BY THIS OFFICE MAY 1, 2000.

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Project
CHATSWORTH RIDGE ESTATES
CHATSWORTH, CA 91320
TRACT #53138, CASE #99-239

PRELIMINARY FUEL MODIFICATION ZONE

Job No. 2190-01 F.M.Z. No. 852
Date 5-26-00 Drawn By NAC
Revision
1. L.A.COUNTY FIRE REVIEW 7-5-00
2. L.A.COUNTY FIRE REVIEW 10-20-00
3. L.A.COUNTY FIRE REVIEW 10-28-00
4. APPROXIMATELY 12 ACRES AREA ADDED TO PROJECT 2-28-01
5. ADDITIONAL ENGINEERING CHANGES ADDED 3-30-01

Sheet 1 of 1

APPENDIX F

AIR QUALITY TECHNICAL REPORT

Giroux & Associates
Environmental Consultants

AIR QUALITY IMPACT ANALYSIS

CHATSWORTH RIDGE ESTATES PROJECT

CHATSWORTH, CALIFORNIA

Prepared for:

HDR/Urban Vision
Attn: Deanna Hansen
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Date:

November 12, 2001

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SETTING

Climate and Meteorology

Regional Climate

A semi-permanent high-pressure cell is the dominant climatic influence over the eastern North Pacific Ocean, particularly during the summer. The high-pressure cell produces a predominantly northwesterly flow of maritime air over the California coastal waters. During winter, the Pacific High weakens and moves south, resulting in weaker and less persistent northwesterly winds along the California coast. The weakened Pacific high pressure ridge allows for the periodic intrusion of fronts and storms into California in winter. Such storm activity is, however, much less intense in Southern California than in more northerly latitudes.

As the air mass approaches the coast of California, this large scale circulation pattern is modified by local influences. The differential heating between the desert and the adjacent Pacific Ocean modifies the prevailing winds, enhancing them during the warmer half of the year and weakening them during the colder portion. On a local and sub-regional basis, the air flow in California is channeled by its mountain ranges and valley. The coastal mountain ranges limit the flow of maritime air into the interior of California. This transition from a cool and damp marine environment to a dry and warm continental climate therefore occurs over a fairly short distance.

South Coast Air Basin

The South Coast Air Basin (SCAB) is a 6,600 square mile coastal plain bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. Basinwide conditions are characterized by warm summers, mild winters, infrequent rainfall, moderate onshore daytime breezes, and moderate humidities.

All seasons generally exhibit onshore flows during the day and offshore flows at night, after the land cools below the temperature of the ocean. The likelihood of strong offshore flows, including Santa Ana winds, is greater during winter than during summer [California Air Resources Board (CARB) 1984].

The topography and climate of Southern California combine to produce generally poor air quality in the Air Basin. The combination of low temperature inversion; meteorological conditions such as light winds, shallow vertical mixing, and extensive sunlight; and topographical features such as adjacent mountain ranges hinder dispersion of air pollutants, thus contributing to poor air quality, especially in inland valleys of the basin.

Existing Air Quality

Air Pollutant Emissions

- **Criteria Air Pollutants**

The most current air pollutant emissions estimate for the SCAB was recently prepared by the California Air Resources Board (2001). In 2000, about 7,200 tons per day (TPD) of carbon monoxide (CO); 1,090 TPD of volatile organic compounds (VOC); 1,210 TPD of nitrogen oxides (NO_x); 80 TPD of sulfur oxides (SO_x); and 360 TPD of respirable particulates (PM-10) were emitted in SCAB (California Air Resources Board; 2001 California Almanac of Emissions and Air Quality). About 81% of the CO, about 63% of the NO_x, 31% of the SO_x, and about 52% of the VOC were emitted by on-road vehicular sources. Past studies have shown relatively little seasonal variation in air pollutant emissions. Seasonal variations in meteorology, however, result in marked seasonal differences in atmospheric concentrations of pollutants (SCAQMD and SCAG 1991).

- **Toxic Air Contaminants**

Substantial concentrations of toxic air contaminants (TAC), both carcinogenic and non-carcinogenic, exist in urban areas as a result of emissions from mobile sources such as motor vehicles and aircraft, and stationary sources such as gasoline service stations automotive repair shops, dry cleaners, various types of manufacturing, and large industrial operations. According to CARB (2001), the lifetime individual cancer risk from toxic air pollution in the SCAB is 275 in a million (due mainly to benzene, 1,3-butadiene and formaldehyde). In the United States, the lifetime cancer risk from all sources is around 275,000 in a million. Toxic air pollution constitutes 0.1 percent of cancer risk due to all risk factors. Diesel particulate matter (DPM) is currently estimated to pose a lifetime cancer risk of 720 in a million, but a number of statewide DPM-control regulations have been adopted that will sharply reduce DPM exposure risk within the next few years.

Ambient Air Pollution Concentrations

◦ South Coast Air Quality Management District Monitoring

SCAQMD operates a regional air quality monitoring network that provides information on average concentrations of those air pollutants for which State or federal agencies have established ambient air quality standards. Table 1 is a six year summary of monitoring data for the major air pollutants, collected at the SCAQMD's Reseda monitoring station. This station is the nearest SCAQMD monitoring station to the project site and, among SCAQMD's current stations, is the one most representative of air quality conditions in the project area. Because there are no measurements of respirable particulate matter (PM-10) made in the western San Fernando Valley, Table 1 also includes PM-10 data from the nearest Ventura County APCD monitoring station in Thousand Oaks.

Over the last 15 years, air quality in the SCAB has improved substantially. Violations of the State and national standards for lead have been completely eliminated. The State and national SO_x standards were met throughout the period. Second-stage smog alerts have disappeared and the number of first-stage alerts has dropped dramatically. The federal annual standard for NO_2 is now met almost every year as is the one-hour CO standard. The likelihood of meeting the federal 8-hour CO standard is a realistic expectation in the not-too-distant future. No significant trend, however, can be seen over the last decade for which respirable particulates (PM-10) have been monitored.

◦ Criteria Air Pollutants

<u>Ozone</u>

Ozone (O_3) is not emitted directly by any major stationary or mobile air pollutant sources in SCAB. It is a "secondary" air pollutant formed in the atmosphere through a complex series of photochemical reactions involving hydrocarbons and NO_x, primarily nitrogen dioxide. Substantial O_3 formation generally requires a stable atmosphere with strong sunlight.

O_3 is considered a pollutant of regional rather than local concern. Significant progress has been made over the past decade in reducing O_3 concentrations in the SCAB, but O_3 concentrations in the SCAB still exceed the national standards far more frequently than in any other area of the U.S. O_3 levels near Chatsworth exceeded the State standard on less than 25 days per year with less than 5 annual violations of the less stringent federal standard. The one-hour federal ozone standard was not exceeded at all in 1997 in the

TABLE 1

WEST SAN FERNANDO VALLEY AMBIENT AIR QUALITY MONITORING SUMMARY - 1995-2000
(Days exceeding standards and maximum concentrations for Criteria)
(Entries shown as ratios = samples exceeding standard/samples taken)

Pollutant	1995	1996	1997	1998	1999	2000
Ozone:						
1-hour > 0.09 ppm	47	50	12	23	5	6
1-hour > 0.12 ppm	8	11	0	7	0	0
1-hour ≥ 0.20 ppm	0	1	0	0	0	0
8-hour > 0.08 ppm	20	28	2	12	0	0
Max. 1-hour Conc. (ppm)	0.15	0.21	0.12	0.16	0.10	0.11
Carbon Monoxide:						
1-hour > 20.0 ppm	0	0	0	0	0	0
8-hour ≥ 9.1 ppm	2	0	2	1	0	0
Max. 1-hr. Conc. (ppm)	13	10	12	11	9	8
Max. 8-hr. Conc. (ppm)	10.3	8.9	9.8	9.3	7.6	6.1
Nitrogen Dioxide:						
1-hour > 0.25 ppm	0	0	0	0	0	0
Max. 1-hr. Conc. (ppm)	0.18	0.16	0.20	0.14	0.12	0.11
Respirable Particulates: (PM-10)						
24-hour > 50 $\mu g/m^3$	9/61	4/57	5/61	0/60	6/59	X/XX
24-Hour >150 $\mu g/m^3$	0/61	0/57	0/61	0/60	0/59	X/XX
Max. 24-hour Conc. ($\mu g/m^3$)	93.	71.	107.	49.	67.	XX.
Ultra-fine Particulates: (PM-2.5)						
24-hour > 65 $\mu g/m^3$	XX	XX	XX	XX	79.	68.
Max. 24-hour Conc. ($\mu g/m^3$)						

XX = no data available

Source: SCAQMD Reseda Air Quality Monitoring Stations; VCAPCD Thousand Oaks Station for PM-10.

western San Fernando Valley for the first time ever in the Reseda SCAQMD station monitoring history. This standard was also met again in 1999 and again in 2000. Although there is a noticeable improvement trend in O_3 levels from 1995-2000, one first-stage smog alert (one hour $\geq$ 0.20 ppm) in the 6-year period was recorded in 1996.

Carbon Monoxide

Carbon monoxide (CO) is a product of incomplete combustion emitted, along with carbon dioxide, by motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, CO is emitted primarily by motor vehicles. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. Excesses of the State CO standard in the SCAB tend to occur near major motor vehicle traffic corridors when meteorological conditions allow CO to accumulate. CO standards are infrequently exceeded near the project site. The eight-hour state and federal CO standard has averaged slightly less than one violation per year since 1995. The one-hour State CO standard has been met with a wide margin of safety throughout the last decade.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a product of high temperature combustion, emitted generally by the same sources as CO. High concentrations of NO_2 cause the brown haze readily observed in urban areas during periods of heavy air pollution. Los Angeles is the last county in the U.S. to meet the national annual NO_2 standard; the standard has been met since 1992 with a very slim margin. State one-hour NO_2 standards are met near the project site by a substantial margin.

Respirable Particulate Matter

Respirable particulate matter (PM-10) consists of suspended particles 10 microns in diameter or less. Particulates in the atmosphere result from natural sources, such as wind erosion and ocean spray, and from human activities. Man-made sources include many types of dust- and fume-producing industrial and agricultural operations; fuel combustion and vehicle travel; grading, excavating, demolition, and blasting for construction; and atmospheric chemical and photochemical reactions. Motor vehicle traffic is the major source of PM-10 from dust lofted by vehicular turbulence.

State PM-10 standards are exceeded at the nearest air monitoring station on an average of eight percent of all measured days. The

three times less stringent federal PM-10 standard has never been violated at the nearest PM-10 monitoring location.

Monitoring data are only beginning to become available on compliance with the recently adopted (1997) federal standard for ultra-small diameter (2.5 microns or less) particulate matter called "PM-2.5." PM-2.5 monitoring began near mid-year at Reseda in 1999. One violation of the federal PM-2.5 standard of 65 $\mu g/m^3$ for 24 hours was recorded in 71 samples in 1999, and two violations in 108 measurement days were observed in 2000.

Air Quality Planning and Regulatory Environment

Regulatory Agencies

- **Federal Agencies**

Regulatory control over air quality relative to meeting federal clean air standards rests with the U.S. Environmental Protection Agency (EPA). EPA derives its authority from the federal Clean Air Act.

The original federal Clean Air Act (CAA), enacted in 1970, was extensively revised in 1977. The 1977 CAA Amendments revised National Ambient Air Quality Standards (NAAQS) designed to protect public health and welfare. Standards were established for criteria air pollutants, O_3, CO, NO_2, SO_2, and total suspended particulates (TSP). In later years, the TSP standard was revised to address PM-10, and a lead standard was established. A PM-2.5 standard was added in 1997.

The 1977 CAA Amendments (CAAA) required each state to prepare a State Implementation Plan (SIP) describing its plans for attaining compliance with federal air quality goals. The 1977 CAAA also classified air basins as either "attainment" or "non-attainment areas for each criteria air pollutant, based on whether or not the established standards have been achieved. The 1990 CAAAs reflect revised requirements and deadlines for attainment of NAAQS.

- **State Agencies**

The California Air Resources Board (ARB) is responsible for state air quality programs. The ARB may delegate a portion of its responsibilities to local or sub-regional jurisdictions. The ARB generally retains authority over statewide programs such as motor vehicle emission standards while air quality monitoring, stationary source permitting and enforcement, or basinwide air quality planning are subordinated to local air pollution control districts (APCD) or air quality management districts (AQMD).

State ambient air quality standards (SAAQS) predate the establishment of federal AAQS by several years. These standards are designed to protect those people most sensitive to adverse air pollution exposure (called "sensitive receptors"). Existing state and federal AAQS are shown in Table 2. The CAAA of 1990 required that EPA consider revising standards if health information warrants. Revisions to the national ozone standard and establishing a standard for PM-2.5 resulted from this review process. SAAQS are generally equal or normally more stringent than national AAQS.

Local Agencies

- **South Coast Air Quality Management District**

SCAQMD is the regional agency charged with meeting state and federal air quality goals. SCAQMD has authority for reducing emissions from stationary sources and has limited authority over mobile sources and consumer products. In 1987, State Senate Bill 151 gave SCAQMD substantial new authority to develop transportation control measures and rules for indirect sources of air pollutants, such as shopping centers, stadiums, and other facilities that attract large volumes of motor vehicles. SCAQMD also is required to develop additional programs and regulations for increasing commuter ridesharing and limiting heavy truck traffic on urban freeways during peak commute hours.

The CAAA requires that clean air plans be updated periodically for all non-attainment areas. The California Clean Air Act (CCAA; Sher-AB-2595) similarly requires development and periodic revision of a plan to meet SAAQS. A revised AQMP for federal standards was prepared in February, 1997. The CCAA most recent plan update was due at the end of 2000. The revised AQMP was prepared early in 1997. It contained an attainment plan for PM-10 for the first time ever, and was designed to meet both federal and state planning requirements.

The 1997 AQMP/SIP was challenged in court as not meeting Clean Air Act deadlines for air quality improvement. The plan was sent back to SCAQMD/SCAG to accelerate deadlines and/or establish additional control programs. In 1999, 13 additional measures were added to the plan. The 1999 SIP Amendments (1997 Plan + 13 changes) were approved by EPA in 2000 as the current basinwide clean air plan.

TABLE 2

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	0.12 ppm (235 µg/m³)	Same as Primary Standard	Ethylene Chemiluminescence
	8 Hour	—		0.08 ppm (157 µg/m³)		
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	30 µg/m³	Size Selective Inlet Sampler ARB Method P (8/22/85)	—	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	24 Hour	50 µg/m³		150 µg/m³		
	Annual Arithmetic Mean	—		50 µg/m³		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean			15 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	Non-dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m³)		—		
Lead	30 days average	1.5 µg/m³	AIHL Method 54 (12/74) Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Fluorescence	0.030 ppm (80 µg/m³)	—	Pararosoaniline
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	1 Hour	0.25 ppm (655 µg/m³)		—	—	
Visibility Reducing Particles	8 Hour (10 am to 6 pm, PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer—visibility of ten miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: ARB Method V (8/18/89).		No Federal Standards		
Sulfates	24 Hour	25 µg/m³	Turbidimetric Barium Sulfate-AIHL Method 61 (2/76)			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Cadmium Hydroxide STRactan			

As part of the AQMP, SCAQMD structures most of its pollution control programs through its Rules and Regulations. SCAQMD's Rules and Regulations include rules that apply to project construction or operation. For a residential development such as the proposed Chatsworth Ridge Estates project, few of the SCAQMD rules apply to a source generating mainly mobile source emissions. Any air district rules therefore apply mainly to construction. Rules that may apply to construction of the proposed project include: Rule 401 - Visible Emissions; Rule 402 - Nuisance Emissions; and Rule 403 - Fugitive Dust.

- **Southern California Association of Governments**

Southern California Association of Governments (SCAG) is responsible for adopting regional growth forecasts and the Regional Transportation Improvement Program (RTIP). Local governments are responsible for implementing suggested transportation and land use measures. These plans and forecasts are incorporated into SCAG's Regional Comprehensive Plan (SCAG 1994) which is thus directly linked to the AQMP. Project conformity with the regional growth forecast, as well as implementation of any air quality planning measures applicable on a project-specific basis, are considered necessary conditions to support a finding of a less than significant regional air quality impact from any general development project.

General development such as Chatsworth Ridge Estates does not relate directly to the AQMP/SIP because there are no specific measures in these documents that relate directly to overall growth. The air quality plan does have transportation and land use measures designed to reduce vehicle miles traveled (VMT) and vehicle trips (VT) generated. Land use patterns that concentrate housing, employment, goods and services, recreation, etc. into a single geographic area promote VMT/VT reduction. Such patterns are considered air quality positive and thus consistent with the AQMP.

Los Angeles County, in its land use planning authority, has developed air quality strategies that adapt the regional VMT/VT objectives to county-wide opportunities and constraints. As with the regional plan, the County's air quality program focuses on the integration of multiple types of land uses. The plan is designed to encourage the use of alternatives to the single occupant vehicle, to shift travel to off-peak periods, and to promote development patterns that maintain a favorable jobs/housing balance. As with the regional plan, it is not possible to isolate the air quality role of one single development such as Chatsworth Ridge Estates without considering its interaction with the entire existing pattern of development and associated infrastructure.

AIR QUALITY IMPACT

Residential developments such as that proposed for the Chatsworth Ridge Estates project potentially impact air quality almost exclusively through increased automotive emissions. Any single project typically does not cause enough traffic and associated air pollutants to be generated as to individually threaten clean air standards. It is the cumulative effect of hundreds of such developments that causes the small incremental impact from any one development to become cumulatively significant. Minor secondary emissions during construction, from increased fossil-fueled energy utilization and from small miscellaneous sources will also be generated, but these are usually much smaller in both duration and volume than the mobile source emissions.

Standards of Significance

Many air quality impacts which derive from dispersed mobile sources, i.e., the dominant pollution generators in the basin, often occur hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual project is generally immeasurably small. The SCAQMD has therefore developed suggested significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The 1993 SCAQMD CEQA Air Quality Handbook states that any projects in the SCAB with daily emissions that exceed any of the following thresholds should be considered as having an individually and cumulatively significant air quality impact:

55 lbs per day of ROC (75 lbs/day during construction)

55 lbs per day of NO_x (100 lbs/day during construction)

550 lbs per day of CO

150 lbs per day of PM-10

150 lbs per day of SO_x

These thresholds do not take into account several important considerations, namely:

1. Emission levels from one large project may exceed thresholds while those from numerous smaller projects with identical emissions might not, even though the regional impact is the same.

2. Large developments have a greater opportunity to effectively implement transportation control measures (TCMs) because of a greater potential participant pool in trip/VMT diversion programs.

3. Project-related emissions and their regional impact may already have been incorporated into regional growth projections.

4. Emissions generated by project traffic have essentially the same regional air quality impact as if they were released in any other nearby community. If the anticipated demand for residential growth is not met at the project site but in some other nearby locality, the no-project alternative will have basically the same regional air quality impact.

These considerations support a finding of a less-than-significant impact, even if the SCAQMD advisory thresholds are exceeded. Alternately, the Lead Agency may make a finding of a significant impact for projects exceeding the SCAQMD thresholds, but use as many of the above criteria in a statement of overriding considerations as are applicable.

Additional indicators are listed in the SCAQMD Handbook that should be used as screening criteria to evaluate the need for further analysis with respect to air quality. Whenever possible, the project should be evaluated in a quantitative analysis; otherwise a qualitative analysis is appropriate. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or State ambient air quality standards by either violating or contributing to an existing or projected air quality violation;

- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP;

- Project could generate vehicle trips that cause a CO hot spot;

- Project might have the potential to create or be subjected to objectionable odors;

- Project could have hazardous materials on site and could result in an accidental release of air toxic emissions;

- Project could emit an air toxic contaminant regulated by District rules or that is on a federal or State air toxic list;
- Project could involve disposal of hazardous waste;
- Project could be occupied by sensitive receptors near a facility that emits air toxics or near CO hot spots;
- Project could emit carcinogenic air contaminants that could pose a cancer risk.

For the conversion to residential use of the Devil Canyon area from low-intensity open space such as the project site, secondary significance criteria are rarely triggered. Potential impact significance thus relates mainly to the SCAQMD CEQA Handbook numerical emissions thresholds identified above.

Project-Related Sources of Potential Impact

Intensification of land uses in Los Angeles County potentially impacts ambient air quality on two scales of motion. As cars drive throughout Southern California, the small incremental contribution to the basin air pollution burden from any single vehicle is added to that from several million other vehicles. The impact from the project, even if it generates a significant number of new vehicle trips, is very small on a regional scale. Basinwide impact significance is, therefore, addressed in terms of project compatibility with regional air quality plans. If any given project or plan has been properly incorporated into basinwide growth projections which are the basis for regional air quality/ transportation planning, then there would be no potential impact significance due to air quality planning inconsistency.

Locally, changes in the location of any collection of automotive sources, or changes in the number of vehicles or travel speeds may impact the microscale air quality around any given development site. Traffic increases not only contribute air pollutants in direct proportion to their cumulative percentage of traffic volume growth, but they may slow all existing traffic to slower, more inefficient travel speeds. The development traffic/air quality impact is thus potentially compounded.

Temporary construction activity emissions will occur during project buildout. Such emissions include on-site generation of dust and equipment exhaust, and off-site emissions from construction employee commuting and/or trucks delivering building materials.

Because of their temporary nature, air quality impacts from construction have often been considered as individually less than significant if the activities comply with all applicable SCAQMD rules. Also, construction activity emissions are difficult to quantify, since the exact type and amount of equipment that will be used or the acreage that may be disturbed on any given day in the future is not known with any reasonable certainty. The emphasis in environmental documents relative to construction activity emission impacts has therefore been to minimize the emissions as fully as possible through comprehensive mitigation even if the precise amount of emissions can not be precisely quantified.

Construction Activity Impacts

Dust is normally the primary concern during construction of new buildings and infrastructure. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions." Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Regulatory agencies typically use one universal factor based on the area disturbed. This factor assumes average values of soil moisture, silt content and wind speed. This assumption may or may not be valid, depending upon site-specific distributions of the above parameters. As noted previously, emissions estimation for project-specific fugitive dust sources is therefore characterized by a considerable degree of imprecision.

The PM-10 fraction of fugitive dust emissions are predicted to be around 55 pounds per day per acre disturbed in the absence of any dust control measures being applied (SCAQMD Handbook, Table 9-2). Mandatory measures required by South Coast AQMD Rule 403 (Fugitive Dust) are generally assumed to reduce this rate by approximately 50%. Average daily PM-10 emissions during site grading and other disturbance are stated in the SCAQMD Handbook to be 26.4 pounds/acre. This estimate is based upon required dust control measures in effect in 1993 when the AQMD CEQA Air Quality Handbook was prepared. Rule 403 was subsequently revised to require use of a greater array of fugitive dust control on construction projects. Use of enhanced dust control procedures such as continual soil wetting, use of supplemental binders, early paving, etc. can achieve a substantially higher PM-10 control efficiency. With the use of currently mandated Best Available Control Measures (BACMs) for dust control, a reduced emission rate of around 10.2 pounds per acre is generally attainable.

Use of "standard" daily PM-10 emission factors allows for the simultaneous disturbance of around 5.7 acres to generate a potentially significant emission level of 150 pounds per day

recommended to be designated as having a temporarily significant impact in the SCAQMD Handbook (150 ÷ 26.4 ≈ 5.7). If BACMs are implemented, as much as 15 acres of the project site could be under disturbance to maintain a less than significant daily PM-10 emission rate.

Maximum daily grading capacity has been estimated at 30,000 cubic yards per day by the project construction supervisor. The average depth of cut or fill has been estimated at one yard for purposes of calculating a daily disturbance area for dust calculation purposes. The daily "footprint" during maximum grading would be 6.2 acres of cut and 6.2 acres of fill, or 12.4 acres per day.

Peak daily PM-10 emissions, relative to the 150 pound per day significance threshold, are calculated as follows:

Standard Mitigation	-	12.4 ac X 26.4 lb/ac/day	=	327 lb/day
With Use of BACMs	-	12.4 ac X 10.2 lb/ac/day	=	126 lb/day

With the use of BACMs, peak grading activity days will experience PM-10 emissions that are below the identified significance threshold. A menu of dust control measures that constitute BACMs is included in the mitigation recommendations for this project. Regardless of emissions magnitude, it should be noted that construction activity dust does not necessarily have any adverse health impacts. Adoption of a new air quality standard for ultra-small diameter particulates has recently occurred at the federal level. This new standard has implications for construction fugitive dust for two reasons, namely,

1. Human health effects from particulate inhalation are mainly related to very small diameter, chemically active material, and,

2. Construction fugitive dust contains almost no ultra-fine particulates (2.5 micron diameter or smaller, called "PM-2.5"), and the dust material is comprised mainly of chemically inert silicates.

Construction activities generate negligible amounts of PM-2.5, and the very small fraction that is created is typically not chemically/biologically reactive in human lung tissue. From a human health perspective, construction activity dust generation has a less than significant air quality impact.

Observable construction activity dust impacts derive almost exclusively from the largest diameter material that has a residence time of only a few seconds. These large particulates quickly settle out on parked cars, landscaping, outdoor furniture and other horizontal surfaces. The primary zone of impact from heavy particulates, however, is less than 100 feet from the source. The nearest sensitive uses will be generally well beyond 100 feet from any construction disturbance area. The distance buffer between the point of disturbance and the nearest residence is thus normally adequate to add only minimally to any local soiling effects.

In addition to PM-10 emissions, construction will entail the use of internal combustion engines to power on-road trucks and off-road mobile, semi-mobile and semi-stationary equipment. Such sources are mainly diesel-powered and are often poorly regulated in terms of allowable emission levels. Off-road sources are sometimes not well maintained because there is no regulatory mechanism to enforce efficient combustion as there is for on-road sources. Construction activities and associated emissions will be heaviest during mass grading activities. A "typical" construction fleet of 5 scrapers, a dozer, a grader, a loader and a water truck were assumed operating on a single day. The resulting maximum daily air emissions relative to the SCAQMD construction activity significance thresholds are shown in Table 3.

Average daily NO_x emissions may exceed the threshold. However, these estimates are based upon construction equipment that is 20-30 years old. New equipment will have lower NO_x emissions in response to new state-wide emission standards for off-road construction equipment. As newer equipment is used in later phases of project development, the NO_x emission rate will decrease. The use of periodic low-NO_x tune-ups for on-site equipment can also reduce the NO_x levels. With newer equipment than assumed and with a routine NO_x emissions abatement program, NO_x emissions can be reduced to just under the significance threshold. All other pollutants will be at sub-threshold levels with a large margin of safety. However, the non-attainment status of the airshed dictates that reasonable and feasible available control measures to minimize construction equipment exhaust emissions for all pollutants should be implemented even if thresholds are not exceeded.

Construction activities are concentrated at the construction site, but they also spill over into the adjacent community. Vehicles track dirt off-site, lane closures create congestion on public roadways and construction worker vehicles and supply trucks compete with the general public for sometimes inadequate roadway capacity. Trucks are often left idling near off-site sensitive receptors while waiting to load or unload. Each of these small impacts may become substantial when summed over all basinwide construction

TABLE 3

MAXIMUM DAILY CONSTRUCTION EQUIPMENT EMISSIONS
(Maximum Activity Day - lbs/day)

	DAILY EMISSIONS (lb/day)				
Equipment	CO	ROG	NOx	SOx	PM-10
Scrapers (5)	40.	8.	123.	15.	13.
Grader	1.	< 1.	3.	1.	< 1.
Dozer	7.	1.	16.	2.	< 1.
Loader	1.	1.	4.	1.	1.
Water Truck	3.	1.	1.	< 1.	< 1.
TOTAL	52.	12.	147.	20.	15.
SCAQMD Threshold	550.	75.	100.	150.	150.
Percent of Threshold	9%	16%	147%	13%	10%
Exceeds (?)	No	No	Yes	No	No
Mitigation	<10>	<2>	<47>	<5>	<3>
(Newer Equipment + low-NO_x tune-ups)°	----	----	----	----	----
MITIGATED	42	10	100	15	12
Exceeds (?)	No	No	No	No	No

° 20% reduction for equipment replacement, 15% low-NO_x tune-up reduction, total combined NO_x mitigation effectiveness = 32% of 147 pounds per day.

activities. As with the on-site impacts, a heightened level of impact mitigation will need to be implemented to maintain an overall tolerable level of impact from project construction activities.

Operational Impacts

By far, the greatest project-related air quality concern centers on the 4,422 new vehicle trips per day that will be generated at project completion. For typical Los Angeles County residential trip lengths, additional vehicle travel from project implementation will be about 40,000 vehicle miles traveled (VMT).

Secondary impact potential will derive from energy consumption in power plants or on-site heaters, stoves, water heaters, etc. General development also creates miscellaneous emissions from a variety of sources such as cleaning products, landscaping equipment, or fireplaces, and also contributes to off-site emissions at restaurants, gas stations, dry cleaners, or sand and gravel plants. Except for more readily quantifiable energy consumption (stationary sources), many of the small miscellaneous sources are typically not quantified on a single project basis. These small sources, however, are non-negligible when minute individual contributions are summed over millions of Southern California residences. They further attest to the conclusion that overall anticipated growth is a substantial impediment to the attainment of regional clean air standards.

The California ARB has developed a land use and air pollution emissions computer model that allows one to reliably calculate the daily emissions increase associated with the proposed project. This model, called URBEMIS7G, was run for a project build-out year of 2002. The calculation was repeated for the years 2005 and 2010 to show how a cleaner future vehicle fleet will progressively reduce the project's impact on future air quality. Stationary source (energy consumption) emissions were not calculated because electricity deregulation has broken any direct linkage between the location where electricity is used and the location of the power source where it was generated. The project-related mobile source emissions burden, along with a comparison of SCAQMD recommended significance thresholds, is shown in Table 4.

At project buildout, project-related mobile source emissions will be below the AQMD's suggested significance threshold for all pollutants. With continued future vehicular improvements, the mobile source emissions will constitute a declining share of the regional inventory. By 2010, project-related NO_x will have decreased to 61 percent of the significance threshold and other

TABLE 4

PROJECT-RELATED EMISSIONS BURDEN

Scenario	Emissions (pounds/day) ROG	NOx	CO	PM-10
Analysis Year				
2002	53.9	50.8	364.0	31.6
2005	42.4	43.4	311.5	31.6
2010	28.2	33.7	241.5	31.6
SCAQMD Threshold	55.	55.	550.	150.
Percent of Threshold (2002)	98%	92%	66%	21%
Percent of Threshold (2005)	77%	79%	57%	21%
Percent of Threshold (2010)	51%	61%	44%	21%

Source: URBEMIS7G Computer Model; Output in Appendix

pollutants will be an even lesser percentage of the adopted significance level. Minor additional emissions reductions may also result from the availability of public transportation and other trip-reduction options (increased telecommuting, etc.). These small offsets would further increase the margin of safety between the project mobile source emissions burden and the SCAQMD significance threshold.

In addition to regional air quality concerns which focus on the photochemical conversion of air pollution emissions to more harmful forms, vehicular exhaust may impact air quality immediately adjacent to the roadway travel lanes. Such impacts occur during periods of maximum traffic congestion and minimum atmospheric dispersion. Microscale air quality impacts are a potential problem because some intersections are forecast to operate at congested levels of service at area buildout unless mitigated.

In order to determine whether any possible traffic congestion may contribute to localized air pollution standard violations, a screening procedure based upon the California roadway dispersion model CALINE4 was run on several roadways surrounding the project area. Carbon monoxide (CO) was used as an indicator pollutant to determine "hot spot" potential. Rush hour traffic was combined with minimum dispersion conditions in order to create a theoretical worst-case impact estimate. Calculations were made for the projected project buildout (2005). A possible one-hour CO "hot spot" was presumed to possibly occur if the local contribution plus the worst-case regional background level of 8 ppm (2000) exceeded the one-hour standard of 20 ppm. A local concentration exceeding 12 ppm thus could create a temporary "hot spot." The results of these calculations are shown in Table 5.

A possible existing microscale violations of standards are seen in Table 5 to occur at the DeSoto Avenue and Chatsworth Street intersection because of high traffic volumes and LOS=F intersection performance. Continued vehicular emissions reductions and only small additional traffic increases will slightly reduce the CO "hot spot" potential at this intersection by 2005.

Table 5 shows that the maximum project-related CO increment above the related projects scenario is 1.2 ppm at the Topanga Canyon Blvd./SR-118 (WB) Ramp intersection during the peak traffic hour scenario because the project will create a measurable worsening of the level of service. This 1.2 ppm impact will be reduced to essentially zero with recommended traffic mitigation (lane restriping). All other project-related microscale CO increments are 0.1 ppm or less. This small increment will not cause the

TABLE 5

MICROSCALE AIR QUALITY IMPACT ANALYSIS
(Hourly CO levels (ppm) above non-local background)°

Intersection	Exist. 2001	2005: With Ambient Growth	2005: With Related Projs.	2005: With Proj.	2005: With Project Mitigation
Topanga Canyon Blvd. &:					
SR-118 WB Ramps	3.9	4.2	4.6	5.8	4.4
SR-118 EB Ramps	10.4	8.7	9.3	9.3	---
Santa Susana Pass	9.2	10.2	10.9	11.0	---
Chatsworth Street	7.4	8.1	8.6	8.6	---
Devonshire Street	5.3	5.6	6.0	6.0	---
Canoga Ave &:					
Rinaldi Street	0.3	0.2	0.2	0.3	---
Chatsworth Street	0.5	0.4	0.5	0.5	---
Devonshire Street	1.3	1.1	1.1	1.2	---
DeSoto Avenue &:					
SR-118 WB Ramps	4.8	5.2	10.2	10.2	---
SR-118 EB Ramps	4.4	3.7	10.3	10.3	---
Chatsworth Street	13.2*	11.0	11.9	12.0	---
Devonshire Street	6.7	5.6	7.8	7.9	---

° = at 25 feet from roadway edge

* = possible existing violation of one-hour CO standard

--- = no mitigation required

Source: Screening procedure based upon CALINE4 model.

hourly standard to be exceeded. The one-hour CO standard is 20 ppm. The project increment is less than one percent of the standard. All with-project CO increments are dominated by the no-project area growth of traffic and congestion. Microscale air quality impacts are not considered significant.

MITIGATION

The proposed development will not contribute to regional air quality degradation by virtue of not exceeding SCAQMD significance thresholds. Grading activity may cause PM-10 emissions to exceed the daily significance threshold unless best available control measures (BACMs) are used. Construction activity equipment emissions may also exceed significance thresholds unless mitigated. Potentially significant construction emissions, coupled with the overall non-attainment status of the airshed, place a special responsibility on project proponents and local regulatory agencies to develop effective impact mitigation even for all emissions whether they exceed significance thresholds or not.

Effective emissions reduction of mobile source emissions will require a unified transportation system management (TSM) approach where a wide variety of transportation control measures (TCMs) are integrated into a comprehensive system of procedures and goals. An effective TSM program as a means for reducing vehicular traffic and its associated environmental effects (air pollution, noise, energy consumption, etc.) is difficult to achieve in practice because of the dependence on the low (mainly single) occupant vehicle as the primary means of transportation.

On a project-specific basis, the number of options to reduce vehicular emissions that can be implemented by an individual developer are limited. With only an assumed minimal use of transit, all mobile source emissions are predicted to be below SCAQMD significance thresholds. Additional mitigation would not be required. However, because of the non-attainment status of the airshed, use of all available mitigation is nevertheless encouraged regardless of impact significance. Recommended developer-sponsored measures include the following:

1. Providing an attractive pedestrian environment,

2. Incorporating bicycle trails and interconnections,

3. Building homes that exceed minimum statewide energy construction requirements,

4. Including residential design features that encourage trip elimination or trip diversion to alternative transportation:

    a. Pre-wired for various telecommunications systems access for in-home offices

    b. Pre-wired for 220V electric vehicle charging systems.

With optimum incorporation of these measures, the daily trip elimination/diversion, or the level of daily on-site energy consumption, can be reduced by perhaps two to three percent. Such a reduction from developer-promoted air pollution emissions mitigation would further increase the margin of safety between project-related mobile source emissions and the SCAQMD threshold.

Construction activity impact mitigation should also be incorporated into the development approval process. Specific measures should include:

1. Use of watering for dust control during clearing, grading and construction using groundwater from on-site wells. Availability of brackish or reclaimed water sources should be investigated. Soil disturbance should be terminated when high winds (>25 mph) make dust control extremely difficult.

2. Developing a dust control program to supplement the routine watering that constitutes best available control measures (BACMs) in excess of any minimum SCAQMD Rule 403 requirements. BACMs that may be adopted and integrated an enhanced dust control program might include hydroseeding previously disturbed areas while awaiting construction, adding chemical binders or surfactants to increase the effectiveness of watering, early paving or chip sealing of roads, enforcing reduced travel speeds (15 mph) on unpaved surfaces and/or sand fences and perimeter sandbags.

3. Minimization of construction interference with regional non-project traffic movement. Measures recommended for inclusion are:

    a. Scheduling receipt of construction materials to non-peak travel periods.

    b. Routing construction traffic through areas of least impact sensitivity.

    c. Limiting lane closures and detours to off-peak travel periods.

    d. Providing ride-share incentives for contractor and subcontractor personnel.

4. Reducing "spill-over" effects by preventing soil erosion, washing vehicles entering public roadways from dirt off-road project areas, and washing/sweeping project access to public roadways on an adequate schedule.

5. Requiring emissions control from on-site equipment through a routine mandatory program of low-emissions tune-ups, and requiring use of off-road equipment with engine manufacture dates of 1991 or later to insure that exhaust emissions have been reduced as much as possible with more current engine technology.

6. Limiting grading/soil disturbance to as small an area as practical at any one time. If the maximum daily disturbance footprint can not be effectively limited to no more than 15 acres, significance of peak daily PM-10 emissions in excess of SCAQMD thresholds needs to be acknowledged in a statement of overriding considerations.

7. Limiting the application of architectural surface treatments (i.e., paint, etc.) to average no more than two houses per day over the project buildout lifetime.

The technology does not exist to construct 484 dwelling units in a semi-arid climate without creating some dust and equipment exhaust. These temporary impacts can, however, be reduced to a less-than-significant level if a commitment is made to pursue available impact mitigation as aggressively as possible. With effective mitigation, the degree of "excess" emissions can be reduced to a less-than-significant level.

COMPARISON OF ALTERNATIVES - AIR QUALITY

Air quality impacts derive from the number of units developed, (operational trips generated) and from the total project disturbance footprint (construction emissions). Construction activity emissions have been calculated based upon a worst-case day of 30,000 cubic yards of cut and fill. That practical limit would exist for each alternative. The only construction activity impact difference for any "build" alternative is that these construction emissions (dust and/or equipment exhaust) would occur for a slightly longer period for 657 units, or for 538 homes built in Chatsworth Ridge.

Operation (traffic) emissions were calculated to be at slightly below the SCAQMD threshold for the proposed project. Maximum microscale air quality impacts from the proposed project were 0.1 ppm or less at any intersection with possible CO "hot spots." This constitutes 0.5 percent of the most stringent one-hour CO standard. Even if this impact level were doubled for a higher intensity development alternative, it would still be only one percent of the standard. The comparison of alternatives thus focuses only on the differences in regional vehicular pollution emissions.

Alternative 1 would develop 657 units. This represents a 36 percent increase in the number of units analyzed for the preferred alternative. An increase in the operational impacts of 36 percent leads to the following daily emissions relative to the SCAQMD CEQA Air Quality Handbook thresholds:

PERCENT OF SCAQMD THRESHOLD

	Operations*	
Pollutant	**Proposed Project***	**Altern. 1**
CO	57%	77%
NO_x	79%	107%
PM-10	21%	29%
ROG	77%	105%

* - project buildout year = 2005

Underlined values exceed SCAQMD thresholds.

Implementation of this alternative would cause emissions of NO_x and ROG to slightly exceed SCAQMD thresholds that do not exceed thresholds with the proposed project. This alternative would be less preferable than the proposed project unless buildout were delayed until 2006 or 2007 when cleaner cars would offset the small (5-7%) amount of excess emissions predicted for a year 2005 buildout for this alternative.

Alternative 2 would develop 538 units. This represents a 10% increase in the number of units analyzed for the preferred 484-unit alternative. An increase in the operational impacts of 10 percent leads to the following daily emissions relative to the SCAQMD CEQA Air Quality Handbook thresholds:

	PERCENT OF SCAQMD THRESHOLD	
	Operations*	
Pollutant	Proposed Project	Altern. 2
CO	57%	62%
NO_x	79%	87%
PM-10	21%	23%
ROG	77%	85%

* - project buildout year = 2005

Implementation of this alternative would increase all emissions by ten percent compared to the proposed project. A ten percent increase would not cause emissions to exceed SCAQMD thresholds.

The no-project alternative would not avoid any significant impacts compared to the proposed project since project impacts (with mitigation) would be mitigated to less-than-significant levels. Because the same level of residential growth would likely occur elsewhere in the region, basinwide air quality would be unaffected by selection of this alternative.

APPENDIX

URBEMIS7G Computer Model Output

Buildout = 2005

Buildout = 2002

Buildout = 2010

URBEMIS 7G: Version 3.2

File Name: Chat.URB
Project Name: Chatsworth Ridge - 484 units
Project Location: South Coast Air Basin (Los Angeles area)

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2002 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	9.14 trips / dwelling unit	484.00	4,422.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	80.00	1.16	98.58	0.26
Light Duty Trucks	16.00	0.13	99.54	0.33
Medium Duty Trucks	2.00	1.44	98.56	
Lite-Heavy Duty Trucks	0.00	19.56	40.00	40.44
Med.-Heavy Duty Trucks	0.00	19.56	40.00	40.44
Heavy-Heavy Trucks	0.50			100.00
Urban Buses	0.50			100.00
Motorcycles	1.00	100.00 % all fuels		

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35	40	40	40	40	40
% of Trips - Residential	20.0	37.0	43.0			

MOBILE SOURCE EMISSIONS

	ROG	NOx	CO	PM10
Single family housing	53.92	50.77	364.03	31.65
	ROG	NOx	CO	PM10
TOTAL EMISSIONS (lbs/day)	53.92	50.77	364.03	31.65

URBEMIS 7G: Version 3.2

File Name: Chat.URB
Project Name: Chatsworth Ridge - 484 units
Project Location: South Coast Air Basin (Los Angeles area)

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2005 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	9.14 trips / dwelling unit	484.00	4,422.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	80.00	1.16	98.58	0.26
Light Duty Trucks	16.00	0.13	99.54	0.33
Medium Duty Trucks	2.00	1.44	98.56	
Lite-Heavy Duty Trucks	0.00	19.56	40.00	40.44
Med.-Heavy Duty Trucks	0.00	19.56	40.00	40.44
Heavy-Heavy Trucks	0.50			100.00
Urban Buses	0.50			100.00
Motorcycles	1.00	100.00 % all fuels		

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Custome
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.
Trip Speeds (mph)	35	40	40	40	40	40
% of Trips - Residential	20.0	37.0	43.0			

MOBILE SOURCE EMISSIONS

	ROG	NOx	CO	PM10
Single family housing	42.41	43.48	311.54	31.59
	ROG	NOx	CO	PM10
TOTAL EMISSIONS (lbs/day)	42.41	43.48	311.54	31.59

URBEMIS 7G: Version 3.2

File Name: Chat.URB
Project Name: Chatsworth Ridge - 484 units
Project Location: South Coast Air Basin (Los Angeles area)

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	9.14 trips / dwelling unit	484.00	4,422.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	80.00	1.16	98.58	0.26
Light Duty Trucks	16.00	0.13	99.54	0.33
Medium Duty Trucks	2.00	1.44	98.56	
Lite-Heavy Duty Trucks	0.00	19.56	40.00	40.44
Med.-Heavy Duty Trucks	0.00	19.56	40.00	40.44
Heavy-Heavy Trucks	0.50			100.00
Urban Buses	0.50			100.00
Motorcycles	1.00	100.00 % all fuels		

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35	40	40	40	40	40
% of Trips - Residential	20.0	37.0	43.0			

MOBILE SOURCE EMISSIONS

	ROG	NOx	CO	PM10
Single family housing	28.24	33.71	241.46	31.55
	ROG	NOx	CO	PM10
TOTAL EMISSIONS (lbs/day)	28.24	33.71	241.46	31.55

APPENDIX G

BIOLOGICAL TECHNICAL REPORT

Biological Technical Report

Chatsworth Ridge Estates

Lead Agency
County of Los Angeles
Planning Division

Applicant
Presidio Chatsworth Partners, LLC

Prepared By
Glenn Lukos Associates

October 2001

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EXHIBIT	TITLE
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1.0 INTRODUCTION

1.1 PROJECT OVERVIEW & DESCRIPTION

The project applicant, Presidio Chatsworth Partners, LLC, proposes to develop an approximate 485 unit single-family residential subdivision on about 235 acres of mostly undeveloped land within the northwestern San Fernando Valley area of Los Angeles County. A portion of the project site with natural communities will be preserved as natural open space. The project site does not occur within the County of Los Angeles Significant Ecological Areas (SEAs) or Environmentally Sensitive Habitat Areas (ESHAs).

Glenn Lukos Associates, Inc. (GLA) was retained by Presidio Chatsworth Partners, LLC to conduct biological surveys of the project (Chatsworth Ridge Estates) study area and to prepare a biological technical report. GLA's assessment is based upon field surveys conducted from March to August 1998, June 1999, April through July 2000, November and December 2000, and May through July 2001.[1] Envicom Corporation also conducted focused botanical surveys in the summer of 2001 (Appendix D).

This biological technical report provides a description of vegetation communities, wildlife and U.S. Army Corps of Engineers (Corps) and California Department of Fish and Game (CDFG) jurisdictions located on the project site. This document assesses the potential for the project site to support sensitive plant and wildlife species as well as wildlife movement corridors. In addition, this report evaluates project impacts and provides mitigation measures designed to reduce project impacts to a level that is less than significant.

1.2 SITE LOCATION & CONDITIONS

The Chatsworth Ridge Estates project in Los Angeles County, [*Exhibit 1*], comprises approximately 230.58 acres of undeveloped land and is depicted on the U.S. Geological Survey (USGS) 7.5 minute topographic map Oat Mountain, California (dated 1952 and photo revised in 1969) [*Exhibit 2*]. The proposed project site is located in an unincorporated section of Los Angeles County within the northwestern San Fernando Valley area in the south-facing

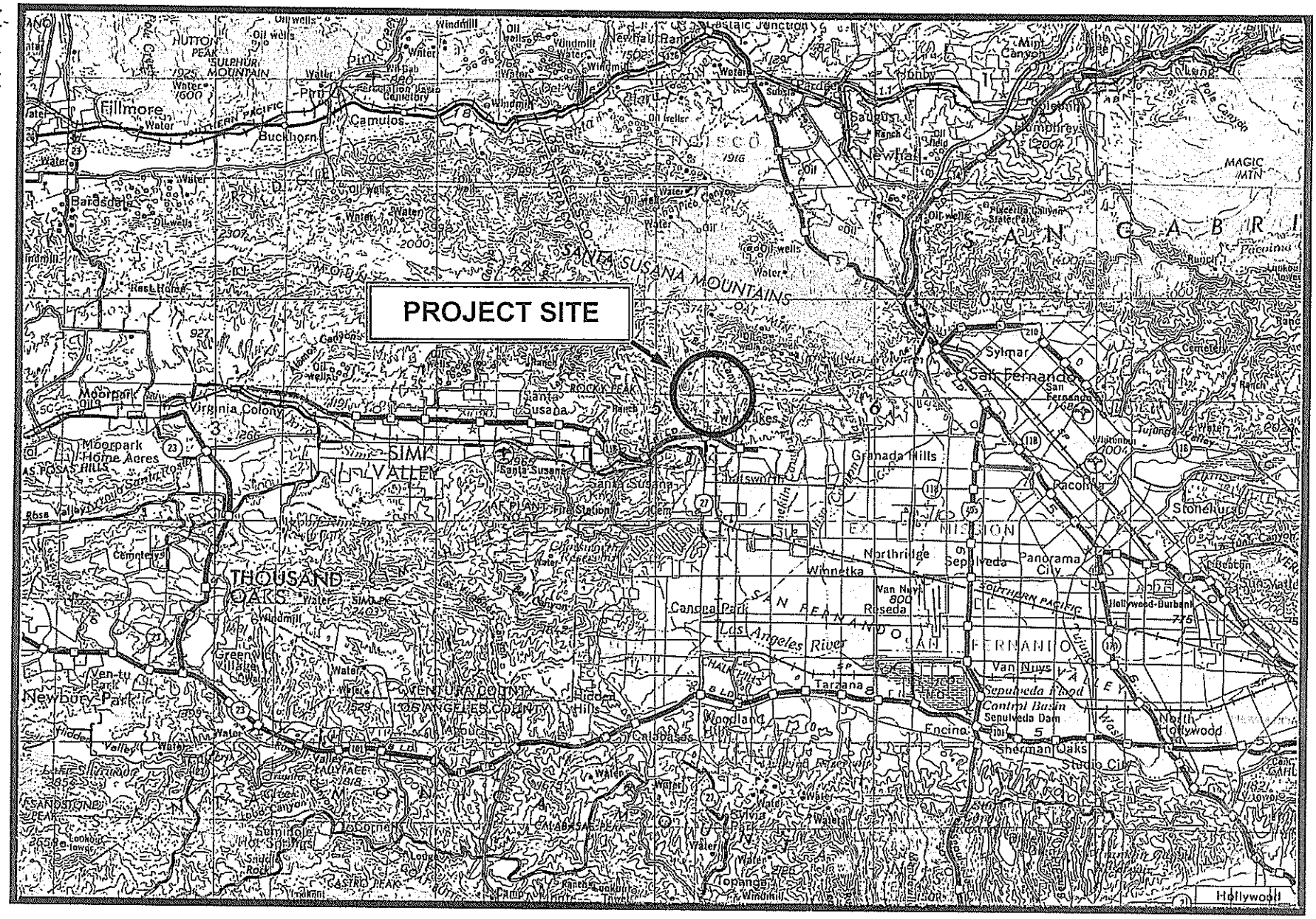
[1] *Following completion of the year 2000 focused surveys, the project applicant acquired an additional 13 acres adjacent to the project site. Field surveys for this area were conducted in November and December 2000 and May through July 2001.*

foothills of Santa Susana Mountains in an area known as Chatsworth. The elevation of the site ranges from approximately 1,200 feet above mean sea level (MSL) in the southeastern section to approximately 1,560 feet above MSL in the northern section.

The topography of the project study area consists of north-south ridges, canyons, and a relatively flat mesa characterized by dry washes and sandstone rock outcrops. Soils on the site consist of sandy soils weathered from sandstone bedrock, along with alluvial soils in drainages. The site supports various habitats and vegetation communities. Native vegetation communities include chamise chaparral, coastal sage scrub, coast live oak woodland, and willow woodland. Non-native vegetation communities include non-native grasslands and eucalyptus groves. Portions of the property were previously developed and/or graded for homes, roads, and equestrian trails.

Lands to the north and east of the project site are undeveloped. Although the land immediately adjacent to the westerly boundary of the site is vacant, an existing multi-family residential complex is located approximately 1/4 mile from the project site, and two existing single family detached residential communities are located approximately 1/2 mile westerly of the project site. Development along the southern boundary of the site consists of single family dwelling units and the Ronald Reagan Freeway (SR-118).

Adapted from USGS Los Angeles Quadrangle



NORTH

2 4 6

MILES

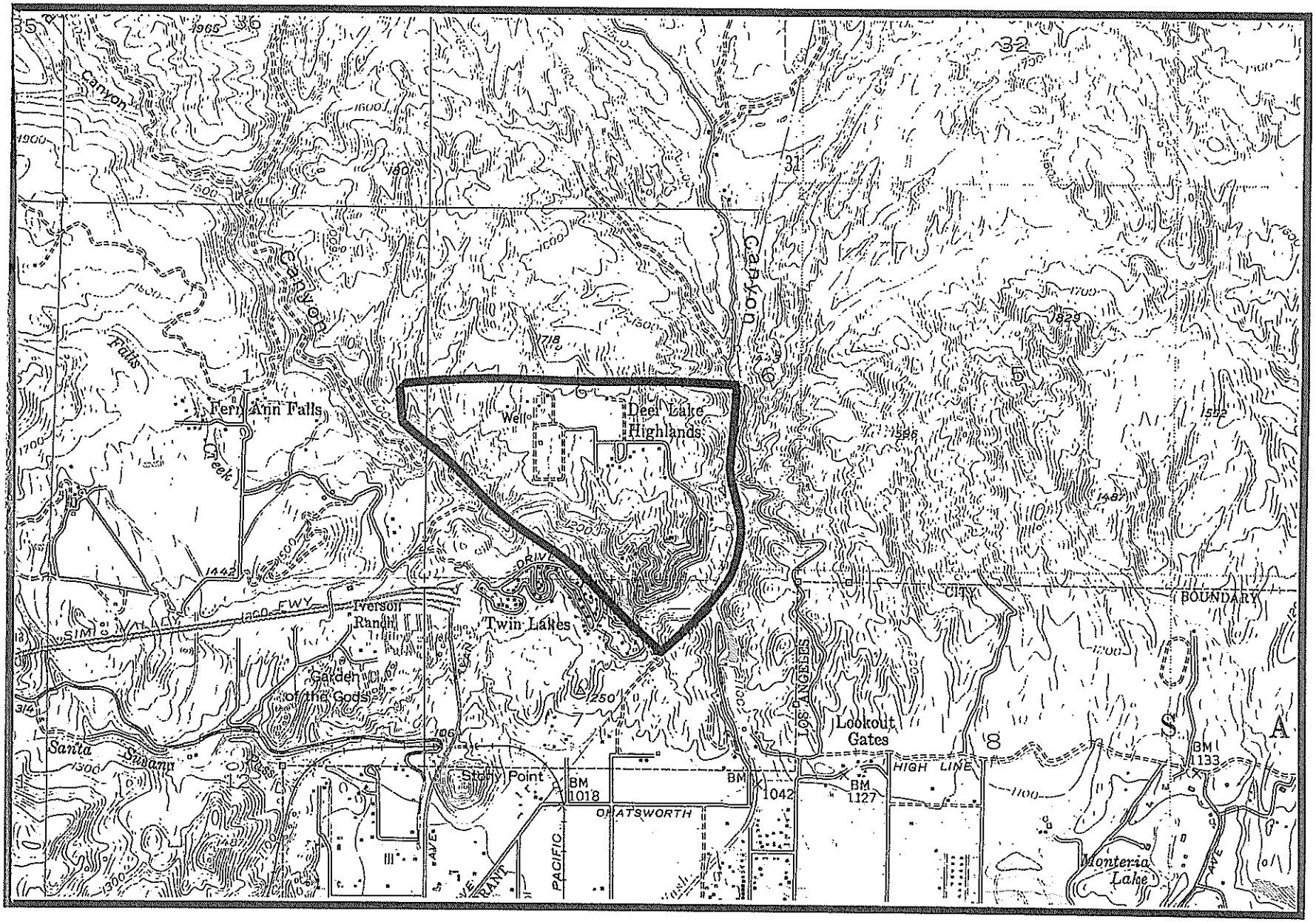
CHATSWORTH RIDGE ESTATES

Regional Map

GLENN LUKOS ASSOCIATES

EXHIBIT 1

Adapted from USGS Oat Mountain Quadrangle



NORTH

1000 2000 3000

FEET

CHATSWORTH RIDGE ESTATES

Vicinity Map

GLENN LUKOS ASSOCIATES

EXHIBIT 2

2.0 SURVEY METHODS

GLA conducted biological field surveys on the approximate 230.58-acre site during March to August 1998, June 1999, April through July 2000, and November through December 2000, and May through July 2001.[1] Envicom Corporation also conducted focused botanical surveys in the summer of 2001. Field studies focused on the following objectives: (1) identify and map vegetation communities; (2) delineation for Corps and CDFG jurisdictions; (3) list all observed plant and wildlife species; (4) determine the potential for the existing habitats to support sensitive plant and wildlife species as listed by U.S. Fish and Wildlife Service (USFWS), CDFG and the California Native Plant Society (CNPS). Observations of all plant and wildlife species were recorded.

A review of literature and databases were utilized from USFWS, CDFG, field guides, California Natural Diversity Database (CNDDB), CNPS (Skinner and Pavlik, 1994), and other pertinent literature. A search of the CNDDB for the Oat Mountain Quadrangle resulted in records for several sensitive species and habitats with the potential to occur in the area. The references are summarized below:

Plants: CNDDB (1999), Skinner and Pavlik (1994), CDFG(1999)
Wildlife: CNDDB (1999); USFWS (1992, 1999); CDFG (1988, 1990a, 1990b, and 1999)
Habitats: CNDDB (1999); CDFG (1999)

Based upon the field studies, literature and database review, GLA determined focused surveys for sensitive species potentially occurring on the project site were required. The focused surveys for potential sensitive plant species include:

Braunton's milkvetch (*Astragalus brauntonii*)
Nevin's barberry (*Berberis nevinii*)
Catalina mariposa lily (*Calochortus catalinae*)
Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)
Plummer's mariposa lily (*Calochortus plummerae*)
San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)

[1] *Following completion of the year 2000 focused surveys, the project applicant acquired an additional 13 acres adjacent to the project site. Field surveys for this area were conducted in November and December 2000 and May through July of 2001.*

Slender-horned spineflower (*Dodecahema leptoceras*)
Santa Susana tarplant (*Hemizonia minthornii*)
Southern California black walnut (*Juglans californica* var. *californica*)
Robinson's pepper grass (*Lepidium virginicum* var. *robinsonii*)
Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)
Fish's milkwort (*Polygala cornuta* var. *fishiae*)
Coast live oak trees (*Quercus agrifolia*)

The focused surveys for potential sensitive wildlife species include:

California red-legged frog (*Rana aurora draytonii*)
San Diego horned lizard (Phrynosoma coronatum blainvillei)
Two-Striped Garter Snake (*Thamnophis hammondii*)
Cooper's hawk (Accipiter cooperii)
Ashy rufous-crowned sparrow (*Aimophila ruficeps canescens*)
Western yellow warbler (Dendroica petechia brewsteri)
Southwestern willow flycatcher (*Empidonax traillii extimus*)
Coastal California gnatcatcher (Polioptila californica californica)
Least Bell's vireo (*Vireo billi pusillus*)

As noted above, focused surveys were conducted from March through August 1998, April through July 2000, and May through July 2001.[2] Envicom Corporation also conducted focused botanical surveys in the summer of 2001.

2.1 VEGETATION COMMUNITIES

Vegetation associations were mapped in the field directly onto clear acetate overlain on an 80-scale black and white aerial photograph of the site. Vegetation associations were mapped based upon descriptions provided by Holland (1986) with, as appropriate, modifications to more accurately characterize site conditions. Vegetation mapping was initially conducted in March of 1998 and refined during subsequent field visits through December of 2000.

[2] *The year 2001 focused spring surveys covered the 13-acre parcel acquired in 2000, following completion of the year 2000 focused spring surveys.*

2.2 CORPS & CDFG JURISDICTION

Delineation for Corps and CDFG jurisdiction were conducted in the field and recorded on site topography maps. Prior to beginning the field delineation, an 80-scale black and white aerial photograph, an 80-scale topographic base map of the property, and the previously cited USGS topographic map were examined to determine the locations of potential areas of Corps/CDFG jurisdiction. Suspected jurisdictional areas were field checked for the presence of definable channels and/or wetland vegetation, soils and hydrology. Suspected wetland habitats on the site were evaluated using the methodology set forth in the *U.S. Army Corps of Engineers Wetland Delineation Manual*[3] (Wetland Manual). While in the field the jurisdictional area was recorded onto an 80-scale color aerial photograph using visible landmarks. Other data were recorded onto wetland data sheets.

The two blue-line drainages on the project site (which were not scheduled to be impacted by proposed development) were delineated only by review of an 80-scale aerial photograph and limited field investigation. Therefore, the Corps and CDFG jurisdictional areas in Browns and Devil Canyons are given as estimates. Portions of Devil Canyon were dedicated to the Santa Monica Mountains Conservancy; Browns Canyon will be maintained as open space. The Soil Conservation Service (SCS) was used to determine the various soil types as occurring in the general vicinity of the project site.

2.3 PLANTS

Plant species encountered during the field surveys were identified and recorded following the guidelines adopted by CNPS and CDFG, as described by Nelson (1994). Scientific nomenclature and common names used in this report follow Hickman (1993). When not available in Hickman, common names are taken from McAuley (1985), Roberts (1998), or Beauchamp (1986). A complete list of the plant species observed during the surveys is provided in Appendix A.

Focused surveys were conducted for the following sensitive plant species potentially occurring on the project site: Braunton's milkvetch (*Astragalus brauntonii*), Nevin's barberry (*Berberis nevinii*), Catalina mariposa lily (*Calochortus catalinae*), slender mariposa lily (*calochortus*

[3] *Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Mississippi.*

clavatus var. *gracilis*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), Plummer's mariposa lily (*Calochortus plummerae*), Slender-horned spineflower (*Dodecahema leptoceras*), Santa Susana tarplant (*Hemizonia minthornii*), southern California black walnut (*Juglans californica* var. *californica*), Robinson's pepper grass (*Lepidium virginicum* var. *robinsonii*), ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*), Fish's milkwort (*Plygala cornuta* var. *fishiae*), and coast live oak (*Quercus agrifolia*). The focused botanical surveys were conducted between March and August 1998, April and July 2000, and May through July of 2001. Envicom Corporation also conducted focused botanical surveys in the summer of 2001.

Oak trees were tagged and mapped by L. Newman Design Group, Inc. (LNDG) in 1998 and 2000 to determine the conditions of the trees and provide guidance to minimize any encroachments upon the preserved trees. A total of 353 oak trees were identified on the project site. The results from the oak tree surveys are documented in a separate report also prepared by LNDG entitled *Oak Tree Survey Report* dated December 20, 2000.

2.4 WILDLIFE

Wildlife species were detected and recorded during field surveys by sight, calls, tracks, scat, nests or other signs. Scientific nomenclature and common names for vertebrate species referred to in this report follow Collins (1997) for amphibians and reptiles, Jones, et al. (1992) for mammals and AOU Check-list (1998) for birds. A complete list of wildlife species observed or detected onsite is provided in Appendix A.

Surveys were conducted for the following sensitive wildlife species potentially occurring on the project site: Cooper's hawk (*Acciptier cooperii*), ashy-rufous crowned sparrow (*Aimophila ruficeps canescens*), western yellow warbler (*Dendroica petechia brewsteri*), southwestern willow flycatcher (*Empidonax traillii extimus*), coastal California gnatcatcher (*Polioptila californica california*), California red-legged frog (*Rana aurora draytonii*), two-striped garter snake (*Thamnophis hammondii*), and least Bell's vireo (*Vireo billi pusillus*). Specific survey protocol is required for southwestern willow flycatcher, coastal California gnatcatcher, California red-legged frog, and least Bell's vireo.

2.4.1 SOUTHWESTERN WILLOW FLYCATCHER

Surveys for the southwestern willow flycatcher were conducted according to the guidelines issued by the USFWS (1997). These guidelines stipulate that three visits be conducted within areas of suitable habitat, within the following survey windows: (1) May 15 through 31; (2) June 1 through 21; and (3) June 22 through July 10. Protocol surveys were performed by biologists Stephen J. Myers (PRT-804203) and Chet McGaugh (PRT-836517) of Campbell BioConsulting.

Surveys were conducted on May 30, June 20, and July 3, 1998. The surveys covered all areas of willow riparian woodland located within the boundaries of the study area. All areas were covered on foot by walking slowly and methodically along the drainages. The presence/absence of southwestern willow flycatcher was determined by identifying all birds by sight and call and conservatively playing taped vocalizations of southwestern willow flycatcher. Weather conditions during the surveys were conducive to a high level of bird activity. Surveys were conducted from 5:40 A.M. to 10:35 A.M. Temperatures ranged from approximately 46 degrees Fahrenheit to 69 degrees Fahrenheit. Wind speeds ranged from zero to three miles per hour during the surveys. A report to Amy Leverett-Henderson of GLA dated July 24, 1998 documents the results of the protocol southwestern willow flycatcher surveys (Appendix B).

The southwestern willow flycatcher surveys were repeated during Summer 2000 by Kurt Campbell (PRT-781485). The surveys covered all areas of willow riparian woodland located within the boundaries of the study area. All areas were covered on foot by walking slowly and methodically along the drainages. The presence/absence of southwestern willow flycatcher was determined by identifying all birds by sight and call, and conservatively playing taped vocalizations of southwestern willow flycatcher. Weather conditions during the surveys were conducive to a high level of bird activity. Surveys were conducted from 5:25 A.M. to 9:30 A.M. Temperatures ranged from approximately 52 degrees Fahrenheit to 73 degrees Fahrenheit. Wind speeds were calm during all surveys. A report to Brad Henderson of GLA dated September 26, 2000 documents the results of the protocol southwestern willow flycatcher surveys (Appendix B).

2.4.2 COASTAL CALIFORNIA GNATCATCHER

Surveys for the coastal California gnatcatcher were conducted according to the guidelines issued by the USFWS (1997). These guidelines stipulate that six visits be conducted by permitted individuals within areas of suitable habitat, with at least seven days between site visits. Field surveys were performed by GLA biologist Amy Leverett-Henderson (PRT-818321).

Coastal California gnatcatcher surveys were conducted on March 30, April 6, 13, 20, 27, and May 4, 1998. The surveys were conducted within all areas of coastal sage scrub/non-native grassland ecotone. The survey area totaled approximately five acres of coastal sage scrub and adjacent chaparral areas. No coastal California gnatcatchers were observed onsite during protocol surveys in 1998. A letter report to Kirk Waln of the USFWS dated June 4, 1998, documents the results of the 1998 protocol coastal California gnatcatcher surveys (Appendix B).

The gnatcatcher surveys were repeated during Spring 2000 by Brad Henderson (TE-020025-0). These surveys were conducted on May 12, 19, 26, June 6, 13, and 20, 2000. A letter report to the USFWS dated August 3, 2000 documents the results of the latest protocol coastal California gnatcatcher surveys (Appendix B).

2.4.3 ARROYO SOUTHWESTERN TOAD

Biologists from GLA conducted a habitat assessment for the arroyo toad in Browns Canyon and Devil Canyon and determined that suitable habitat for this species was not present on within the boundaries of the site. Therefore, focused surveys for the arroyo toad were not performed.

2.4.4 CALIFORNIA RED-LEGGED FROG

Surveys for the California red-legged frog were conducted according to USFWS guidelines (1997). These guidelines stipulate that four visits be conducted, with two during the day and two at night. The surveys were performed by Peter H. Bloom on August 31, September 5, and September 18, 1999. All areas within canyons potentially supporting red-legged frogs were searched. The California red-legged frog surveys were repeated during Spring/Summer 2000 by Brad Henderson and Jeff Ahrens. A letter report to USFWS dated October 7, 1999 and December 27, 2000 documents the results of the protocol surveys for California red-legged frog (Appendix B).

2.4.5 LEAST BELL'S VIREO

Surveys for the least Bell's vireo were conducted according to the guidelines issued by USFWS (1992). These guidelines stipulate that eight visits be conducted within areas of suitable habitat, with at least seven days between site visits between April 1 and July 31. Field surveys were performed by GLA biologist Amy L. Leverett-Henderson and Campbell Bio Consulting under appropriate weather conditions.

The surveys were conducted on June 8, 15, 22, 29, July 6, 13, 20, and 27, 1998. The surveys covered all areas of willow riparian woodland located within the boundaries of the project site. All areas were covered on foot by walking slowly and methodically along the drainage. The presence/absence of least Bell's vireo was determined by identifying all birds by sight and call. No taped least Bell's vireo vocalizations were used. Weather conditions during the surveys were conducive to a high level of bird activity. Surveys were conducted from 5:30 A.M. to 11:00 A.M. Temperatures ranged from approximately 56 degrees Fahrenheit to 70 degrees Fahrenheit. Wind speeds ranged from zero to five miles per hour during the surveys, averaging zero to two miles per hour over the survey period. A letter report to Kirk Waln of

the USFWS dated August 24, 1998 documents the results of the protocol least Bell's vireo surveys (Appendix B).

The least Bell's vireo surveys were repeated during the spring/summer of 2000 by Brad Henderson and Jeff Ahrens. Protocol surveys were conducted on May 2, 12, 22, June 2, 13, 23, July 3, 13, and August 5, 2000. The surveys covered all areas of willow woodland. All surveys were begun within an hour of sunrise and completed before 11:00 A.M., in accordance with USFWS guidelines. All suitable areas were covered on foot by walking slowly and methodically through the riparian habitat. Weather conditions during the surveys were conducive to a high level of bird activity. Temperatures ranged from approximately 51 degrees Fahrenheit to 84 degrees Fahrenheit. Wind speeds ranged from zero to two miles per hour during the surveys, averaging one mile per hour over the survey period. A letter report to Richard Garlinghouse of Presidio Chatsworth Partners LLC dated September 21, 2000 documents the results of the protocol surveys (Appendix B).

2.5 WILDLIFE MOVEMENT CORRIDORS

In addition to observed species, expected wildlife usage of the site was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area. The term "wildlife movement corridors" implies a continuous unidirectional movement of individual animals. While wildlife movement corridors may sometimes be utilized in this way, their two most important functions are the long-term dispersal of genetic material between population centers and the maintenance of balanced viable populations. Surveys of wildlife corridors involved similar methods for detecting wildlife species, spotlighting study to observe wildlife that might be utilizing the site but not traversing the usual game trails, and any necessary directed species surveys.

3.0 VEGETATION COMMUNITIES

Several vegetation communities were identified within the project site. Vegetation communities on the project site include chamise chaparral, coastal sage scrub, coast live oak woodland, willow woodland, oak woodland/willow woodland, non-native grassland, and eucalyptus. The extent and location of each vegetation community as mapped is shown in Exhibit 3 and the acreage of each vegetation community is listed in Table 3.1. The plant species occurring and potentially occurring on the site are included in Appendix A.

Table 3.1
Vegetation Communities

Vegetation Communities	Approximate Total Acres
Chamise Chaparral	190.73
Coastal Sage Scrub/Non-Native Grassland	2.39
Coast Live Oak Woodland	5.73
Willow Woodland	9.88
Oak Woodland/Willow Woodland	0.58
Non-native Grassland/Previously Disturbed [a]	7.56
Eucalyptus Grove	0.18
Previously Graded or Developed	13.53
Total	**230.58**

[a] *Includes some developed areas.*

Source: Glenn Lukos Associates, Inc., 2000.

3.1 CHAMISE CHAPARRAL

Chamise chaparral occupies flat areas and slopes throughout most of the site and is the predominant vegetation association observed at the project site. A total of approximately 190.73 acres of chamise chaparral has been identified on the project site. Chamise (*Adenostoma fasciculatum*) and black sage (*Salvia mellifera*) are the dominant shrubs in this vegetation association. Other shrubs include Mexican elderberry (*Sambucus mexicana*), laurel

sumac (*Malosma laurina*), Our Lord's candle (*Yucca whipplei*), California buckwheat (*Eriogonum fasciculatum*) and deerweed (*Lotus scoparius*). The understory is composed of annuals including non-native tocolote (*Centaurea melitensis*), common cryptantha (*Cryptantha intermedia*), various suncups (*Camissonia* spp.), common catchfly (*Silene gallica*), and various non-native grasses. A special-status plant species, Plummer's mariposa lily (*Calochortus plummerae*) (CNPS List 1B), occurs in open, xeric areas within the chamise chaparral.

3.2 COASTAL SAGE SCRUB/NON-NATIVE GRASSLAND

The total area of coastal sage scrub/non-native grassland identified on the project site is approximately 2.39 acres and is dominated by California sagebrush (*Artemisia californica*), deerweed (*Lotus scoparius*), and California buckwheat. The understory is composed of slender wild oats (*Avena barbata*), tocalote, and other mostly non-native herbaceous species. The coastal sage scrub on-site occurs in a previously graded homestead near the middle of the site, and most likely represents a transitional early-successional vegetation association. As observed in many areas throughout the state (Mooney, 1977), it is likely that this area would gradually be replaced by chaparral species if left undisturbed.

3.3 COAST LIVE OAK WOODLAND

The total area of oak woodland identified on the project site is approximately 5.73 acres with a dominant overstory species being coast live oak (*Quercus agrifolia*). However, individual oak trees are also found in other vegetation associations on the site. Coast live oak woodland is not listed by CDFG as a snesitive vegetation type. However, the County of Los Angeles has identified the habitat as sensitive. The understory includes shrubs such as toyon (*Heteromeles arbutifolia*), southern California black walnut (*Juglans californica* var. *californica*), Mexican elderberry, poison oak (*Toxicodendron diversilobum*), and non-native grasses. Coast live oak woodland on-site was most often observed adjacent to drainages, or on shaded, north-facing slopes.

3.4 WILLOW WOODLAND

The total area of willow woodland identified on the project site is approximately 9.88 acres, and is more or less analogous with "Southern Mixed Riparian Forest" (Holland, 1986). However, because shrubby species rather than large trees dominate many areas, the general name "willow woodland" is used here. Willow woodland (i.e., Southern Mixed Riparian Forest) is ranked as S2.1 ("very threatened") by CDFG due to its small number of occurrences, individuals, and acres. Dominant vegetation within this association includes arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), mule fat (*Baccharis salicifolia*), and Fremont's cottonwood (*Populus fremontii*). Less common overstory species include black cottonwood (*Populus balsamifera ssp. trichocarpa*), western sycamore (*Platanus racemosa*), Southern California black walnut, and occasional box elder (*Acer negundo* var. *californicum).* Adjacent mesic areas support scattered stands of coast live oak and its associated understory includes California blackberry (*Rubus ursinus*), poison oak, and mugwort (*Artemisia douglasiana*). This association occurs in areas adjacent to the Devil Canyon drainage, characterized by areas of dense trees as well as more shrubby willow and mule fat in areas prone to stream scouring. The willow woodland has been invaded by non-native giant reed (*Arundo donax*) in parts of lower Devil Canyon.

3.5 OAK WOODLAND/WILLOW WOODLAND

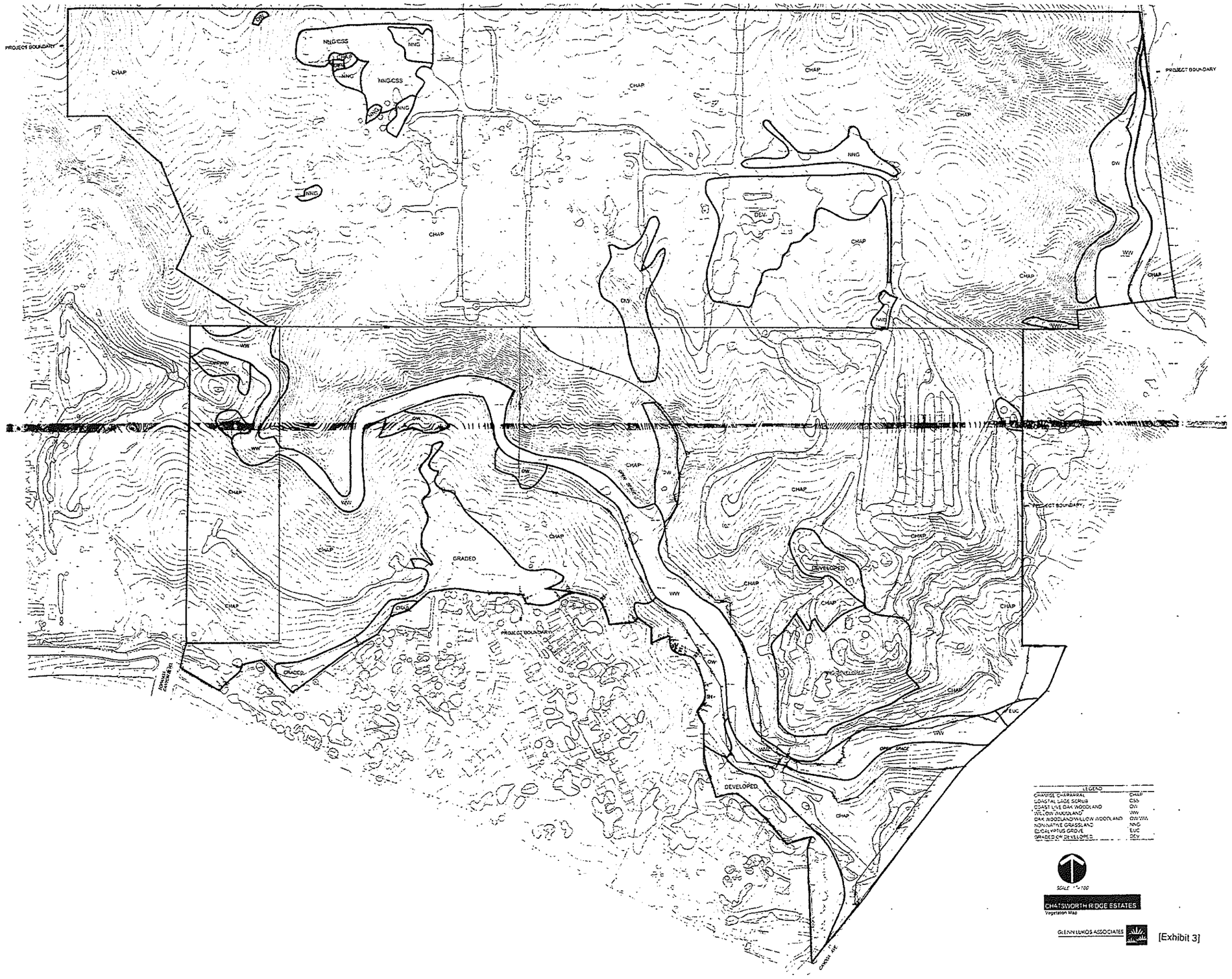
This association is characterized by small stands dominated by coast live oak and willows (*Salix* ssp.) found on stream terraces above Devil Canyon Creek upstream from the Devil Canyon debris dam. This total area on the project site is approximately 0.58 acre.

3.6 NON-NATIVE/PREVIOUSLY DISTURBED

The project site includes approximately 7.56 acres of non-native grassland. Non-native grassland on-site is dominated by slender wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), Black mustard (*Brassica nigra*), summer mustard (*Hirschfeldia incana),* common catchfly (*Silene gallica*), and tocolote. The non-native grassland identified on the site occupies approximately 2.20 acres and primarily occurs in areas of past disturbance.

Scattered non-native eucalyptus trees are found in flat areas throughout the site and seedlings have begun to colonize riparian areas. The total area of eucalyptus grove identified on the project site is approximately 0.18 acre. A grove of mature blue gum (*Eucalyptus globulus*) and red gum (*Eucalyptus camaldulensis*) has been planted near Devil Canyon, presumably for fuel wood production. This vegetation association includes an understory typically composed of weedy annual grasses and herbs. Scattered eucalyptus trees occupy most other vegetation associations in several locations.

Previously developed areas that have been graded or repeatedly cleared of vegetation on the project site total approximately 13.53 acres. Some areas exhibit a cover of bare earth and rocks, while other areas are dominated by ruderal plant species, many of which are non-native. Summer mustard, slender wild oat (*Avena barbata*), storksbill (*Erodium* spp.), and cheeseweed (*Malva parviflora*) are common non-natives colonizing these disturbed areas.


PROJECT BOUNDARY
CHAP
NNG/CSS
NNG
WW
OW
DEV.
GRADED
DEVELOPED
NO DEVELOPED
OPEN SPACE
EUC
LEGEND
CHAPARRAL CHAP
COASTAL SAGE SCRUB CSS
COAST LIVE OAK WOODLAND OW
WILLOW WOODLAND WW
OAK WOODLAND/WILLOW WOODLAND OW/WW
NON-NATIVE GRASSLAND NNG
EUCALYPTUS GROVE EUC
GRADED OR DEVELOPED DEV
SCALE 1" = 100'
CHATSWORTH RIDGE ESTATES
Vegetation Map
GLENN LUKOS ASSOCIATES

[Exhibit 3]

4.0 GENERAL WILDLIFE

Most wildlife species are not restricted to a single plant community, occurring instead in several communities, especially those of similar species composition and physical structure. However, some animals, birds, and wide-ranging mammals may utilize an array of dissimilar communities for forage and cover. Most animals found on the project site are common, widespread, and highly adaptable species. Wildlife species recorded by GLA as occurring on the project site result from species that were observed and the presence of diagnostic sign on the site. All wildlife species occurring and potentially occurring on the project site are listed in Appendix A.

4.1 AMPHIBIANS

Amphibians often require a source of standing or flowing water to complete their life cycle. However, some terrestrial species can survive in drier areas by remaining in moist environments found beneath leaf litter and fallen logs, or by burrowing into the soil. These xeric-adapted species conserve moisture by emerging only under conditions of high humidity or when the weather is cool and/or wet.

Willow and oak woodland habitats, as well as permanent flowing water are present on the project site. These areas provide potential habitat for amphibian species adapted to drier conditions, but only minimal potential habitat for species requiring permanent water. Amphibians observed on-site were the Pacific treefrog (*Pseudacris regilla*) and western toad (*Bufo boreas*). Additional amphibian species which could potentially occur on-site include the Pacific slender salamander (*Batrachoseps pacificus*), California newt (*Taricha torosa*), ensatina (*Ensatina eschscholtzii*), arboreal salamander (*Aneides lugubris*), and black-bellied salamander (*Batrachoseps nigriventris*).

4.2 REPTILES

Coastal sage scrub and chaparral communities identified on-site are utilized nearly year-round by a large number of reptile species. Species identified within the scrub and chaparral communities during the site surveys include the western fence lizard (*Sceloporus occidentalis*),

communities during the site surveys include the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), southern alligator lizard (*Gerrhonotus multicarinatus*), western skink (*Eumeces skiltonianus*), California whipsnake (*Masticophis lateralis*), gopher snake (*Pituophis melanoleucus*), western whiptail (*Cnemidophorus tigris*), and western rattlesnake (*Crotalus viridis*). Other reptile species potentially occurring on-site include the Gilbert skink (*Eumeces gilberti*), San Diego banded gecko (*Coleonyx variegatus abbotti*), legless lizard (*Anniella pulchra*), rosy boa (*Lichanura trivirgata*), ringneck snake (*Diadophis punctatus*), racer (*Coluber constrictor*), western patch-nosed snake (*Salvadora hexalepis*), and common kingsnake (*Lampropeltis getulus*).

The reptile species identified within the grassland communities on-site are expected to vary over the course of the year depending on abundance of grasses and availability of cover. Species observed during the site surveys include the western fence lizard, side-blotched lizard, and western rattlesnake. Other reptile species potentially occurring in grassland habitats include the southern alligator lizard, gopher snake, common kingsnake, coachwhip (*Masticophis flagellum*), and night snake (*Hypsiglena torquata*).

Riparian communities tend to exhibit low reptile species diversity. However, reptiles commonly identified near the edge of the intermittent drainages include southern alligator lizard, California whipsnake, side-blotched lizard, and western fence lizard. Other species potentially occurring within or near riparian areas include the Gilbert skink, two-striped garter snake (*Thamnophis hammondii*), and common garter snake (*Thamnophis sirtalis*).

4.3 BIRDS

Birds were the most common vertebrates observed on the project site. The scrub communities present on-site are generally composed of low dense vegetation which provides breeding habitat for resident bird species. Resident bird species observed on the site include the California towhee (*Pipilo crissalis*), wrentit (*Chamaea fasciata*), Bewick's wren (*Thryomanes bewickii*), California quail (*Callipepla californica*), Anna's hummingbird (*Calypte anna*), western scrub-jay (*Aphelocoma coerulescens*), northern mockingbird (*Mimus polyglottos*), and California thrasher (*Toxostoma redivivum*). Migratory species which utilize coastal sage scrub at various times include the white-crowned sparrow (*Zonotrichia leucophrys*), song sparrow (*Melospiza melodia*), Costa's hummingbird (*Calypte costae*), ash-throated flycatcher (*Myiarchus cinerascens*), and golden-crowned sparrow (*Zonotrichia atricapilla*).

On-site chaparral vegetation provides habitat for resident species such as the western scrub-jay, California thrasher, wrentit, Bewick's wren, California quail, Anna's hummingbird, northern mockingbird, California towhee, spotted towhee (*Pipilo erythrophthalmus*), bushtit (*Psaltriparus minimus*), black phoebe (*Sayornis nigricans*), and house finch (*Carpodacus mexicana*). Migratory species which utilize chaparral communities include the white-crowned sparrow, golden-crowned sparrow, Costa's hummingbird, orange-crowned warbler (*Vermivora celata*), black-throated gray warbler (*Dendroica nigrescens*), Allen's hummingbird (*Selasphorus sasin*), black-chinned hummingbird (*Archilochus alexandri*), and fox sparrow (*Passerella iliaca*).

Grassland communities provide habitat for resident species such as the house finch. Grassland communities are also utilized by a number of migratory species including the horned lark (*Eremophila alpestris*), lark sparrow (*Chondestes grammacus*), western kingbird (*Tyrannus verticalis*), song sparrow, and Brewer's blackbird (*Euphagus cyanocephalus*). In addition, raptors often seen searching grassland areas for prey include the American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*).

The native woodland communities on-site, including coast live oak woodland and willow woodland, provide habitat for many bird species. Resident species observed include the following species: the northern flicker (*Colaptes auratus*), black phoebe, Anna's hummingbird, western scrub-jay, mourning dove (*Zenaida macroura*), bushtit, acorn woodpecker (*Melanerpes formicivorus*), barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), oak titmouse (*Parus inornatus*), house wren (*Troglodytes aedon*), Hutton's vireo (*Vireo huttoni*), Cassin's vireo (*Vireo cassinii*), American goldfinch (*Carduelis tristis*), lesser goldfinch (*Carduelis psaltria*), American crow (*Corvus brachyrhynchos*), and common raven (*Corvus corax*).

Migratory species identified from on-site woodland communities include the black-chinned hummingbird, Costa's hummingbird, song sparrow, Nuttall's woodpecker (*Picoides nuttallii*), ash-throated flycatcher, western bluebird (*Sialia mexicana*), American robin (*Turdus migratorius*), yellow-rumped warbler (*Dendroica coronata*), Wilson's warbler (*Wilsonia pusilla*), yellow warbler (*Dendroica petechia brewsteri*), western tanager (*Piranga ludiviciana*), rufous-crowned sparrow (*Aimophila ruficeps*), white-crowned sparrow, Bullock's oriole (*Icterus galbula*), western kingbird, common yellowthroat (*Geothlypis trichas*), cliff swallow (*Hirundo pyrrhonota*), and western wood-pewee (*Contopus sordidulus*). The raptors most commonly observed on-site in oak woodland communities were the Cooper's hawk (*Accipiter cooperii*) and red-tailed hawk.

The eucalyptus grove provides habitat for several species, but is considered to have lower biological value than native woodland habitats. While eucalyptus does provide nectar, cover, nesting, and perching opportunities, the trees generally do not provide significant carbohydrate and protein resources. In addition, plants growing in the eucalyptus understory are primarily non-native grasses and forbs. Nevertheless, birds noted on-site utilizing eucalyptus include bullock's oriole, Anna's and Allen's hummingbird, Nuttall's woodpecker, northern flicker, European starling (*Sturnus vulgaris*) , common raven, brown-headed cowbird (*Molothrus ater*), great horned owl, Cooper's hawk, and red-tailed hawk.

4.4 MAMMALS

Physical evidence rather than direct visual identification determined identification of mammals on the project site. Many of the mammal species, which could potentially occur on-site are nocturnal and would not have been active during the site visits. The diverse habitats on-site provide a multitude of services for mammal species, including use for foraging, nesting/burrowing, and wildlife movement.

The coastal sage scrub and alluvial scrub communities represent potential habitat for a number of mammals. Species identified on-site, either by direct observation or physical evidence, include the Audubon's cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), deer mouse (*Peromyscus maniculatus*), desert woodrat (*Neotoma lepida*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), and mule deer (*Odocoileus hemmionus*).

The chaparral communities on-site provide habitat for the Audubon's cottontail, brush rabbit (*Sylvilagus bachmani*) , California ground squirrel, Pacific kangaroo rat (*Dipodomys agilis*), deer mouse, desert woodrat, coyote, gray fox (*Urocyon cinereoargenteus*), striped skunk, bobcat, and mule deer.

The grassland communities on-site provide potential habitat for the ornate shrew, Botta's pocket gopher, western harvest mouse (*Reithrodontomys megalotis*), deer mouse, California vole (*Microtus californicus*), coyote, striped skunk, and bobcat.

The riparian communities on-site, especially areas of Devil Canyon associated with permanent water sources can be heavily utilized. Therefore, the majority of mammals present on-site

would be expected to concentrate in riparian areas. Species which are known or have the potential to occur within the riparian communities on-site include deer mouse, California vole, California ground squirrel, Merriam's chipmunk (*Tamias merriami*), coyote, ringtail (*Bassariscus astutus*), raccoon (*Procyon lotor*), western spotted skunk (*Spilogale gracilis*), striped skunk, mountain lion (*Felis concolor*) , bobcat, and mule deer.

The woodland communities present on the project site, including southern coast live oak woodland and walnut woodland, provide habitat for numerous mammal species. Mammals known to utilize the woodland communities present on-site include the deer mouse, desert woodrat, California ground squirrel, coyote, gray fox, raccoon, striped skunk, bobcat, and mule deer. Non-native woodland communities, such as eucalyptus support opportunist mammals such as opossum, striped skunk, and California ground squirrel.

4.5 WILDLIFE MOVEMENT CORRIDORS

Wildlife, including large mammals such as mule deer and coyote regularly utilize the property, especially the northern portion of the property (i.e., "Deer Lake Highlands"). As discussed previously, the site provides foraging and breeding habitat for a number of reptiles, amphibians, birds, and mammals. Wildlife movement corridors link together or connect areas of suitable natural habitat that is otherwise separated by rugged topography, human disturbance, or changes in vegetation. Disruption of these corridors and fragmentation of the natural areas, which they connect, lead to isolated patches or "islands" of wildlife habitat. According to Noss (1983) and Soule and Gilpin (1991), wildlife corridors are required by animals for three main reasons: (1) to allow the movement of animals between remaining natural areas thus replenishing populations and maintaining genetic diversity; (2) provide escape routes from fire, predators, and human disturbances; and (3) provide a travel route for animals to disperse, forage, and breed. In the absence of these corridors studies by biologists such as Soule (1987) indicate that the larger mammals, such as mountain lions, mule deer and bobcats, will not likely persist over time in these isolated "islands" because they prevent the entry of new individuals and the associated genetic exchange vital to the health and preservation of the population. Therefore, the purpose or function of a wildlife corridor is to facilitate the movement of animals between two or more patches of habitat (Soule, 1991).

Because of existing development south and west of the site, and impending development east of the site, the property does not represent an important wildlife movement corridor for land-

bound animals. While Browns Canyon is likely utilized to some extent for seasonal movement, the canyon flows into a concrete culvert south of the property, and enters an urbanized area. Devil Canyon remains relatively natural from its confluence with Browns Canyon to its headwaters northwest of the project site. However, an approximately 25-foot debris dam erected in 1971 blocked access through the middle part of the canyon. Some resident species, including birds, amphibians, and mammals such as Merriam's chipmunk, are locally common in Devil Canyon. However, sign of larger mammals is scarce. It is likely that Devil Canyon may have been more heavily utilized by larger species of wildlife in the past, before construction of the debris dam.

Regional wildlife movement studies have been prepared for The Nature Conservancy (TNC) and the Santa Monica Mountains Conservancy (SMMC) and include the vicinity of the project site (Edelman, 1990). This study identifies regionally important wildlife movement corridors in the vicinity of the project site. Most of these areas lie west of the project site, where the proximity of the Santa Susana Mountains to the Simi Hills may allow for movement between these areas. No on-site regionally important wildlife movement corridors were identified in these studies.

5.0 SENSITIVE BIOLOGICAL RESOURCES

5.1 SENSITIVE VEGETATION COMMUNITIES

Three vegetation communities located within the project site are considered sensitive by state, federal, or local resource protection agencies. These communities include coastal sage scrub, willow woodland, and coast live oak woodland. Oak woodland/willow woodland is considered sensitive due to the sensitivity status of willow woodland and coast live oak woodland.

5.1.1 COASTAL SAGE SCRUB/NON-NATIVE GRASSLAND

Coastal sage scrub is considered a sensitive vegetation type throughout much of Southern California, primarily in regions known to support the federally-listed threatened coastal California gnatcatcher. Coastal sage scrub has an S3.1 (between 10,000 and 50,000 extant acres and a high level of threat) ranking by the CDFG. Recent observations of the coastal California gnatcatcher in northern Los Angeles County could result in the application of higher levels of sensitivity to coastal sage scrub in regions where this habitat was not formerly considered sensitive. Approximately 2.39 acres of disturbed coastal sage scrub/non-native grassland ecotone has been identified onsite. This vegetation is located near the foundations of several abandoned structures that have burned to the ground. In this area, the coastal sage scrub is dominated by California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and deerweed (*Lotus scoparius*) with few other native species. The understory is dominated by non-native grasses and weedy herbs.

5.1.2 WILLOW WOODLAND

Willow woodland (i.e., Southern Mixed Riparian Forest) is ranked as S2.1 ("very threatened," with a small number of occurrences, individuals, or acres) by CDFG. The site supports approximately 9.88 acres of willow woodland in Devil Canyon. This type of habitat is known to support a wide diversity of wildlife, including several sensitive and/or listed wildlife species. The willow woodland has been invaded by the non-native giant reed (*Arundo donax*) in parts of lower Devil Canyon.

5.1.3 COAST LIVE OAK WOODLAND

Coast live oak woodland is not listed by CDFG as a sensitive vegetation type. However, the County of Los Angeles has identified this habitat as sensitive. At least one area in the northern portion of the project site has burned recently and is dominated by young trees. In general, the larger trees are associated with canyons and north-facing slopes. Oak woodlands support a variety of distinct plant and animal associates. In Devil Canyon, southern California black walnut occurs in the oak woodland.

In addition, a tree inventory was conducted by Poly and Associates and LNDG in 1998, February and December of 2000, respectively for coast live oaks (*Quercus agrifolia*). A total of 353 coast live oak trees over eight inches diameter at breast height (DBH) were identified on the site. One heritage tree was identified. The results of the tree inventory conducted by LNDG are provided in the *Oak Tree Report* dated December 20, 2000 and are discussed in Section 6.1.3.

5.2 SENSITIVE PLANT SPECIES

Focused surveys were conducted for special-status plant species with the potential to occur on the project site. Two special-status plant species were identified on the project site: Plummer's mariposa lily and southern California black walnut. In addition, coast live oak (*Quercus agrifolia*) have been identified on the project site which is subject to County of Los Angeles Oak Tree Ordinance (No. 93-0018). Table 5.1 summarizes the potential plant species found on the project site and its associated habitats. The status of the species are listed according to the CDFG Natural Diversity Database. Results of field work and surveys are also listed in the table.

Braunton's milkvetch (*Astragalus brauntonii*) is a short-lived, stout perennial in the pea family federally-listed as endangered and as a List 1B plant (plants that are rare or endangered) by the CNPS. This plant occurs below 1,500 feet elevation in coastal sage scrub and chaparral in Los Angeles, Orange, and Ventura counties. A population is known from the Oat Mountain quadrangle (CNPS, 1994). This species is often found on carbonate soils, primarily associated with recent burns or other disturbances such as grading. Typically, Braunton's milk-vetch will occupy a site for the first few years following a disturbance, and then will become less prevalent after a number of years. The species then persists in the soil seed bank

until the next disturbance or other event necessary to stimulate germination. This species is threatened by development and alteration of historic fire regimes. A wildfire passed through the southern end of the site within the past several years. This burned area and other disturbed areas on-site would be considered typical habitats for Braunton's milk-vetch if calcareous soils also existed on the site. Braunton's milk-vetch was not observed during plant surveys for the project site and is not likely to be present.

Nevin's barberry (*Berberis nevinii*) is a federally- and state-listed endangered species and a CNPS List 1B plant. This species is a shrubby member of the barberry family. This shrub is 3 to 12 feet tall with dull blue-green pinnately compound leaves with leaflets that are both dentate and spinose. This woody shrub typically stems from rhizomes and produces flowers that are approximately ½ inch in diameter in the spring and early summer. Numerous berry-like fruits are produced in bunches ranging in color from yellow to red. This shrub occurs below 2,000 feet elevation in sandy areas in coastal sage scrub and chaparral in Los Angeles, San Bernardino, and Riverside counties. This species is threatened by development and road maintenance. Nevin's barberry was not observed on the project site and is not likely to be present.

Catalina mariposa lily (*Calochortus catalinae*) is a bulb-forming perennial in the lily family designated by CNPS as a List 4 (plant that has limited distribution – a watch list) plant. This species is endemic to California but is widespread, occurring in nine coastal California counties. Habitat includes chaparral, coastal sage scrub, woodland communities, and grasslands below 2,000 feet. Although potential habitat is present on-site, this species was not observed on the project site.

Slender mariposa lily (*Calochortus clavatus* var. *gracilis*) is a federal Species of Concern and a CNPS List 1B plant. This species is a bulb-forming perennial member of the lily family. This species is endemic to chaparral slopes below 4,000 feet along the south base of the San Gabriel Mountains and near Newhall, and is known from the vicinity of the project site. Although a similar species, *Calochortus clavatus* var. *pallidus* was identified on the project site, slender mariposa lily was not observed.

Plummer's mariposa lily (*Calochortus plummerae*) is a federal Species of Concern and a CNPS 1B species. This species is known from several vegetation communities and is found in Los Angeles, Ventura, Riverside, and San Bernardino counties. Plummer's mariposa lily occurs on the project site, in association with chamise chaparral vegetation. Plummer's mariposa lily is

Table 5.1
Sensitive Plant Species Potentially Occurring On-Site

Species	Status			Habitat	Observed?
	Federal	California	CNPS		
Braunton's milkvetch (*Astragalus brauntonii*)	Endangered	None	1B	Below 1,500 feet elevation in coastal sage scrub and chaparral; carbonate soils primarily associated with recent burns or other disturbances such as grading.	No
Nevin's barberry (*Berberis nevinii*)	Endangered	Endangered	1B	Below 2,000 feet elevation in sandy areas of coastal sage scrub and chaparral.	No
Catalina mariposa lily (*Calochortus catalinae*)	None	None	4	Endemic to California; chaparral, coastal sage scrub, woodland communities and grasslands below 2,000 feet.	No
Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)	Species of Concern	None	1B	Endemic to chaparral slopes below 4,000 feet.	No
Plummer's mariposa lily (*Calochortus plummerae*)	Species of Concern	None	1B	Chamise chaparral.	Yes [a]
San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)	Proposed	Proposed	1B	Sandy openings in coastal sage scrub or non-native grassland.	No
Slender-horned spineflower (*Dodecahema leptoceras*)	Endangered	Endangered	1B	Washes and other sandy open habitats.	No
Santa Susana tarplant (*Hemizonia minthornii*)	Species of Concern	Rare	1B	Rocky openings in chaparral.	No [b]
Southern California black walnut (*Juglans californica* var. *californica*)	None	None	4	Cismontane southern California.	Yes [c]
Robinson's pepper grass (*Lepidium virginicum* var. *robinsonii*)	None	None	1B	Coastal sage scrub and chaparral.	No
Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)	Species of Concern	None	4	Canyons below 3,000 feet.	No
Fish's milkwort (*Polygala cornuta* var. *fishiae*)	None	None	4	Shaded, rocky places in canyons below 3,000 feet.	No
Coast live oak (*Quercus agrifolia*)	Listed as "sensitive" by the County of Los Angeles			Dominant species in coast live oak woodland, but does occur in other plant communities.	Yes [d]

[a] *1,793 individuals identified on-site in 61.04 acres.*
[b] *Was observed off-site on a road cut near Topanga Canyon Boulevard and 118 Freeway.*
[c] *Scattered individuals in Devil Canyon.*
[d] *353 oak trees were evaluated on-site and one (1) heritage oak tree was identified.*

Source: Glenn Lukos Associates, Inc., 2000; L. Newman Design Group, Inc., 2000.

supported by soils derived from sandstone bedrock (Gaviota Sandy Loams), with less dense patches occurring on soils derived from granitic material. Plummer's mariposa lily is absent from very dense or north-facing stands of chaparral, and from dense stands of vegetation. This species is distributed at an approximate density of 20 to 30 plants per acre throughout the northern portion of the site, with two dense subpopulations totaling approximately one acre and supporting approximately 350 plants located in the north-central section of the site [Exhibit 5]. Field work was conducted during the spring following the heavy 1997-1998 El Niño event, thus the detectability of this species was very high and 1,793 individual Plummer's mariposa lily plants were identified on the project site.

San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) is a federal Species of Concern and a CNPS 1A (plant that is presumed extinct in California) species. This species is a diminutive annual in the buckwheat family, was formerly assumed to be extinct. This plant was rediscovered in Calabasas during the spring of 1999 by botanists of GLA. This species was known from sandy areas in several southern California localities, including Chatsworth Reservoir. Although two related plants were identified, Turkish rugging (*Chorizanthe staticoides*) and lastarriaea (*Lastarriaea coriacea*), during general botanical surveys in 1998 and focused surveys in 1999-2000, the previously identified populations of San Fernando Valley spineflower could not be located at the Chatsworth Resevoir during 1999 and is not likely to be present on the project site.

Slender-horned spineflower (*Dodecahema leptoceras*) is a federally- and state-listed endangered species and a CNPS List 1B plant. This species is a low-growing annual herb in the buckwheat family, with a spread from one to four inches above vernal, basal leaves. The flowers are white to pink and approximately one to two millimeters in length and flowering occurs in the late spring and early summer months. This species is known from Los Angeles, Riverside, and San Bernardino counties, in washes and other sandy, open habitats at elevations between 600 and 2,100 feet. This plant is threatened by development, vehicles, and loss of historical flooding regimes. Slender-horned spineflower was not observed on the project site and is not likely to be present.

Santa Susana tarplant (*Hemizonia minthornii*) is a federal Species of Concern and a CNPS List 1B plant. Santa Susana tarplant is known from rocky openings in chaparral in the vicinity of Santa Susana pass and in the Santa Monica Mountains. A roadcut near Topanga Canyon Boulevard and the 118 Freeway (approximately 0.2 mile from the project site) may have supported this species. Potential habitat including rock outcrops and openings in scrub

are present on-site, however, non-native fountain grass (*Pennisetum setaceum*) dominates the cut slope. Non-native fountain grass is an aggressive weed that would likely prevent Santa Susana tarplant from establishing. In addition, evidence of clearing would likely prevent Santa Susana tarplant from establishing on the cut slope. Santa Susana tarplant was not observed on the project site.

Southern California black walnut (*Juglans californica* var. *californica*) is listed as a CNPS List 4. This species occurs throughout cismontane Southern California, but is declining in much of its range. Scattered individuals of Southern California black walnut have been identified on the site in Devil Canyon.

Robinson's pepper grass (*Lepidium virginicum* var. *robinsonii*) is an annual plant in the mustard family designated as a CNPS List 1B plant. This species occurs in coastal sage scrub and chaparral from Los Angeles County to Baja California. Robinson's pepper grass was not observed on the project site.

Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*) is a federal Species of Concern and a CNPS List 4 plant. This robust perennial herb is in the lily family. This species is known from several southern California counties, normally found in canyons below 3,000 feet. Ocellated Humboldt lily was not observed on the project site and is not likely to be present.

Fish's milkwort (*Polygala cornuta* var. *fishiae*) is a CNPS List 4 plant. This shrubby perennial is in the milkwort family. This species is found throughout southern California and Baja California in shaded, rocky places in canyons below 3,000 feet. Fish's milkwort was not observed on the project site and is not likely to be present.

Coast live oaks (*Quercus agrifolia*) are designated as "sensitive" by the County of Los Angeles. Coast live oak trees are native to southern California and are large evergreen trees with a broad round shape and large limbs. These trees are typically 30 to 70 feet tall with a broad spread between 35 to 80 feet wide. The leaves are glossy green and one to three inches long with a spiny round holly-like shape. The leaves are also distinctively cupped or curled at the edges. A total of 353 oak trees over eight inches diameter at breast height (DBH) were surveyed on the project site.

5.3 SENSITIVE WILDLIFE SPECIES

Focused surveys were conducted for special-status wildlife species with the potential to occur on the project site. Three special-status wildlife species were identified on the project site: Cooper's hawk, ashy rufous-crowned sparrow, and western yellow warbler. Table 5.2 summarizes the potential wildlife species found on the project site and its associated habitats. The status for each species is listed according to the CDFG Natural Diversity Database. Results of field work and surveys are also listed in the table.

Ringtail (*Bassariscus astutus*) is a California fully-protected species. This mammal is widespread through many habitats in California and the western North America. This species is non-migratory and is generally found within 1 km of permanent water. Because the site exhibits only seasonal water in Browns Canyon and Devil Canyon, there is a low probability that this species is resident on the site. As such, focused surveys were not conducted for this species.

California red-legged frog (*Rana aurora draytonii*) is a federally-listed threatened species. This species is a relatively large aquatic frog found from Humboldt, Shasta, and Trinity counties along the western third of the state to the Mexican border, and along the western slope of the Sierra Nevada range south to Mariposa County. The frog is rare in southern California, but has been recently identified in the Los Virgines Creek watershed, approximately six miles south of the project site. Surveys conducted in Browns and Devil Canyons in 1999 resulted in no observations of California red-legged frog. A letter from Peter H. Bloom to Brad Henderson of GLA dated October 7, 1999 documents the results of the red-legged frog surveys (see Appendix B), which were updated by Brad Henderson and Jeff Ahrens in spring of 2000.

Arroyo Southwestern Toad (*Bufo microscaphus californicus*) is a federally-listed endangered species and a California species of special concern. It is typically associated with higher order streams with sand and gravel bars and with slow moving water and shallow pools. Gravel bottoms for the shallow ponds are preferred for breeding. GLA biologists conducted a habitat assessment for this species and determined that suitable habitat for this species was not present on the site. As such, focused surveys were not conducted for this species.

San Diego horned lizard (*Phrynosoma coronatum blainvillei*) is a state Species of Concern. The site does provide potential habitat, including the favored food source for the San Diego

Coast horned lizard, harvester ants (*Pogonomyrmex* spp.) and suitable sandy soils. However, the San Diego Coast horned lizard was not observed on the project site.

Table 5.2
Sensitive Wildlife Species Potentially Occurring On-Site

Species	Status		Habitat	Observed?
	Federal	California		
Ringtail (*Bassariscus astutus*)	None	Fully Protected	Riparian areas and adjacent shrublands or forests	No (suitable habitat lacking)
California red-legged frog (*Rana aurora draytonii*)	Threatened	None	Riparian areas – aquatic species.	No [a]
Arroyo Southwestern Toad (*Bufo microscaphus californicus*)	Endangered	Species of Concern	Riparian and alluvial scrub	No (suitable habitat lacking)
San Diego horned lizard (*Phrynosoma coronatum blainvillei*)	None	Species of Concern	Sandy soils.	No
Two-striped garter snake (*Thamnophis hammondii*)	None	Species of Concern	Riparian areas – aquatic species.	No
Cooper's hawk (*Accipiter cooperii*)	None	Species of Concern	Woodland habitat.	Yes [b]
Ashy-rufous crowned sparrow (*Aimophila ruficeps canescens*)	None	Species of Concern	Coastal sage scrub and other xeric habitats; chaparral.	Yes [c]
Western yellow warbler (*Dendroica petechia brewsteri*)	None	Species of Concern	Migratory songbird nesting in riparian habitats.	Yes [d]
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Endangered	Endangered [e]	Migratory songbird found in riparian habitats.	No
Coastal California gnatcatcher (*Polioptila californica californica*)	Threatened	None	Cismontane; coastal sage scrub.	No
Least Bell's vireo (*Vireo billi pusillus*)	Endangered	Endangered	Migratory songbird found in riparian habitats; willow thickets along streams.	No

[a] *Identified approximately six miles south of site.*
[b] *Fledglings were also commonly observed in lower Devil Canyon*
[c] *At least 3 to 4 pairs identified near Devil Canyon; No nesting confirmed but an increase in birds was observed, thus indicating nesting does occur.*
[d] *Observed sporadically during spring and fall migration; possible nesting on-site although none observed.*
[e] *Entire species endangered.*

Source: Glenn Lukos Associates, Inc., 2000.

Two-Striped Garter Snake (*Thamnophis hammondii*) is a state Species of Concern and a highly aquatic snake known from Monterey County to northwestern Baja California. The species is relatively common in coastal southern California, but has declined from modification of stream courses, urban development, and introduction of introduced predators. Although suitable habitat is present in the study area in Devil Canyon and Browns Canyon, this species was not observed on the project site.

Cooper's hawk (*Accipiter cooperii*) is a state Species of Concern and are found in woodland habitats. They prey primarily on birds but they are known to eat small mammals, reptiles, amphibians, insects and fish. Cooper's hawks was observed throughout the 1998 and 2000 field seasons. Fledglings were commonly observed in lower Devil Canyon during field work in 2000.

Ashy rufous-crowned sparrow (*Aimophila ruficeps canescens*) is a state Species of Concern and a year-round resident of Southern California. This species is frequently found in coastal sage scrub and in other xeric habitats. Like other sparrows, the ashy rufous-crowned sparrow primarily eats seeds and insects. At least three to four pairs of ashy rufous-crowned sparrows were identified on the site, primarily near Devil Canyon in 1998, and 2000, with a single observation in the Deer Lake Highlands portion of the site in 1999. No nesting pairs of ashy-rufous crowned sparrow were confirmed on the site during 1998, 1999, or 2000, but since the birds have been seen in multiple years, it is assumed that some nesting occurs on the site.

Western yellow warbler (*Dendroica petechia brewsteri*) is a state Species of Special Concern and a migratory songbird nesting in riparian habitats. This species was observed sporadically during Spring and Fall migration. Although there is potential for this species to nest on the project site, nesting activity was not observed.

Southwestern willow flycatcher (*Empidonax traillii extimus*) is a federally- and state-listed endangered small, migratory songbird also found in riparian habitats. The southwestern willow flycatcher breeds from the south end of the Sierra Nevada Range south to Baja California and east to western Texas. The species has been depleted due to the loss and adverse modification of riparian habitat, and is threatened by brown-headed cowbird nest parasitism. Wintering habitat is not well known, but is thought to extend from Mexico south at least to Panama. Protocol surveys conducted in 1998 did not result in observations of southwestern willow flycatcher. Focused surveys for this species were repeated in 2000, however the species was not observed. Reports from Kurt Campbell of Campbell

BioConsulting dated July 24, and September 26, 2000 documents the results of the 2000 protocol surveys (Appendix B).

Coastal California gnatcatcher (*Polioptila californica californica*) is a federally-listed threatened species and occurs in many areas of cismontane Southern California from Ventura County to San Diego County. These birds are not common in the vicinity of the project site but have been identified in Simi Valley/Moorpark and in the Sylmar area. In 1998, GLA conducted surveys for the coastal California gnatcatcher according to the guidelines issued by the USFWS (1997). During the surveys, which covered all areas of coastal sage scrub and coastal sage scrub ecotone, no coastal California gnatcatchers were observed on the site. A letter report to Kirk Waln of the USFWS dated June 4, 1998 documents the findings of the surveys (Appendix B). The gnatcatcher surveys were repeated in 2000, and a letter report to the USFWS dated August 3, 2000 documents the results of the 2000 protocol coastal California gnatcatcher surveys (Appendix B). The coastal California gnatcatcher has not been observed on the site during protocol surveys or at any other time. In addition, during subsequent field surveys, it was determined that no suitable gnatcatcher habitat exists on the additional 13 acres. No further surveys are required for the coastal California gnatcatcher.

Least Bell's vireo (*Vireo billi pusillus*) is a federally- and state-listed endangered small, migratory songbird found in riparian habitats. The least Bell's vireo was once common throughout the Central Valley extending to Baja California. The species has been depleted due to loss of riparian habitat and the increase in brown-headed cowbird nest parasitism. Least Bell's vireo is often found in willow thickets along streams, breeding in southern California and wintering in Mexico. Protocol surveys conducted in 1998 did not result in observations of least Bell's vireo. A letter report to Kirk Waln of the USFWS dated August 24, 1998 documents the results of the 1998 vireo surveys (Appendix B). Focused surveys for this species were repeated in the spring/summer of 2000. A letter report to Richard Garlinghouse of Chatsworth Presidio Partners LLC dated September 21, 2000 documents the results of the protocol surveys (Appendix B).

5.4 JURISDICTIONAL RESOURCES

The Chatsworth Ridge Estates project contains one blue-line drainage as depicted on USGS topographic map [see Exhibit 2]. On March 18, 19, 23, 26, April 6, May 29, June 1, and June 3, 1998, and December 2000, regulatory specialists of GLA examined the project site to

determine the limits of (1) Corps jurisdiction pursuant to Section 404 of the Clean Water Act, and (2) CDFG jurisdiction pursuant to Division 2, Chapter 6, Section 1603 of the Fish and Game Code. A letter report dated July 27, 1998) documenting these findings was prepared and submitted to the client. Jurisdictional areas are depicted on Exhibit 4.

As shown in Table 5.3, Corps jurisdiction at the site, including portions of Devil Canyon totals approximately 65,075 square feet (1.49 acres), of which approximately 40,200 square feet (0.92 acre) consist of jurisdictional wetlands. CDFG jurisdiction, includes everything within Corps jurisdiction, extending beyond Corps jurisdiction to the limits of the riparian canopy. CDFG jurisdiction at the site totals approximately 400,325 square feet (9.19 acres) of which approximately 383,015 square feet (8.79 acres) consisting of vegetated riparian habitat (see Table 5.3).

5.4.1 Drainage/Canyon Locations

Drainage 1

Corps jurisdiction associated with Drainage 1 totals approximately 1,150 square feet (0.03 acre) and is limited to the ordinary high water mark (OHWM) of the channel. CDFG jurisdiction associated with Drainage 1 totals approximately 28,500 square feet (0.65 acre), all of which constitutes riparian vegetation. The drainage supports coast live oak (*Quercus agrifolia*) and western sycamore (*Platanus racemosa*). Drainage 1 is located in a moderately steep part of the site and varies from one to two feet in width. Drainage 1 consists of an incised channel with a sandy bottom at the upper reach and contains some steep areas on sandstone bedrock near the edge of the property. No wetlands are associated with Drainage 1.

Drainage 2

Corps jurisdiction associated with Drainage 2 and its tributaries totals approximately 3,670 square feet (0.084 acre) and is limited to the OHWM of the channel. CDFG jurisdiction associated with Drainage 2 and its tributaries totals approximately 5,770 square feet (0.13 acre) and includes 2,240 square feet (0.051 acre) of riparian vegetation. Drainage 2 and its tributaries extend from the first discernible OHWM to where it leaves the property. Drainage 2 varies from one to three feet in width, and consists of an incised channel with a rocky bottom. Areas adjacent to the drainage are vegetated with upland chaparral shrubs such as chamise

(*Adenostoma fasciculatum*), black sage (*Salvia mellifera*), laurel sumac (*Malosma laurina*), hoary leaf ceanothus (*Ceanothus crassifolius*), toyon (*Heteromeles arbutifolia*), and other upland species. An 80-foot section in the upper reach of Drainage 2 supports coast live oak. No wetlands are associated with Drainage 2 or its tributaries.

Drainage 3

Corps jurisdiction associated with Drainage 3 and its tributaries is limited to the OHWM of the channels and totals approximately 4,355 square feet (0.10 acre). CDFG jurisdiction associated with Drainage 3 and its tributaries totals approximately 5,325 square feet (0.12 acre) and includes 1,290 square feet (0.03 acre) of riparian habitat. Drainage 3 varies in width from one to three feet. Drainage 3 is steep and rocky in places, but along the middle and upper reaches there are areas of little topographic relief. The channel bottom in Drainage 3 ranges from sandstone bedrock to areas of cobbles, sand, or soil. The channel flows through areas vegetated with upland chaparral shrubs, herbs, and grasses. There are no wetlands associated with Drainage 3 or its tributaries.

Drainage 4

Corps jurisdiction associated with Drainage 4 and its tributaries totals 12,130 square feet (0.28 acre) and is limited to the OHWM of the channels. CDFG jurisdiction associated with Drainage 4 and its tributaries totals 66,530 square feet (1.53 acres) and includes 59,475 square feet (1.36 acres) of riparian vegetation. Drainage 4 varies from one to three feet in width and the incised channel bottom consists of bedrock or sand. Drainage 4 flows through areas vegetated with chaparral and supports coast live oak in the lower reach. There are no wetlands associated with Drainage 4 or its tributaries.

Drainage 5

Corps jurisdiction associated with Drainage 5 totals approximately 1,505 square feet (0.034 acre) and is limited to the OHWM of the channel. CDFG jurisdiction associated with Drainage 5 totals approximately 6,265 (0.14 acre) and includes 5,640 square feet (0.13 acre) of riparian vegetation. This drainage is located near the southeast corner of the site where it meets Browns Canyon. The channel bottom is incised with a rocky or sandy bottom and ranges from one to three feet wide. The upper 560- foot reach of Drainage 5 flows through areas dominated by typical chaparral vegetation and is considered ephemeral. The lower reach

of Drainage 5 supports coast live oak woodland mixed with willow woodland. Typical species include poison oak (*Toxicodendron diversilobum*), mugwort (*Artemisia douglasiana*), coast live oak, and southern California black walnut (*Juglans californica* var. *californica*). There are no wetlands associated with drainage 5.

Table 5.3
Drainages Located on the Project Site

Location	Jurisdiction			
	Corps		CDFG	
	Square Feet	Acres	Square Feet	Acres
Drainage 1	1,150	0.03	28,500	0.65
Drainage 2	3,670	0.084	5,770	0.13
Drainage 3	4,355	0.10	5,325	0.12
Drainage 4	12,130	0.28	66,530	1.53
Drainage 5	1,505	0.034	6,265	0.14
Drainage 6	Drainage 6 is located off-site			
Drainage 7	985	0.023	985	0.023
Drainage 8	Drainage 8 is located off-site			
Drainage 9	1,560	0.036	1,560	0.036
Drainage 10	760	0.02	1,340	0.03
Devil Canyon	106,755	2.45	467,900	10.74
Total	132,870	3,050	584,715	13.399

Source: Glenn Lukos Associates, Inc., 2000.

Drainage 6

Drainage 6 is located off site.

Drainage 7

Corps jurisdiction associated with Drainage 7 and its tributary totals approximately 985 square feet (0.023 acre). CDFG jurisdiction associated with Drainage 7 and its tributary totals approximately 985 square feet (0.023 acre). Drainage 7 is located in the northwest area of the property, and meets Browns Canyon near a flat area vegetated with oaks. The OHWM of Drainage 7 averages one to two feet in width. The channel banks are vegetated with typical chaparral species. The drainage bottom ranges from bedrock to sand and includes a vertical drop over a bedrock ledge. There are no wetlands associated with Drainage 7 or its tributaries.

Drainage 8

Drainage 8 is located off site.

Drainage 9

Corps jurisdiction associated with Drainage 9 and its tributary totals approximately 1,560 square feet (0.036 acre) and is located north of Devil Canyon, and south of Drainage 4. CDFG jurisdiction associated with Drainage 9 totals approximately 1,560 square feet (0.036 acre). No riparian vegetation is associated with Drainage 9. This channel averages one to two feet in width, and the bottom consists of rocks or sandstone bedrock. The channel flows through areas dominated by chaparral. There are no wetlands associated with Drainage 9 or its tributary.

Drainage 10

Corps jurisdiction associated with Drainage 10 and its tributary totals approximately 760 square feet (0.02 acre) and is limited to the ordinary high water mark (OHWM) of the channel. CDFG jurisdiction associated with Drainage 10 totals approximately 1,340 square feet (0.03 acre) and includes 1,200 square feet (0.03 acre) of riparian vegetation. The drainage supports mule fat (*Baccharis salicifolia*). Drainage 10 is located in the western portion of the 13-acre addition to the site and varies from two to four feet in width. Drainage 10 consists of an incised channel with a sandy or bedrock bottom. No wetlands are associated with Drainage 10.

Devil Canyon

Corps jurisdiction associated with Devil Canyon totals approximately 106,755 square feet (2.45 acres). CDFG jurisdiction associated with Devil Canyon totals approximately 467,900 square feet (10.74 acres) and includes 463,275 square feet (10.63 acres) of riparian vegetation. This blue-line drainage flows into Browns Canyon east of the site. The width of the channel varies from 8 to 15 feet, and the bottom consists of sand and silt. Vegetation associated with Devil Canyon consists of a mosaic of willow woodland, and coast live oak woodland. Typical component species supported by this drainage include arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), narrow-leaved willow (*Salix exigua*), western sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus balsamifera*

ssp. *trichocarpa*), giant reed (*Arundo donax*), coast live oak (*Quercus agrifolia*), mugwort (*Artemisia douglasiana*), poison oak (*Toxicodendron diversilobum*), and California blackberry (*Rubus ursinus*).

5.4.2 REGULATORY REQUIREMENTS

Impacts to certain habitats and species associated with the project site are regulated by federal, state, and local agencies, including the Corps, CDFG as well as the County of Los Angeles pursuant to CEQA.

U.S. Army Corps of Engineers

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined at 33 CFR Part 328 and includes (1) all navigable waters (including all waters subject to the ebb and flow of the tide), (2) all interstate waters and wetlands, (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce, (4) all impoundments of waters mentioned above, (5) all tributaries to waters mentioned above, (6) the territorial seas, and (7) all wetlands adjacent to waters mentioned above. Wetlands are defined at 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions."

Issuance of a Section 404 Permit to discharge dredged or fill material into jurisdictional waters is considered a federal action and cannot be undertaken by the Corps if the permitted actions could adversely affect federal-listed (or proposed) endangered or threatened species. Where listed or proposed species could be adversely impacted by a permitted action, the Corps must consult with USFWS prior to issuing a section 404 permit.

California Department of Fish and Game

Pursuant to Division 3, Chapter 1.5, Sections 2050-2116 of the California Fish and Game Code, the CDFG prohibits take of state-listed species. If state-listed species are impacted by

project implementation, a California Endangered Species Act (CESA) permit would be required. Likewise, take of plants listed as rare under the California Native Plant Protection Act (CNPPA) are subject to CDFG approval. Impacts to state-listed species must be fully mitigated in order to satisfy CESA and CNPPA requirements.

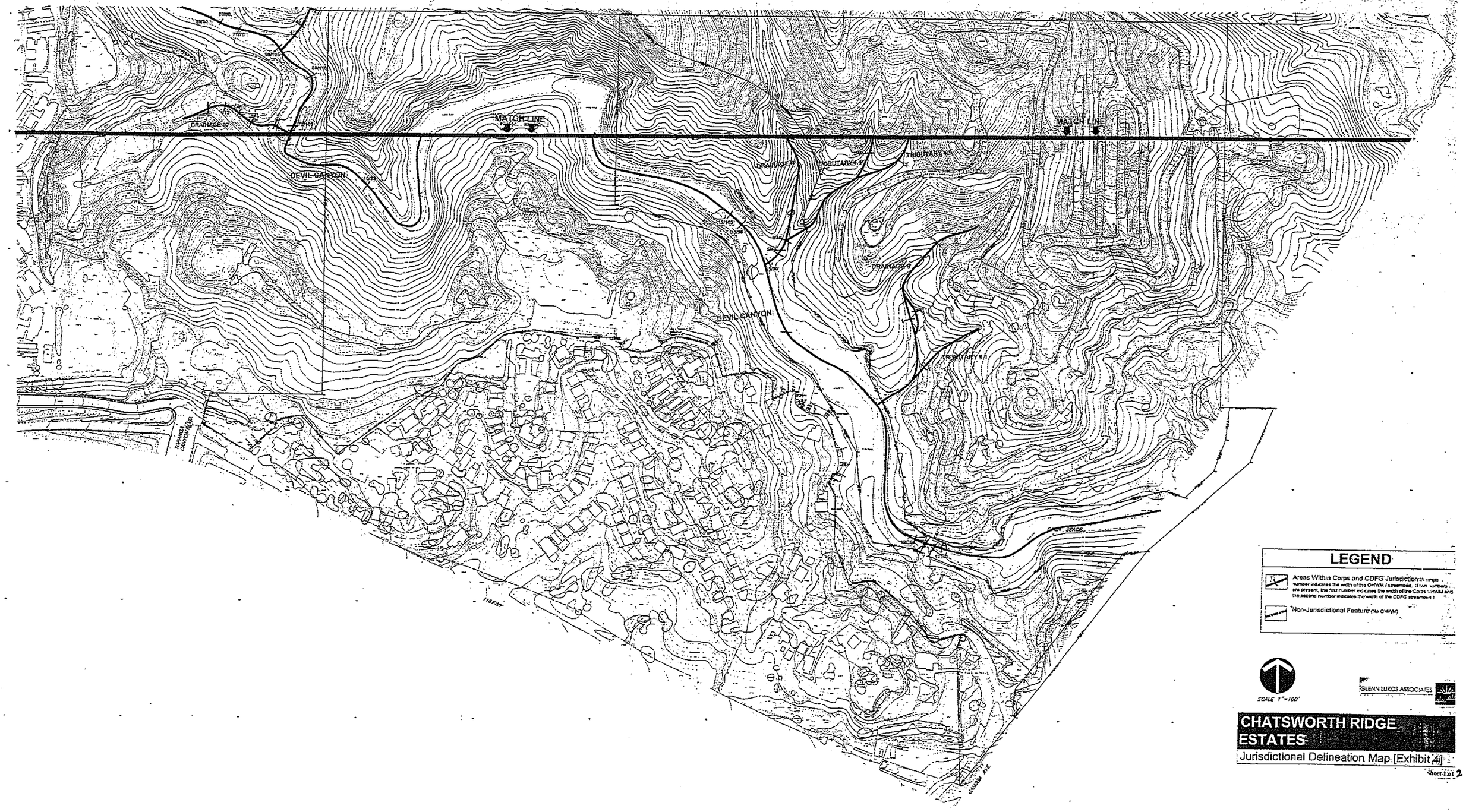
Pursuant to Division 2, Chapter 6, Sections 1600-1603 of the California Fish and Game Code, the CDFG regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake supporting fish or wildlife. CDFG defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation."

CDFG jurisdictional limits for rivers, streams, and lakes closely mirror those of the Corps. Exceptions are CDFG's exclusion of isolated wetlands (those not associated with a river, stream, or lake), the addition of artificial stock ponds and irrigation ditches constructed on uplands, and the addition of riparian habitat supported by a river, stream, or lake regardless of the riparian area's federal wetland status.

County of Los Angeles

Oak trees within the County of Los Angeles are protected by law. County Ordinances #88-0157, #93-0017, and #99-0018 makes the cutting, moving, removal, or encroachment into the protected zone of an oak tree without a permit a misdemeanor. The protected zone will mean that area within the dripline of an oak tree and extending there from to a point at least five feet outside the dripline, or 15 feet from the trunk(s) of a tree, whichever distance is greater.

The major thrust of the Oak Tree Policy (OTP) was established to recognize oak trees as significant, historical, aesthetic and valuable ecological resources, and as one of the most picturesque trees in Los Angeles County. In addition, the OTP intends to create favorable conditions for the preservation and propagation of this unique, threatened plant heritage, particularly those trees, which may be classified as "heritage oak trees". It is the intent of the OTP to maintain and enhance the general health, safety, and welfare by assisting in counteracting air pollution, and in minimizing soil erosion and other related environmental damages.



LEGEND

Areas Within Corps and CDFG Jurisdiction (A single number indicates the width of the OHWM / streambed. If two numbers are present, the first number indicates the width of the Corps OHWM and the second number indicates the width of the CDFG streambed.)

Non-Jurisdictional Feature (No OHWM)

SCALE 1"=100'

GLENN LUKOS ASSOCIATES

CHATSWORTH RIDGE ESTATES

Jurisdictional Delineation Map [Exhibit 4]

Sheet 1 of 2

LEGEND

Areas Within Corps and CDFG Jurisdiction (A single number indicates the width of the OHWM / streambed. If two numbers are present, the first number indicates the width of the Corps OHWM and the second number indicates the width of the CDFG streambed.)

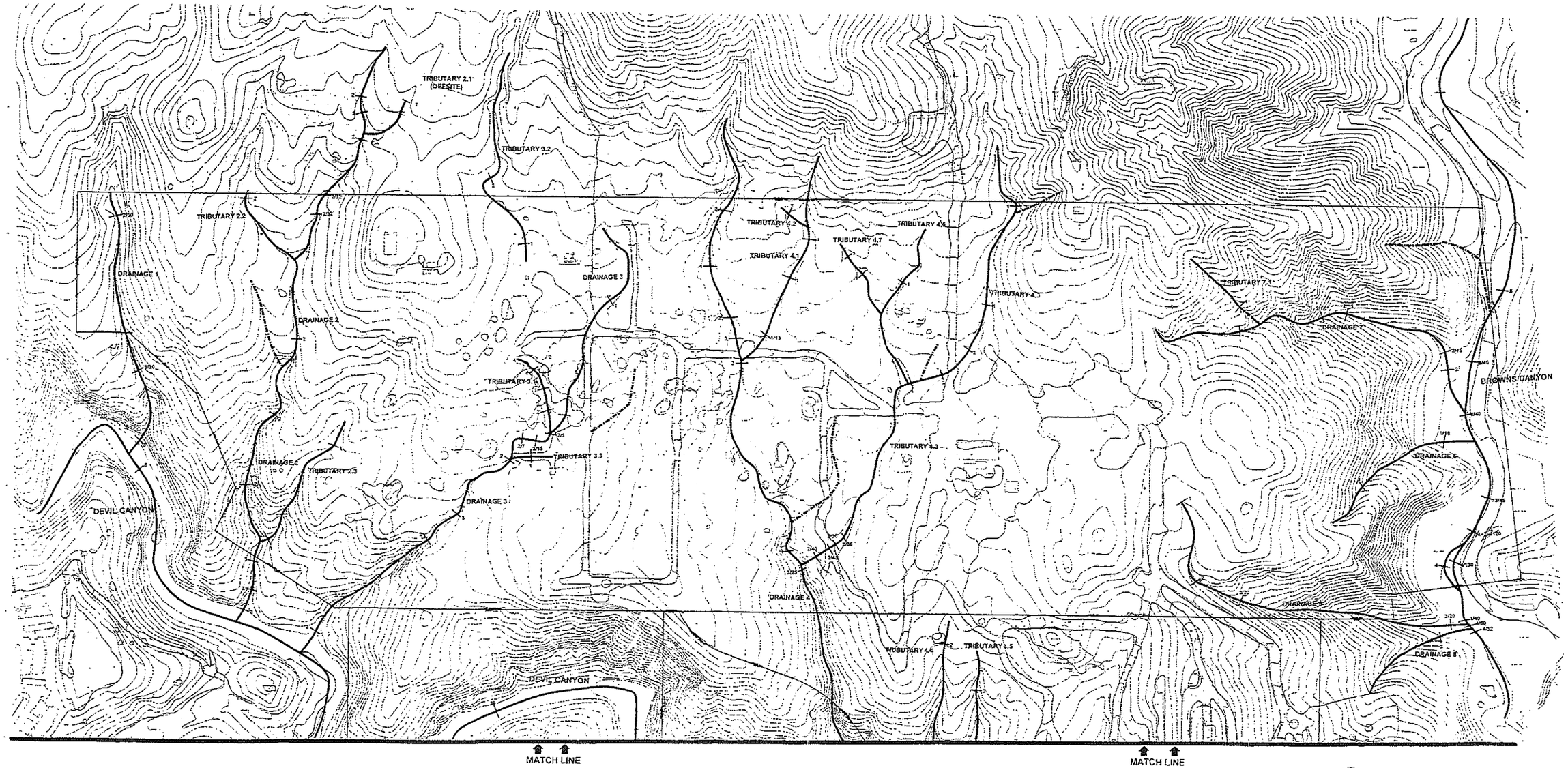
Non-Jurisdictional Feature (no OHWM)

GLENN LUKOS ASSOCIATES

CHATSWORTH RIDGE ESTATES

Jurisdictional Delineation Map [Exhibit 4]

Sheet 2 of 2



SCALE 1"=100

6.0 IMPACTS TO BIOLOGICAL RESOURCES

Impacts to biological resources were evaluated with respect to special status plant and wildlife species including associated habitats and streambeds/wetlands and their associated vegetation. Direct impacts involve the initial loss of habitats by grading and construction. Indirect impacts are related to disturbance from construction, such as dust and noise, or from activities of future residents.

6.1 SENSITIVE VEGETATION COMMUNITIES

Project impacts were calculated by Forma Systems, Inc., using a Geographic Information System (GIS) file of the existing biological resources superimposed on the Tentative Tract Map dated October 6, 2000. Fuel modification impacts were calculated from the GIS fuel modification file prepared by LNDG. The County of Los Angeles requires fuel modification for developed areas in the urban/wildland interface. In native tree-dominated vegetation communities, the lower branches of trees may be pruned, but trees would be left standing. Impacts to other vegetation communities are assumed to be total and permanent. Therefore, fuel modification impacts to tree-dominated communities will be assumed to be partial impacts.

The areas of impact and subsequent analysis presented herein apply only to the proposed plan and no other variants or alternatives. A total of 176.44 acres (153.90 acres of permanent impact and 22.53 acres of partial fuel modification impact) of on-site biological resources would be impacted by project implementation as summarized in Table 6.1 and discussed below. These impacts include all anticipated disturbance to the ground. The impacts may be permanent or temporary and include mass grading, remedial grading, road construction, fuel modification, and utility easements. Modifications to the grading plans described above may require revision of the analysis and conclusions presented in this report.

6.1.1 CHAMISE CHAPARRAL

Implementation of the proposed project would result in the loss of 137.68 acres of chamise chaparral due to grading activities and 20.73 for fuel modification. Chamise chaparral is

abundant in Los Angeles County with thousands of acres protected by Angeles National Forest. Chamise chaparral is not listed as a Rare Natural Community by CDFG. The loss of a total of 158.41 acres of chamise chaparral would not be significant.

Table 6.1
Vegetation Impact Summary

Vegetation Association	Total Acres	Grading Impacts (permanent)	Fuel Modification Impacts (partial)	Total Acres Impacted (permanent/ partial)
Chamise Chaparral	195.72	125.62	20.73	146.35
Coastal Sage Scrub/Non-Native Grassland	2.39	2.39	0.00	2.39
Coast Live Oak Woodland	5.73	0.68	0.62	1.30
Willow Woodland	9.88	0.02	0.01	0.03
Oak Woodland/Willow Woodland	0.58	0.00	0.00	0.00
Non-Native Grassland [a]	7.56	2.53	0.58	3.11
Eucalyptus Grove	0.18	0.01	0.00	0.01
Previously Graded or Developed	13.53	10.59	0.60	11.19
Total	**235.58**	**141.84**	**22.54**	**164.38**

[a] *Includes some developed areas*

Source: Glenn Lukos Associates, Inc., 2000.

6.1.2 COASTAL SAGE SCRUB/NON-NATIVE GRASSLAND

Implementation of the proposed project would result in the loss of 2.39 acres of coastal sage scrub due to grading activities. No loss to coastal sage scrub would result from fuel modification impacts. This vegetation covers a disturbed site previously occupied by homes, is small in size, lacks diversity, and does not support the coastal California gnatcatchers. Impacts to this area of coastal sage scrub vegetation would not be significant.

6.1.3 COAST LIVE OAK WOODLAND

Implementation of the proposed project would result in the loss of 0.68 acre of coast live oak woodland due to grading activities and fuel modification would disturb an additional 0.62

acres of oak understory but would not affect mature trees. Currently, there is a total of 353 oak trees (all of which are of the species *Quercus agrifolia*) and one heritage tree on the project site. Of this total, 65 oak trees would require removal in order to construct this project. None of the oak trees proposed for removal are of heritage status. Fuel modification would result in the removal of understory species, but would not result in the removal of oak trees. A detailed list of the inventory can be found in the report prepared by LNDG entitled *Oak Tree Survey Report* dated December 20, 2000. This habitat is considered as sensitive by the County of Los Angeles. Therefore, any loss of coast live oak woodland would be considered significant. However, with implementation of mitigation measures, impacts would be reduced to less than significant.

6.1.4 Willow Woodland

Implementation of the proposed project would result in impacts to 0.02 acres of willow woodland due to grading activities and 0.01 acre for fuel modification. An additional 0.30 acre of willow woodland was evaluated for impacts potentially resulting from two free-span bridge crossings of Devil Canyon and due to the height of the bridges, it was determined that shading would not be a measurable impact. All willow woodland on the site is under the jurisdiction of CDFG, and would be mitigated by habitat enhancement and/or replacement pursuant to Section 1603 of the California Fish and Game Code. Because the willow woodlands are under the jurisdiction of CDFG; and the habitat is considered sensitive in southern California, any impacts are potentially significant. With the mitigation measures for Corps and CDFG jurisdiction discussed in Section 6.1.1, direct impacts to 0.03 acre of willow woodland would be less than significant.

6.1.5 Oak Woodland/Willow Woodland

Implementation of the proposed project would not result in impacts from grading activities or regarding fuel modification to oak woodland/willow woodland on the project site.

6.1.6 NON-NATIVE/PREVIOUSLY DISTURBED

Implementation of the proposed project would result in impacts to 2.53 acres of non-native grassland due to grading activities and 0.58 acre for fuel modification. Non-native grassland is dominated by non-native annual species and is widespread throughout southern California, and therefore, impacts to non-native annual grassland would not be significant.

Implementation of the proposed project would result in the loss of approximately 0.01 acre of eucalyptus due to grading activtities. Eucalyptus is generally considered to be an undesirable and dangerous vegetation association in southern California. Blue gum is a destructive wildland weed, as listed by the California Exotic Pest Plant Council (CalEPPC List A-1). Red gum is afflicted by the red gum lerp psyllid (*Glycaspis brimblecombei*), a new exotic pest that has severely affected red gum trees on the project site. Both species of eucalyptus are afflicted with the longhorn boring beetle (*Phoracantha semipunctata*), a pest that tunnels through the trunks of trees, further stressing and weakening them. Eucalyptus would be removed from the project site to enhance the biological values of open space areas, reduce the risk of a canopy fire, and prevent further encroachment of eucalyptus into native habitats. The removal of eucalyptus grove would be a beneficial impact and less than significant.

Implementation of the proposed project would result in impacts to approximately 10.59 acres of previously developed areas due to grading activities and 0.60 for fuel modification. These areas currently provide little habitat for native species. Impacts to 11.19 acres of previously graded/developed areas would be less than significant.

6.2 GENERAL WILDLIFE & WILDLIFE MOVEMENT CORRIDORS

Many common animals, especially ground-nesting mammals and reptiles would be adversely affected by direct take and/or habitat loss associated with the implementation of the project. Under the proposed plan approximately 129.21 acres would remain open space, of which approximately 70.72 acres would be left undisturbed (i.e., existing conditions would not be impacted by grading or fuel modification), including riparian habitats associated with Devil Canyon. Large areas of chaparral are common to the north and west of the site and would continue to provide habitat for a variety of wildlife species. While it is acknowledged that the project would result in the loss of access to local foraging, cover, and water resources, wildlife

would likely continue to utilize open space portions of the site via Browns Canyon, upper Devil Canyon, and open space to the north. Therefore, the project would not have a significant effect on regional wildlife movement; and impacts on local wildlife populations would not be considered significant.

6.3 SENSITIVE PLANTS

The following sensitive plant species were not observed on the project site: Braunton's milkvetch, Nevin's barberry, Catalina mariposa lily, slender mariposa lily, San Fernando Valley spineflower, slender-horned spineflower, Santa Susana tarplant, Robinson's pepper grass, ocellated Humboldt lily, and Fish's milkwort. Therefore, no significant impacts would occur.

Plummer's mariposa lily was observed on the project site. Implementation of the project would result in direct impacts to approximately 61.02 acres of Plummer's mariposa lily habitat and up to 1,793 individuals identified on the site [Exhibit 5]. This species is endemic to southern California, but is found in fairly widespread habitats, including coastal sage scrub, chaparral, cismontane woodland, lower coniferous forests, and grasslands in Los Angeles, Ventura, Riverside, and San Bernardino counties. Because this species is listed on CNPS List 1B, impacts to an estimated 1,700 Plummer's mariposa lily individuals are considered significant.

Plummer's mariposa lily is present in low densities over large portions of the site. The large size of the Plummer's mariposa lily occurrence over a large portion of the site would be impossible to avoid. With the implementation of mitigation, the impacts are considered adverse due to the loss habitat quality and extent, but below a level of significance.

Southern California black walnuts were also identified scattered on the project site in Devil Canyon. However, implementation of the proposed project would not result in the removal of southern California black walnuts trees. No impacts to this species would be associated with project implementation.

6.4 SENSITIVE WILDLIFE

Implementation of the proposed project would not result in an impact to any state or federally listed wildlife species. The following sensitive wildlife species were not observed on the project site during protocol surveys: California red-legged frog, San Diego horned lizard, two-striped garter snake, southwestern willow flycatcher, coastal California gnatcatcher, and least Bell's vireo. Therefore, no significant impacts would occur.

Cooper's hawks were observed throughout the 1998 and 2000 field seasons and fledglings were commonly observed in lower Devil Canyon during field work in 2000. If construction should occur during the breeding season for migratory birds and/or raptors, there is a potential for impacts to an active nest. The loss of an active nest of a migratory bird protected pursuant to the Migratory Bird Treaty Act of 1918. The loss of a Cooper's hawk, or a common raptor species would be considered a potential violation of California Fish and Game Code Section 3513, 3503, and 3505.5 and would be considered as a significant impact. However, with avoidance of active nests under the direction of a qualified biologist, the impact would be reduced to less than significant.

Ashy rufous-crowned sparrows were observed in several locations on the site. This species is strongly associated with coastal sage scrub, grassland, and chaparral. Approximately 153.91 acres of associated habitat would be impacted resulting in impacts to an estimated one to two pairs of rufous-crowned sparrows. However, these pairs of rufous-crowned sparrows would likely be displaced to the open space areas north of the site. Thus, impacts would be considered adverse, but less than significant.

Western yellow warblers were observed sporadically during spring and fall migration. Although there is potential for this species to nest on the project site, nesting activity was not observed. Nearly all the willow woodland on the site will be preserved in perpetuity, thus the western yellow warbler will not be impacted by implementation of the project.

6.5 JURISDICTIONAL RESOURCES

Approximately 132,870 square feet (3.05 acres) of Corps jurisdiction was identified on the site,.Construction of the project would impact approximately 18,860 square feet (0.43 acre).

The waters of the United States proposed to be impacted are ephemeral and none of the impacted areas constitute jurisdictional wetlands. Table 6.2 summarizes impacts to Corps jurisdiction, Exhibit 4 depicts the locations and widths of the various drainages.

Because discharges associated with the project would result in minor impacts to ephermeral drainages subject to Corps jurisdiction, the Los Angeles District of the Corps has issued a conditional authorization for the project under a Nationwide Permit No. 26. This authorization, dated March 27, 2000 is valid until February 11, 2002 and is included as Appendix C.

Out of approximately 469,720 square feet (10.78 acres) of CDFG jurisdiction at the site, construction of the project as proposed would impact approximately 59,885 square feet (1.37 acres) of CDFG jurisdiction of which 42,095 square feet (0.97 acre) consists of vegetated riparian habitat composed of 0.03 acre of willow woodland, and 0.94 acre of coast live oak woodland. Table 6.3 summarizes impacts to CDFG jurisdiction, Exhibit 4 depicts the locations and widths of the various drainages and associated riparian habitat. Two bridge crossings of Devil Canyon would span the drainage and avoid direct impacts to jurisdictional areas.

Table 6.2
Corps Jurisdiction and Impacts

Location	Jurisdictional Area (square feet)			Impacts (square feet)		
	Wetlands	Drainages	Total	Wetlands	Drainages	Total
Drainage 1	0	1,150	1,150	0	0	0
Drainage 2	0	3,670	3,670	0	3,670	3,670
Drainage 3	0	4,355	4,355	0	4355	4,355
Drainage 4	0	12,130	12,130	0	7,630	7,630
Drainage 5	0	1,505	1,505	0	955	955
Drainage 6	Located off-site					
Drainage 7	0	985	985	0	690	690
Drainage 8	Located off-site					
Drainage 9	0	1,560	1,560	0	1,560	1,560
Drainage 10	0	760	760	0	0	0
Devil Canyon	106,755	0	106,755	0	0	0
Total	**106,755**	**26,114**	**132,870**	0	**18,860**	**18,860**

Source: Glenn Lukos Associates, Inc., 2000.

Table 6.3
CDFG Jurisdiction and Impacts

Location	Jurisdictional Area (square feet)			Impacts (square feet)		
	Riparian	Non-Riparian	Total	Riparian	Non-Riparian	Total
Drainage 1	28,500	0	28,500	0	0	0
Drainage 2	2,240	3,530	5,770	2,240	3,530	5,770
Drainage 3	1,290	4,035	5,325	1,290	4,035	5,325
Drainage 4	59,475	7,055	66,530	32,925	7,055	39,980
Drainage 5	5,640	625	6,265	5,640	625	6,265
Drainage 6	Located off-site					
Drainage 7	0	985	985	0	985	985
Drainage 8	Located off-site					
Drainage 9	0	1,560	1,560	0	1,560	1,560
Drainage 10	1,200	140	1,340	0	0	0
Devil Canyon	348,820	4,625	67,575	0	0	0
Total	447,165	22,555	469,720	42,095	17,790	59,885

Source: Glenn Lukos Associates, Inc., 2000.

6.6 INDIRECT IMPACTS

Because the Chatsworth Ridge Estates project is near existing or approved developments to the south, east, and west, portions of the proposed project site have been and continue to be impacted by: (1) past and present residential development and fuel modification; (2) equestrian development and use; (3) unauthorized informal recreational use and access by neighbors; and (4) planting/escape of non-native species, resulting in adverse effects to biological resources. Implementation of the project would result in less incidence of certain indirect effects and increased incidence of others.

Indirect impacts would be associated with all phases of a development project, beginning at the time of initial grading and construction, and continuing in perpetuity. These impacts may occur as a single event, or can interact cumulatively (discussed below) to adversely affect native wildlife, plants, and their habitats.

Increased recreational and residential use can contribute to increased indirect impacts to native plants and vegetation communities. These impacts include further risk of disturbance resulting from vehicle use and human-caused incidences such as fire. Disturbance tends to drive native communities toward a higher percentage of non-native, weedy species, affecting the plant and animal makeup and distribution within a given area. Non-native plants used in landscaping or in livestock feed can escape and degrade natural communities.

Unauthorized recreational or transitory use of the site after buildout would be more controlled than at present; however, not all such recreational or transitory uses can always be controlled. These uses are associated with the following impacts to wildlife (Knight and Gutzwiller 1995):

- Loss of wildlife habitat (cover, foraging, breeding sites) due to human access into vegetated areas;
- Loss of wildlife habitat from destruction of understory/forest floor vegetation resulting from being run over/torn up by mountain bikes, or horses;
- Loss of individuals from being run over or from destruction of aestivation sites (especially important for ground-nesting species);
- Disturbance to or destruction of unique/sensitive/rare habitat types (e.g., riparian, springs, habitat links, corridors, etc.). Aquatic habitats are especially vulnerable and, seem to be especially attractive to drivers of all types of vehicles who seek out water to ford;
- Soil compaction/disturbances and erosion resulting in a loss of vegetative productivity;
- Destruction of food, cover, and breeding habitats;
- Increased zone of displacement and the associated impacts of flight responses;
- When components of soil, vegetation, or aquatic resources are changed, food supply, food availability, and shelter characteristics are impacted. Impacts to food and shelter ultimately affect behavior, survival, reproduction, and distribution of individuals, and wildlife communities and populations; and
- Adding to the acreage of unvegetated areas and disturbance zones, leaving less total acreage of undisturbed natural areas.

Within or immediately adjacent to developed areas, wildlife can be disturbed by light and noise, and may be killed by vehicles, cats, dogs, or humans. Domestic cats are particularly skilled predators, taking mammals, reptiles, amphibians, and birds. Generalist animals such as coyotes, opossums, skunks, raccoons, ravens, and starlings can benefit from human settlement,

but other less-adaptable species rarely persist in an area after it is developed. Proposed open space areas, such as Devil Canyon, have sufficient cover and isolation from many of the indirect effects of development to support a suite of small wildlife species. Other areas, particularly small, open space "islands" or "edges" next to or surrounded by development, may be subject to more severe indirect effects. The project would limit access to the open space to the north and west.

The effects of night lighting on wildlife utilizing the adjacent open areas of the project site and off site are of potential concern. Streetlights on the project site have been designed to minimize light-related disturbance to wildlife. Light poles will be 14 feet high instead of 26 feet high and all streetlights potentially affecting open space areas will be fitted with baffles to eliminate direct shine into open space areas. While there will be a minor amounts of light coming from homes, vehicles, and other sources, these light sources would likely have little adverse effect on open space habitats, especially high-quality habitat in canyons below the development.

The project proposes to remove eucalyptus and other non-native plant species, include non-invasive or native landscaping in the project landscaping plan, design multi-use trails, channel public access into predetermined and suitable trails while restricting access to others, and provide for regular management, maintenance, and oversight of the open space areas. Therefore, indirect effects are considered adverse, but less than significant.

The proposed project could have a moderate impact on surface water quality during the construction period. A storm water pollution prevention plan will be in place to direct prevention and/or minimization of storm runoff from the work site during construction and thereby mitigate that impact. However, an accidental or otherwise unforeseen discharge could cause a temporary increase in suspended sediments and/or turbidity, resulting in impacts to aquatic organisms. For example, the discharge of sediments could affect developing amphibian embryos by smothering (Sweet 1992) and reduce available pool habitat (reductions in water depth) for egg-laying and larvae. Increased urban runoff would likely result in increased growth of plants in low-lying areas. In many instances increased vegetative growth could potentially result in a potentially beneficial increase of native riparian and/or wetland vegetation and a shift toward longer periods of flow in the streambeds. If increased flows in the future contribute to an increase in non-native vegetation, native plant and animal communities would likely be adversely impacted.

After construction, sediment runoff from the site is expected to be less than pre-project conditions due to a reduction in erodible surfaces on the site. Storm water runoff is expected to undergo long-term water quality changes following project buildout and transformation into an urban setting. A Standard Urban Stormwater Mitigation Plan (SUSMP) shall be developed to ensure that pollutants from runoff would not lower the surface water quality of water courses on the site and downstream. The runoff will contain increased concentrations of nitrogen and phosphorus because of the use of fertilizers by homeowners. Oil and grease concentrations would increase because of motor vehicle use. Increased loading of organic material and the associated biological oxygen demand (BOD) are also likely. Bacteria, including the coliform group may also exhibit increased concentrations. These pollutants would slightly lower the water quality of watercourses on the site and downstream. However, these impacts would only be expected infrequently during episodes of storm water runoff from the project site and are not likely to result in significant impacts to biological resources. A Stormwater Pollution Prevention Plan (SWPPP) will be in place to direct prevention and/or minimization of stormwater runoff from the work site during construction and thereby mitigate that impact.

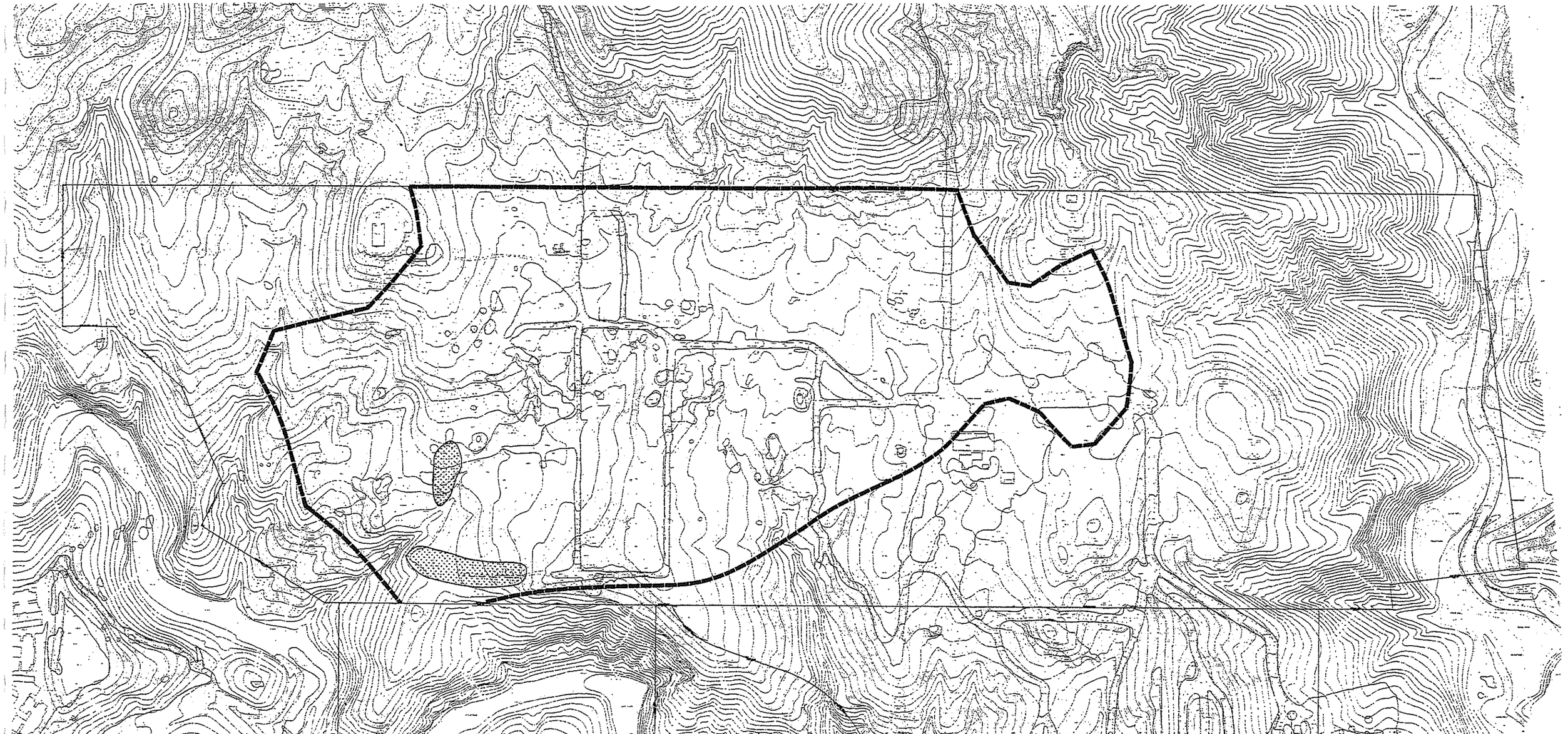
Nuisance flows will likely carry the largest load of pollutants. Where nuisance flows are directed to wetlands, swales, canyons, or other areas where the nuisance flows would percolate, evaporate, or be taken up by wetland/riparian vegetation, impacts to wildlife and water quality would be considered minor. In major storm events, nuisance flows would mix with the storm flows and would discharge in a diluted form. Impacts resulting from urban nuisance flows are considered to be below a level of significance. As stated above, a Stormwater Pollution Prevention Plan (SWPPP) will be in place to direct prevention and/or minimization of stormwater runoff from the work site during construction and thereby mitigate that impact.

6.7 CUMULATIVE IMPACTS

The proposed project is within a rapidly urbanizing area near protected public lands. The approved Porter Ranch development to the east will likely result in the loss of approximately 1,500 acres of open space and native habitats. The Indian Springs development to the west is less dense, but has resulted in the modification of similar habitats to urban uses. Impacts to Corps and CDFG jurisdiction on other sites are subject to mitigation requirements.

The proposed project would not contribute to a cumulative loss or degradation of Corps and CDFG jurisdiction, sensitive vegetation associations or habitats, or federally- and/or state-listed plants or animals. In addition, local open space, particularly in the protected portions of the project site and elsewhere in the vicinity of the Santa Susana Pass, will preserve common wildlife species and vegetation associations with the likely result that most, if not all, will remain common in the region. However, the project would result in adverse but not significant impacts to common wildlife species and ashy rufous-crowned sparrow, and adverse but not significant cumulative impacts to Plummer's mariposa lily. The applicant is proposing to dedicate a strip of land along the northern portion of the project site to the Santa Monica Mountains Conservancy, which will effectively restrict any future access to, and development of areas north of the project site.

OPEN SPACE
118 FWY
SCALE 1"=100'
LEGEND
Plummer's Mariposa Lily Population
Dense Plummer's Mariposa Lily
CHATSWORTH RIDGE ESTATES
Plummer's Mariposa Lily Locations
SHEET 1 OF 2
GLENN LUKOS ASSOCIATES
Exhibit 5f



LEGEND

- Plummer's Mariposa Lily Population
- Dense Plummer's Mariposa Lily

SHEET 2 OF 2

CHATSWORTH RIDGE ESTATES

Plummer's Mariposa Lily Locations

GLENN LUKOS ASSOCIATES

[Exhibit 5]

7.0 MITIGATION MEASURES

7.1 SENSITIVE VEGETATION COMMUNITIES

As stated in Section 6.1, implementation of the proposed project would not result in significant impacts with regard to the following sensitive vegetation communities: chamise chaparral, coastal sage scrub, oak woodland/willow woodland, or non-native/previously disturbed areas. However, significant impacts could occur with regard to coast live oak woodland and willow woodland. Therefore, mitigation measures have been included to reduce impacts to these sensitive communities to less than significant.

The applicant is proposing, as a component of the mitigation program to reduce impacts to less than significant level through the acquisition of a minimum 60 acre parcel of undisturbed natural open space in the immediate vicinity of the project site. This parcel will be dedicated to a public resource protection agency prior to initiation of project grading operations and will be located either adjacent to the project site or adjacent to existing undisturbed open space. The biological composition of the mitigation parcel shall have, at a minimum, the required amount of high quality habitat to meet mitigation ration requirements as outlined below and in many cases will provide in excess of required mitigation requirements.

With the exception of mitigation measures addressing onsite preservation or habitat creation, the following mitigation measures will be primarily implemented on the off-site mitigation parcel and are recommended to ensure biological resource impacts would be less than significant.

Finally, a Storm Water Pollution Prevention Plan (SWPPP) will be in place to direct prevention and/or minimization of stormwater runoff from the work site during construction to prevent/minimize impacts to riparian/wetland vegetation and associated species.

7.1.1 COAST LIVE OAKS

As development occurs around the preserved oak trees, they will become dependent upon the future residents for their care and preservation. All construction activities will be conducted in accordance with the established preservation program. This program was developed to

control the impacts to each tree and to protect them from any unnecessary and unscheduled damage. All oak tree mitigation techniques will be observed on-site by a qualified arborist. The following discussion of recommendations, if followed, should ensure that the saved oak trees would remain as valuable assets to the community.

Tree Protection

The trees within 50 feet of proposed grading shall be fenced at their "protected zones", or at the location of their approved encroachment, with a minimum four foot high chain-link fence, or an acceptable alternative, before any site grading commences. No equipment storage, debris drip, etc. shall take place within any tree-protected zone. This fence shall not be moved and/or removed without certification from a qualified arborist and approved by the Los Angeles County Forester. Any brush clearance within the dripline areas will be completed by handwork only.

Dead Wood Removal and/or Pruning (*only if needed*)

Dead wood removal is the removal of dead wood from within the tree, while structural pruning for clearance and/or safety pruning of hazardous limbs should only be done if approved by the Los Angeles County Forester. All pruning shall be done by a qualified arborist on an "as needed basis" and is subject to the approval by the Los Angeles County Forester. Pruning wounds shall not be sealed unless required by the Los Angeles County Forester. Climbing "gaffs" shall not be used by any tree climber except to reach an injured climber or when removing a tree.

Water and Fertilization (*only if needed*)

The water and fertilization frequency shall be done on an "as needed basis" and is subject to the approval of the Los Angeles County Forester. Native oak trees are in a dormant state during the summer months and do not require regular or constant watering (or fertilizing). Watering is normally contemplated only following long periods of extreme drought. Fertilization of these native oak trees may be detrimental in general drought conditions. The addition of fertilizer into a maintenance program may promote temporary growth "flushes" at a time when the tree would normally be maintaining regular growth or to even reduce the number of green leaves present. The greater amount of foliage the tree has, the higher the needs of watering requirements may occur.

Disease and Pests (*only if needed*)

During all phases of construction, the health of the trees shall be monitored by a qualified arborist for signs and symptoms of disease. These problems, if they arise, shall be remedied as prescribed. If bees are encountered and they become a problem in any on-site oak tree, they shall be removed by a professional beekeeper.

Grading Within the Protected Zone

No grading shall take place within the oak tree protected zones without the approval of the Los Angeles County Forester. If grading is approved within the protected zone, a qualified arborist shall be present during all work. This shall initially be done by handwork. All pruned roots shall consist of clean-cut surfaces at a 90 degree angle and shall not be sealed unless approved by the Los Angeles County Forester.

Other Considerations

The leaflet (P09-88) entitled "Oak Tree Care and Maintenance," as prepared by the Los Angeles County Fire Department – Forestry Division should be utilized as reference material. Grade stakes or anything else shall not be nailed to any native oak tree. Natural leaf mulch within any native oak dripline shall not be removed unless absolutely necessary. Herbicides shall not be applied within the protected zone of any native oak tree. The dust accumulation on the tree's foliage (from nearby construction) will be hosed off during construction, under the advice from a qualified arborist.

Oak Tree Mitigation Measures

Oak tree replacement mitigation shall consist of a minimum 130 15-gallon oak specimen trees (2:1 replacement with 15 gallon trees) to be planted on the project site or offsite mitigation parcel as replacement trees for the required 65 oak tree removals (none of which are heritage oak trees). In addition, 2.6 acres of coast live oak habitat will be provided on-site or off-site, representing a 2:1 replacement for the loss of habitat value associated with the impacted oak habitat. Replacement trees shall be properly maintained for a period of two years and replaced by this project developer if fatality occurs during that period. The landscape architect/designer for this project shall design into the "native undisturbed landscape area" with these replacement oak trees. The irrigation system to water these newly planted

replacement trees shall be compatible with the watering requirement of the project's indigenous oak trees. Any County approved work within the protected zones of the saved oak trees, including pruning, shall be under the observation of a qualified arborist. Copies of the final *Oak Tree Report* and the Los Angeles County approved Oak Tree Permit shall be maintained on-site during all site construction.

Finally, All eucalyptus shall be removed from open space portions of the project site to enhance the biological values of open space areas, reduce the risk of a canopy fire, and prevent further encroachment of eucalyptus into native habitats. To avoid impacts to nesting birds such removal shall be implemented outside of the avian nesting season from March 15th to August 15th.

7.1.2 COASTAL SAGE SCRUB

Although impacts to 2.39 acres of degraded coastal sage scrub are not considered significant, the applicant proposes to mitigate the loss of this habitat which is utilized by wildlife through off-site preservation, on the mitigation parcel of a minimum of 4.78 acres of coastal sage scrub or coastal sage scrub/chaparral ecotone habitat.

7.1.3 WILLOW WOODLAND

The applicant shall mitigate impacts to 0.03 acre of on-site willow woodland based on recommendations of the project biologist (see Appendix G of this Draft EIR) and to the satisfaction of the CDFG. This mitigation measure will be implemented on the mitigation parcel with 0.12 acre (representing a 4:1 ratio).

7.2 GENERAL WILDLIFE AND WILDLIFE MOVEMENT CORRIDORS

Although as stated in Section 6.2, project implementation would not result in significant impacts to regional wildlife movement or local wildlife populations, the following mitigation measure is recommended to ensure that impacts would remain less than significant. Light poles shall be 14 feet high instead of 26 feet high and all streetlights potentially affecting open space areas shall be fitted with baffles to eliminate direct shine into open space areas.

7.3 SENSITIVE PLANTS

As stated in Section 6.3 no significant impacts would occur to the following sensitive plants: Braunton's milkvetch, Nevin's barberry, Catalina mariposa liy, slender mariposa lily, San Fernando Valley spineflower, slender-horned spineflower, Robinson's pepper grass, ocellated Humboldt lily, and Fish's milkwort.

It has been determined that significant impacts would occur to Plummer's mariposa lily with implementation of the proposed project. Therefore, the following mitigation measures, developed by Envicom Corporation in a detailed mitigation program are recommended to reduce impacts to less than significant.[1]

Impacts to Plummer's mariposa lily shall be mitigated through a 2:1 replacement of impacted individuals for a total of 4,000 for an impact of 2,000 and an additional 1:1 replacement through preservation. Relocated Plummer's mariposa lily will be planted on the mitigation parcel. A qualified biologist/botanist shall oversee all aspects of this mitigation plan including bulb and seed collection and transplanting, per the recommendations of the project biologist (included in Appendix G of this Draft EIR). Seed collection shall occur prior to collection of bulbs from all plants within the development envelope. The Plummer's mariposa lily mitigation plan shall be reviewed and approved by the Los Angeles County Department of Regional Planning, prior to issuance of grading permits. Maintenance of relocated Plummer's mariposa lilies shall be monitored for a period of five years. Annual monitoring reports shall be submitted to CDFG and the Los Angeles County Department of Regional Planning. The Plummer's mariposa lily salvage, propagation and transplanting program is designed to retrieve a sizable portion of the on-site bulbs for use in both on-site and off-site habitat enhancement. Another component of this effort is researching and documenting methods that lead to successful long-term establishment of transplanted bulbs. This includes bulbs collected and transplanted directly to a site within the same year, stored bulbs, and bulbs grown from seed in a nursery. The salvage program will consist of the following components:

- Prior to grading, seed shall be collected and all flagged/mapped bulbs, and any uncovered during removal shall be salvaged. A minimum of 4,000 bulbs shall be collected (this represents a 2:1 replacement ratio). If 4,000 bulbs do not inhabit the project site, all bulbs found shall be collected.
- All bulbs shall be stored at a qualified native plant nursery.
- 40 percent of the bulbs shall be used for transplantation to on-site and off-site preserved habitat in the fall/winter immediately following salvage.

[1] Envicom Corporation, 2001. *Chatsworth Ridge Estates Mitigation Plan, Plummer's Mariposa Lily and Sensitive Biological Resources.*

- 20 percent of the bulbs shall be propagated at a qualified native plant nursery to collect seed for starting new plants for transplantation to preserved areas both on-site and off-site.
- 40 percent of bulbs shall be stored for a period of five (5) years for annual or bi-annual planting in preserved areas, as determined by a qualified biologist.
- All transplanted bulbs shall be maintained, including weed control.
- Monitoring and reporting shall be conducted.

7.4 SENSITIVE WILDLIFE: PRECONSTRUCTION MITIGATION MEASURES

As stated in Section 6.4 no significant impacts would occur to the following sensitive wildlife: California red-legged frog, San Diego horned lizard, two-striped garter snake, ashy rufous-crowned sparrow, western yellow warbler, southwestern willow flycatcher, coastal California gnatcatcher, and least Bell's vireo. Also; while project impacts do not require compensation for impacts to the San Diego horned lizard or the ashy rufous-crowned sparrow, the proposed acquisition of off-site habitat as mitigation for the Plummer's mariposa lily would directly benefit these two still-common species.

Prior to any construction activity, the applicant shall have a qualified biologist survey the project site for the presence of any occupied raptor nests, including Cooper's hawks as protected by the Migratory Bird Treaty Act. If such a nest is found, it will be avoided and protected until nesting activity has ended to ensure compliance with Section 3503.5 of the California Fish and Game Code based on the recommendations of the project biologist (see Appendix G of this Draft EIR). During nesting (March 15th to August 15th) occupied nests shall be avoided through implementation of a 300 foot buffer zone for nesting bird and a 500 foot buffer zone for nesting raptors. Should construction activities encroach into these identified buffer zones, noise barriers shall be constructed to minimize noise impacts to the birds and ensure that noise levels do not exceed 65db CNEL.

7.5 JURISDICTIONAL RESOURCES

Impacts to Corps jurisdiction total 0.43 acre of ephemeral streambed and includes no impacts to jurisdictional wetlands. Impacts to CDFG jurisdiction totals 1.37 acres of which 0.97 acres consist of vegetated riparian habitat consisting of 0.03 acre of willow woodland habitat, 0.94

acre of coast live oak forest and 0.40 acre of unvegetated ephemeral channel. The applicant shall be responsible for the development of a detailed mitigation plan in accordance with the Corps' Mitigation and Monitoring Guidelines and would include those measures required by CDFG. The objective of the mitigation plan is to ensure no net loss of habitat values from the project. The plan would typically include the following elements:

- Responsibilities and qualifications of the personnel to implement and supervise the plan
- Plant material seed mixtures
- Site preparation and planting implementation
- Performance criteria
- Monitoring and maintenance plan
- Long term preservation of the site

This mitigation monitoring plan shall be subject to approval by the Corps, CDFG, the Regional Water Quality Control Board (RWQCB), SMMC, and Los Angeles County. However, if unforeseen circumstances require the use of alternate on-site of off-site planting locations, these locations may be changed pursuant to the recommendations of the project biologist, the City and responsible agencies. If an annual performance criterion is not met for any portion of the mitigation project in any year, or if the final success criteria are not met, the applicant will prepare an analysis of the cause(s) of failure and, if determined necessary by the Corps and/or CDFG, propose remedial action for approval. The applicant will fund planning, implementation, and monitoring of any contingency procedures that may be required to achieve mitigation goals. The applicant will be responsible for implementing and monitoring any contingency procedures. The applicant may assign these responsibilities to an appropriate contractor, but will retain ultimate responsibility for implementing and monitoring any contingency procedures.

Planting Plan

To the extent that habitat creation/revegetation is included as a component of the mitigation program, it will incorporates willow woodland and coast live oak woodland as a reflection of the project site's existing vegetation communities. The areas designed to mitigate for impacts to Corps and CDFG jurisdiction shall be planted with red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), Fremont cottonwood (*Populus fremontii*), western sycamore (*Platanus racemosa*), and mule fat (*Baccharis salicifolia*). Understory species shall include California rose (*Rosa californica*) and California

blackberry (*Rubus ursinus*). Table 7.1 provides a list of the container stock required for this portion of the planting.

Plants in one-gallon cans shall be the preferred container stock size due to their ability to become established quickly. All container stock except for the willows and mule fat shall be inoculated with mycorrhizae or will be planted with mycorrhizal inoculum. Mycorrhizae are specialized fungi found on plant roots. A symbiotic relationship exists between plant roots and mycorrhizae wherein the plants benefit from the increased ability to take up nutrients and withstand drought when mycorrhizae are present. This relationship is essential to the growth rate, well-being, and longevity of most native plant communities. Plant utilization of mycorrhizal fungi markedly increases the success of revegetation on disturbed or degraded lands. All appropriate container-grown plants, except those known to be non-host species shall be inoculated with mycorrhizal fungi before delivery to the job site.

Seeded species include ragweed (*Ambrosia psilostachya*), mugwort (*Artemisia douglasiana*), Table 7.1 provides a list of the seed required for this portion of the planting. The seeds shall be hydroseeded or raked into the upper one-inch of the soil surface and mycorrhizal inoculum shall be incorporated during the seeding process because mycorrhiza is likely scarce or absent from soils dominated by non-native species.

Container stock shall be laid out in a natural configuration within planting areas. Prior to plant installation, individual planting locations in the field shall be flagged with pin flags by the project monitor. The flags shall be color coded by species. A list of species referencing their color code shall be provided to the installation contractor by the project monitor prior to plant installation.

Irrigation Plan

A temporary irrigation system placed on grade shall be utilized to supplement natural rainfall, stream flows, and ground water. The system shall provide overhead application of water using spray heads in order to reduce the potential for erosion. Following the establishment of the planted and seeded species for two years and the passage of one summer without irrigation, the irrigation system shall be removed at the discretion of the project monitor.

Table 7.1
Plant Palette for Mitigation for Impacts to Corps and CDFG Jurisdiction

Botanical Name	Common Name	Stock Type	Plant Spacing	No./Acre	Total Plants [a]
WILLOW WOODLAND (up to 0.15 ac)					
Salix lasiolepis	arroyo willow	1-gal	10' o.c.	262	TBD
Salix laevigata	red willow	1-gal	10' o.c.	262	TBD
Populus fremontii	Fremont cottonwood	1-gal	12' o.c.	50	TBD
Populus balsamifera ssp. *trichocarpa*	black cottonwood	1-gal	12'o.c.	30	TBD
Baccharis salicifolia	mule fat	1 gal.	7' o.c.	350	TBD
Platanus racemosa	western sycamore	deep 1-gal	15' o.c.	25	TBD
OAK WOODLAND (up to 2.6 ac)					
Quercus agrifolia	coast live oak	1-gal	12' o.c.	349	TBD
UNDERSTORY (2.6 ac)					
Rosa californica	California rose	1-gal	6' o.c.	350	TBD
Rubus ursinus	California blackberry	1-gal	6' o.c.	350	TBD
Seed		Lbs./Acre	Total Lbs.	Comments	
Ambrosia psilostachya	ragweed	3	12	–	
Artemisia douglasiana	mugwort	4	15.5	–	
Rosa californica	wild rose	2	7.75	3 mos. cold stratification in refrigerator; keep moist in sealed container; check for germination	

a *An additional ten percent of each species (above and beyond the figures shown here) will be ordered and available on hold at the nursery charged with providing plant material for this project. This availability will be necessary for the first six months of project life.*

Source: Glenn Lukos Associates, Inc., 2000.

Maintenance Activities

The purpose of this program is to ensure the success of the mitigation planting. Maintenance will occur over the life of the project. The applicant shall be responsible for financing and carrying out maintenance activities. The applicant may assign the maintenance responsibilities to an appropriate contractor, but will retain ultimate responsibility for maintenance of the mitigation site. As the installation is completed the project monitor shall schedule a meeting

with key members of the landscape maintenance crew in order to identify proper maintenance procedures. The following tasks shall be performed as general maintenance duties:

- Contractor Education: The contractor must schedule a meeting with the project monitor previous to the start of the maintenance period in order clearly identify proper maintenance procedures.
- Irrigation: The irrigation system shall be checked periodically by the maintenance contractor in order to ensure its proper functioning and to check for damage by vandals or wildlife. Broken or poorly functioning parts shall be replaced immediately.
- Weeding: The mitigation plantings shall be maintained free of weeds through the five year monitoring period. Weed species known to not present a serious threat to the successful establishment of the desired native species may be left in place, but only if their presence does not preclude the ultimate establishment of the native species over at least 80-percent of the mitigation site.
- Plant Replacement: All plants terminally diseased or dead, as determined by the project monitor, shall be replaced within two weeks by the installation contractor for a 120-day period after installation, and thereafter shall be replaced as required by the project monitor on an annual basis. Unless substitutions are approved by the project monitor, the replacement plants shall be of the same species, spacing and size as specified for plants being replaced. Any substitutions shall be reported in the annual report (see below).
- Pruning and Staking: Pruning and staking of trees and shrubs is not necessary. Dead wood should remain where it has fallen, it plays an important role in habitat creation and in soil formation.
- Pest Control: Plants should be monitored for herbivory and diseases. Biological control of insect pests is preferred and badly damaged plants should be removed to prevent spread of the problem.
- Weekly weed control maintenance shall be necessary for at least the first six months of project life. Uncontrolled weeds would quickly out-compete many of the desired native plant species. As the first year passes into the summer and fall the weed problem is expected to decrease, and, depending on the health and spread of the desired plants, the weed maintenance schedule shall likely decrease the second year of project life.

Monitoring Plan

Habitat creation or revegetation areas, to the extent that they are incorporated into the mitigation program, will be monitored for five years. Monitoring will consist of routine site visits to inspect the functioning of the irrigation system and the health of the container stock and seed plantings. Percent coverage of the slopes will be determined each year on an annual

basis. If percent coverage does not satisfy the following percent coverages at the end of each year of monitoring, then remedial measures may be taken in order to ensure that the following year's percent coverage goal is satisfied: Year One - 20%, Year Two - 35%, Year Three - 50%, Year Four - 65%, and Year Five - 80%. If a portion of the mitigation areas attains the fifth-year percent coverage criteria before the end of the fifth year and after the plantings have survived at least one summer without supplemental irrigation, then the applicant may request that the remaining portion of the monitoring period be waived.

Monitoring will be performed by the project monitor. The success of mitigation is usually measured in percent coverage by target species. While a fully successful mitigation plan might be viewed as one that results in 100-percent coverage, such coverage is unlikely. Natural habitats rarely exhibit 100-percent coverage, but rather include a considerable proportion of open spaces. While this monitoring program uses percent coverage criteria, it is noted that determination of successful coverage is expected to be relative to other similar native habitats typical of the region.

Percent cover determinations will be made using standard point-intercept transect measurements or another suitable visual method. Scaled aerial photography may also be employed in order to approximate percent cover and overall progress of the plantings.

At the end of each of the five monitoring period growing seasons, an annual report will be prepared for submittal to the Corps, RWQCB, CDFG, and Los Angeles County. These reports will assess both attainment of yearly target criteria and progress toward final success criteria. These reports will include the following:

- A list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year.
- A copy of the Corps permit, Water Quality Certification, Streambed Alteration Agreement and any attachments including Special Conditions and subsequent Letters of Modification, Amendments or Extensions.
- An analysis of all qualitative monitoring data.
- Copies of monitoring photographs.
- Maps identifying monitoring areas, transects, planting zones, etc. as appropriate.

Routine monitoring will be conducted once each month for the first twelve months following project installation and then quarterly thereafter. Field work for the annual reports will be

conducted on or about the anniversary of the completion of installation for five years. The annual report will be submitted within one month of the completion of field surveys.

Completion of Mitigation

When the initial monitoring period is complete, and if the applicant believes final success criteria have been met, the applicant will notify the Corps and the CDFG when submitting the annual report that documents this completion. Following receipt of the report, the applicant will, at the request of the Corps or the CDFG, provide access and guidance through the project site to confirm the adequate completion of the mitigation effort.

7.6 SIGNIFICANCE AFTER MITIGATION

After implementation of the aforementioned mitigation measures, the project would not result in significant impacts to Corps/CDFG jurisdiction, coast live oak woodland, willow woodland, or Plummer's mariposa lily. In addition, although there would be no significant impacts to the two-striped garter snake, western yellow warbler, ashy rufous-crowned sparrow, common wildlife, or wildlife movement corridors, each of these would be directly benefited by the proposed off-site acquisition of high quality oak riparian and adjacent upland habitat.

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APPENDIX A

FAUNAL AND FLORAL COMPENDIA

APPENDIX A
FAUNAL AND FLORAL COMPENDIA
INTRODUCTION TO FLORAL AND FAUNAL SURVEY

Floral taxonomy used in this report follows the Jepson Manual (Hickman 1993) and, for sensitive species, the California Native Plant Society's Rare Plant Inventory (5th Edition) (Skinner and Pavlik 1994). Additional common plant names are taken from Munz (1974), Beauchamp (1986), and Roberts (1998). Vertebrates identified in the field by sight, calls, tracks, scat, or other signs are cited according to the nomenclature of Collins (1997) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

FAUNAL COMPENDIUM[1]

LEGEND

STATUS

+ Presence of animals noted by direct sighting, call identification or observation of tracks, scat or other signs.

* Non-native

TERRESTRIAL VERTEBRATES

AMPHIBIANS

SALAMANDRIDAE - NEWTS

Taricha torosa
California newt

PLETHODONTIDAE - LUNGLESS SALAMANDERS

Ensatina eschscholtzi
ensatina
Aneides lugubris
arboreal salamander
Batrachoseps nigriventris
black-bellied slender salamander
Batrachoseps pacificus
Pacific slender salamander

BUFONIDAE - TRUE TOADS

+ *Bufo boreas*
western toad

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1 List includes species observed or expected to occur on or in the immediate vicinity of the site.

HYLIDAE - TREEFROGS

+ *Pseudacris regilla*
  Pacific treefrog

REPTILES

GEKKONIDAE - GECKOS

Coleonyx variegatus
San Diego banded gecko

IGUANIDAE - IGUANID LIZARDS

+ *Sceloporus occidentalis*
  western fence lizard
Sceloporus graciosus
  sagebrush lizard
+ *Uta stansburiana*
  side-blotched lizard
Phrynosoma coronatum
  coast horned lizard

SCINCIDAE - SKINKS

+ *Eumeces skiltonianus*
  western skink
Eumeces gilberti
  Gilbert skink

TEIIDAE - WHIPTAIL LIZARDS

+ *Cnemidophorus tigris*
  western whiptail

ANGUIDAE - ALLIGATOR LIZARDS

+ *Gerrhonotus multicarinatus*
  southern alligator lizard

ANNIELLIDAE - CALIFORNIA LEGLESS LIZARDS

Anniella pulchra
California legless lizard

LEPTOTYPHLOPIDAE - SLENDER BLIND SNAKES

Leptotyphlops humilis
western blind snake

BOIDAE - PYTHONS AND BOAS

Charina bottae
rubber boa
Lichanura trivirgata
rosy boa

COLUBRIDAE - COLUBRID SNAKES

+ *Diadophis punctatus*
ringneck snake
Coluber constrictor
racer
Masticophis flagellum
coachwhip
+ *Masticophis lateralis*
California whipsnake
Salvadora hexalepis
western patch-nosed snake
Arizona elegans
glossy snake
+ *Pituophis melanoleucus*
gopher snake
Lampropeltis getulus
common kingsnake
Lampropeltis zonata
California mountain kingsnake
Thamnophis hammondii
two-striped garter snake
Thamnophis sirtalis
common garter snake
Tantilla planiceps
California black-headed snake
Trimorphodon biscutatus
lyre snake
Hypsiglena torquata
night snake

VIPERIDAE - VIPERS

+ *Crotalus atrox*
  western diamondback rattlesnake
  Crotalus viridis
  western rattlesnake

BIRDS

ARDEIDAE - HERONS

Bubulcus ibis
cattle egret

CATHARTIDAE - NEW WORLD VULTURES

+ *Cathartes aura*
  turkey vulture

ACCIPITRIDAE - HAWKS

Elanus leucurus
white-tailed kite
Circus cyaneus
northern harrier
+ *Accipiter striatus*
  sharp-shinned hawk
+ *Accipiter cooperii*
  Cooper's hawk
+ *Buteo lineatus*
  red-shouldered hawk
+ *Buteo jamaicensis*
  red-tailed hawk
Buteo regalis
ferruginous hawk

FALCONIDAE - FALCONS

+ *Falco sparverius*
  American kestrel
Falco columbarius
merlin
Falco mexicanus
prairie falcon

Falco peregrinus
peregrine falcon

PHASIANIDAE - PHEASANTS & QUAILS

\+ *Callipepla californica*
California quail

CHARADRIIDAE - PLOVERS

Charadrius vociferus
killdeer

COLUMBIDAE - PIGEONS & DOVES

+* *Columba livia*
rock dove
Columba fasciata
band-tailed pigeon
\+ *Zenaida macroura*
mourning dove

CUCULIDAE - CUCKOOS & ROADRUNNERS

\+ *Geococcyx californianus*
greater roadrunner

TYTONIDAE - BARN OWLS

\+ *Tyto alba*
barn owl

STRIGIDAE - TRUE OWLS

Otus kennicottii
western screech-owl
\+ *Bubo virginianus*
great horned owl
Speotyto cunicularia
burrowing owl

CAPRIMULGIDAE - GOATSUCKERS

Phalaenoptilus nuttallii
common poorwill

APODIDAE - SWIFTS

+ *Chaetura vauxi*
Vaux's swift
Aeronautes saxatalis
white-throated swift

TROCHILIDAE - HUMMINGBIRDS

Archilochus alexandri
black-chinned hummingbird
+ *Calypte anna*
Anna's hummingbird
+ *Calypte costae*
Costa's hummingbird
+ *Selasphorus sasin*
Allen's hummingbird

PICIDAE - WOODPECKERS

+ *Melanerpes formicivorus*
acorn woodpecker
Melanerpes lewis
Lewis' woodpecker
+ *Sphyrapicus ruber*
red-breasted sapsucker
+ *Picoides nuttallii*
Nuttall's woodpecker
+ *Picoides pubescens*
downy woodpecker
Picoides villosus
hairy woodpecker
+ *Colaptes auratus*
northern flicker

TYRANNIDAE - TYRANT FLYCATCHERS

Contopus borealis
olive-sided flycatcher

+ *Contopus sordidulus*
  western wood-pewee
  Empidonax traillii
  willow flycatcher
  Empidonax hammondii
  Hammond's flycatcher
+ *Sayornis nigricans*
  black phoebe
+ *Sayornis saya*
  Say's phoebe
+ *Myiarchus cinerascens*
  ash-throated flycatcher
  Tyrannus vociferans
  Cassin's kingbird
+ *Tyrannus verticalis*
  western kingbird

ALAUDIDAE - LARKS

Eremophila alpestris
horned lark

HIRUNDINIDAE - SWALLOWS

+ *Tachycineta bicolor*
  tree swallow
+ *Tachycineta thalassina*
  violet-green swallow
+ *Stelgidopteryx serripennis*
  northern rough-winged swallow
+ *Hirundo pyrrhonota*
  cliff swallow
  Hirundo rustica
  barn swallow

CORVIDAE - JAYS & CROWS

+ *Aphelocoma coerulescens*
  western scrub-jay
+ *Corvus brachyrhynchos*
  American crow
+ *Corvus corax*
  common raven

PARIDAE - TITMICE

+ *Parus inornatus*
  plain titmouse

AEGITHALIDAE - BUSHTITS

+ *Psaltriparus minimus*
  bushtit

SITTIDAE - NUTHATCHES

Sitta canadensis
  red-breasted nuthatch
Sitta carolinensis
  white-breasted nuthatch

CERTHIIDAE - CREEPERS

Certhia americana
  brown creeper

TROGLODYTIDAE - WRENS

Campylorhynchus brunneicapillus
  cactus wren
Salpinctes obsoletus
  rock wren
Catherpes mexicanus
  canyon wren
+ *Thryomanes bewickii*
  Bewick's wren
+ *Troglodytes aedon*
  house wren

MUSCICAPIDAE - KINGLETS, GNATCATCHERS, THRUSHES & BABBLERS

+ *Regulus calendula*
  ruby-crowned kinglet
+ *Polioptila caerulea*
  blue-gray gnatcatcher
Polioptila californica californica
  coastal California gnatcatcher

Sialia mexicana
western bluebird
Catharus ustulatus
Swainson's thrush
+ *Catharus guttatus*
hermit thrush

+ *Turdus migratorius*
American robin
+ *Chamaea fasciata*
wrentit

MIMIDAE - THRASHERS

+ *Mimus polyglottos*
northern mockingbird
+ *Toxostoma redivivum*
California thrasher

MOTACILLIDAE - PIPITS

Anthus rufescens
American pipit

BOMBYCILLIDAE - WAXWINGS

Bombycilla cedrorum
cedar waxwing

PTILOGONATIDAE - SILKY-FLYCATCHERS

+ *Phainopepla nitens*
phainopepla

LANIIDAE - SHRIKES

Lanius ludovicianus
loggerhead shrike

STURNIDAE - STARLINGS

+* *Sturnus vulgaris*
European starling

VIREONIDAE - VIREOS

+ *Vireo solitarius*
  solitary vireo
+ *Vireo huttoni*
  Hutton's vireo
  Vireo gilvus
  warbling vireo

EMBERIZIDAE- WOOD WARBLERS, TANAGERS, BUNTINGS & BLACKBIRDS

  Vermivora celata
  orange-crowned warbler
  Vermivora ruficapilla
  Nashville warbler
+ *Dendroica petechia*
  yellow warbler
+ *Dendroica coronata*
  yellow-rumped warbler
  Dendroica nigrescens
  black-throated gray warbler
+ *Dendroica townsendi*
  Townsend's warbler
  Dendroica occidentalis
  hermit warbler
  Geothlypis trichas
  common yellowthroat
+ *Wilsonia pusilla*
  Wilson's warbler
  Icteria virens
  yellow-breasted chat
+ *Pheucticus melanocephalus*
  black-headed grosbeak
+ *Piranga ludoviciana*
  western tanager
  Guiraca caerulea
  blue grosbeak
  Passerina amoena
  lazuli bunting
+ *Pipilo crissalis*
  California towhee
+ *Pipilo erythrophthalmus*
  spotted towhee

+ *Aimophila ruficeps*
  rufous-crowned sparrow
Amphispiza belli
  sage sparrow
Spizella passerina
  chipping sparrow
Pooecetes gramineus
  vesper sparrow
Chondestes grammacus
  lark sparrow

Passerculus sandwichensis
  savannah sparrow
Ammodramus savannarum
  grasshopper sparrow
Passerella iliaca
  fox sparrow
+ *Melospiza melodia*
  song sparrow
+ *Melospiza lincolnii*
  Lincoln's sparrow
+ *Zonotrichia atricapilla*
  golden-crowned sparrow
+ *Zonotrichia leucophrys*
  white-crowned sparrow
+ *Junco hyemalis*
  dark-eyed junco
Sturnella neglecta
  western meadowlark

ICTERIDAE - BLACKBIRDS

Agelaius phoeniceus
  red-winged blackbird
Xanthocephalus xanthocephalus
  yellow-headed blackbird
Euphagus cyanocephalus
  Brewer's blackbird
+ *Molothrus ater*
  brown-headed cowbird
+ *Icterus galbula*
  Hooded oriole
+ *Icterus bullockii*
  Bullock's oriole

FRINGILLIDAE - FINCHES

Carpodacus purpureus
purple finch
+ *Carpodacus mexicanus*
house finch
+ *Carduelis psaltria*
lesser goldfinch
Carduelis lawrencei
Lawrence's goldfinch

+ *Carduelis tristis*
American goldfinch

PASSERIDAE - OLD WORLD SPARROWS

+* *Passer domesticus*
house sparrow

MAMMALS

DIDELPHIDAE - NEW WORLD OPOSSUMS

* *Didelphis virginiana*
Virginia opossum

SORICIDAE - SHREWS

Sorex ornatus
ornate shrew
Notiosorex crawfordi
desert shrew

TALPIDAE - MOLES

Scapanus latimanus
broad-footed mole

VESPERTILIONIDAE - EVENING BATS[1]

Myotis evotis
long-eared myotis
Myotis thysanodes
fringed myotis

Myotis volans
long-legged myotis
Myotis californicus
California myotis
Myotis leibii
small-footed myotis
Eptisicus fuscus
big brown bat
Lasiurus blossevillii
western red bat
Lasiurus cinereus
hoary bat
Euderma maculatum
spotted bat
Pipistrellus hesperus
western pipistrelle
Plecotus townsendii
Townsend's big-eared bat
Antrozous pallidus
pallid bat

MOLOSSIDAE - FREE-TAILED BATS[2]

Tadarida brasiliensis
Brazilian free-tailed bat
Eumops perotis
western mastiff bat

LEPORIDAE - HARES & RABBITS

\+ *Sylvilagus audubonii*
desert cottontail
\+ *Sylvilagus bachmani*
brush rabbit
Lepus californicus
black-tailed jackrabbit

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2 The site is within the range of a number of bat species in several families, but it is unlikely that all are present. As their distribution varies according to season, and as the precise habitat requirements of each species are not well known, it is difficult to determine which species are present on the property.

SCIURIDAE - SQUIRRELS

+ *Tamias merriami*
  Merriam's chipmunk
+ *Spermophilus beecheyi*
  California ground squirrel
  Sciurus griseus
  western gray squirrel

GEOMYIDAE - POCKET GOPHERS

+ *Thomomys bottae*
  Botta's pocket gopher

HETEROMYIDAE - POCKET MICE & KANGAROO RATS

Chaetodipus californicus
California pocket mouse
Dipodomys agilis
Pacific kangaroo rat

CRICETIDAE - NEW WORLD RATS AND MICE

Reithrodontomys megalotis
western harvest mouse
Peromyscus boylii
brush mouse
Peromyscus californicus
California mouse
Peromyscus eremicus
cactus mouse
+ *Peromyscus maniculatus*
  deer mouse
Peromyscus truei
pinyon mouse
Onychomys torridus
southern grasshopper mouse
Neotoma lepida intermedia
desert woodrat
+ *Neotoma lepida*
  desert woodrat
Neotoma fuscipes
dusky-footed woodrat

Microtus californicus
California vole

MURIDAE - OLD WORLD MICE, RATS, AND VOLES

* *Rattus rattus*
black rat
* *Mus musculus*
house mouse

CANIDAE - WOLVES & FOXES

* *Canis familiaris*
domestic dog

\+ *Canis latrans*
coyote
Urocyon cinereoargenteus
gray fox

PROCYONIDAE - RACCOONS

Bassariscus astutus
ringtail
\+ *Procyon lotor*
raccoon

MUSTELIDAE - WEASELS, SKUNKS & OTTERS

Mustela frenata
long-tailed weasel
Taxidea taxus
American badger
Spilogale gracilis
western spotted skunk
\+ *Mephitis mephitis*
striped skunk

FELIDAE - CATS

* *Felis catus*
domestic cat
Felis concolor
mountain lion

Lynx rufus
bobcat

EQUIDAE - HORSES

+ *Equus* sp.
domestic horse

CERVIDAE - DEER

+ *Odocoileus hemionus*
mule deer

FLORAL COMPENDIUM – CHATSWORTH RIDGE ESTATES

The floral compendium lists species identified on the project site.

* = non-native species

DRYOPTERIDACEAE

Dryopteris arguta
wood fern

POLYPODIACEAE

Polypodium californicum
California polypody

PTERIDACEAE

Aspidotis californica
California lace fern
Adiantum jordanii
California maiden-hair
Pellaea andromedifolia
coffee fern
Pentagramma triangularis ssp. triangularis
goldback fern

SELAGINELLACEAE

Selaginella bigelovii
Bigelow's mossfern

PINACEAE

**Cedrus deodara*
deodar cedar
**Pinus canariensis*
Canary island pine
**Pinus halepensis*
Aleppo pine

ACERACEAE

Acer negundo ssp. *californicum*
box elder

AMARANTHACEAE

**Amaranthus retroflexus*
red root pigweed

ANACARDIACEAE

Malosma laurina
laurel sumac
Rhus ovata
Sugar bush
Rhus trilobata
basket plant
**Schinus molle*
Peruvian pepper tree
Toxicodendron diversilobum
poison oak

APIACEAE

Apiastrum angustifolium
mock parsley
Berula erecta
cut-leaved water parsnip
Lomatium dasycarpus ssp. dasycarpum
wolly lomatium

APOCYNACEAE

Nerium oleander
oleander
Vinca major
greater periwinkle

ASCLEPIADACEAE

Asclepias californica
California milkweed

Asclepias fascicularis
narrow-leaf milkweed

ASTERACEAE

Acourtia microcephala
sacapellote
Ambrosia acanthicarpa
sand-bur
Ambrosia psilostacha
western ragweed
Artemisia douglasiana
mugwort
Artemisia dracunculus
tarragon
Artemisia californica
California sagebrush
Baccharis pilularis
coyote bush
Baccharis salicifolia
mulefat
Brickellia californica
California brickellbush
Brickellia nevinnii
Nevin's Brickellia
**Carduus pycnocephalus*
Italian thistle
**Centaurea melitensis*
tocalote
Cirsium occidentale var. *californicum*
California thistle
**Cirsium vulgare*
bull thistle
**Conyza bonariensis*
little horseweed
Conyza canadensis
common horseweed
Encelia californica
bush sunflower
Erigeron foliosus var. *foliosus*
leafy fleabane
Eriophyllum confertiflorum
golden yarrow

Filalgo californica
*h*erba impia
Filago gallica
narrow-leaved filago
Gazania linearis
gazania
Gnaphalium bicolor
bicolor cudweed
Gnaphalium californicum
California everlasting
Gnaphalium canescens ssp. benolens
fragrant everlasting
**Gnaphalium luteo-album*
weedy cudweed
Gnaphalium paulestre
lowland cudweed
Hazardia squarrosa var. grindeliodes
sawtooth goldenbush
Helianthus gracilentus
slender sunflower
Hemizonia fasciculata
fscicled tarweed
Heterotheca grandiflora
telegraph weed
**Hypocharis glabra*
smooth cat's-ear
**Lactuca serriola*
prickly lettuce
Lessingia filaginifolia var. filaginifolia
California-aster
Malacothrix saxatilis var. *tenuifolia*
cliff malacothrix
Rafenesquia californica
California chicory
**Senecio vulgaris*
common groundsel
**Silybum marianum*
milk thistle
Solidago californica
California goldenrod
**Sonchus asper*
prickly sow-thistle
**Sonchus oleraceus*
sow-thistle

**Taraxacum officinale*
dandelion
Uropappus lindleyi
silver puffs

Venegasia carpesoides
canyon sunflower

BORAGINACEAE

Amsynckia intermedia
rancher's fiddleneck
Cryptantha intermedia
common cryptantha
Cryptantha micromeres
minute-flower cryptantha
Pectocarya linearis ssp. *ferocula*
slender pectocarya

BRASSICACEAE

**Brassica nigra*
black mustard
**Capsella bursa-pastoris*
shepherd's purse
**Hirshfeldia incana*
short-pod mustard
Lepidium lasiocarpum var. *lasiocarpum*
hairy peppergrass
**Raphanus sativa*
wild radish
Rorippa nasturtium-aquaticum
water cress
**Sisimbryum altissimum*
tumble mustard
**Sisimbryum irio*
London rocket

CACTACEAE

**Opuntia ficus-indica*
Indian fig
Opuntia littoralis
coast prickly-pear

CAPRIFOLIACEAE

Lonicera hispidula var. vacillans
California honeysuckle
Sambucus mexicana
Mexican elderberry
Symphoricarpos mollis
spreading snowberry

CARYOPHYLLACEAE

**Silene gallica*
common catchfly
Silene laciniata ssp. *major*
Mexican pink
**Stellaria media*
chickweed

CHENOPODIACEAE

**Atriplex semibaccata*
Australian saltbush
**Chenopodium album*
white goosefoot
**Chenopodium ambrosioides*
Mexican tea
Chenopodium californicum
California goosefoot
**Chenopodium rubrum*
alkali goosefoot
**Salsola tragus*
Russian thistle

CISTACEAE

Helianthemum scoparium
California rock-rose

CONVOLVULACEAE

Calystegia macrostegia
wild morning-glory
**Convolvulus arvense*
bindweed

CRASSULACAE

Crassula connata
pigmy stonecrop
Dudleya lanceolata
coastal dudleya
Dudleya pulverulenta
chalk lettuce

CUCURBITACEAE

Cucurbita foetidissima
calabazilla
Marah marcrocarpus var. macrocarpus
wild cucumber

CUSCUTACEAE

Cuscuta californica var. californica
dodder

DATISCACEAE

Datisca glomerata
durango root

ERICACEAE

Arctostaphylos glandulosa
eastwood manzanita

EUPHORBIACEAE

Chamaesyce albomarginata
rattlesnake weed
Croton californicus
croton
Eremocarpus setiger
doveweed
**Euphorbia peplus*
petty spurge
**Ricinus communis*
castor bean

FABACEAE

Astragalus trichopodus
southern California locoweed

Lathyrus vestitus
wild sweet-pea
Lotus purshianus var. *purshianus*
Spanish clover
Lotus scoparius
deerweed
Lotus strigosus
strigose lotus
Lupinus albifrons var. *albifrons*
silver bush lupine
Lupinus bicolor
dove lupine
Lupinus hirsutissimus
stinging lupine
Lupinus truncatus
collar lupine
Melilotus alba
white sweetclover
**Melilotus indica*
sourclover
**Medicago polymorpha*
California burclover
**Spatium junceum*
Spanish broom
Trifolium gracilentum var. gracilentum
pin-point clover

FAGACEAE

Quercus agrifolia
coast live oak
Quercus berberidifolia
California scrub oak

GERANIACEAE

**Erodium cicutarium*
red-stemmed filaree

**Erodium botrys*
long-beaked filaree
**Erodium moschatum*
white-stemmed filaree
Geranium carolinianum
Carolina geranium

GROSSULARIACEAE

Ribes malvaceum var. viridifolium
chaparral currant

HYDROPHYLLACEAE

Emmananthe penduliflora
whispering bells
Eriodictyon crassifolium var. crassifolium
thick-leaved yerba santa
Eucrypta chrysanthemifolia var. chrysanthemifolia
eucrypta
Phacelia cicutaria var. *hispida*
caterpillar phacelia
Phacelia distans
common phacelia
Phacelia parryi
Parry's phacelia
Phacelia ramosissima
branching phacelia
Pholistoma auriyum var. *auritum*
fiesta flower

JUGLANDACEAE

Juglans californica var. *californica*
southern California black walnut

LAMIACEAE

**Lamium amplexicaule*
common henbit
**Marrubium vulgare*
Horehound
**Mentha piperita*
peppermint

Salvia apiana
white sage
Salvia columbariae
chia
Salvia mellifera
black sage
Scutellaria tuberosa
Danny's skullcap
Stachys albens
white hedge nettle

MALVACEAE

Malacothamnus fasciculatus
mesa bush mallow
**Malva parviflora*
cheeseweed

MORACEAE

**Ficus carica*
edible fig

MYRTACEAE

**Eucalyptus camaldulensis*
river red gum
**Eucalyptus globulus*
blue gum
**Eucalyptus polyanthemos*
silver dollar gum

NYCTAGINACEAE

Mirabilis californica
wishbone bush

OLEACEAE

Fraxinus dipetala
California ash
**Olea europea*
olive

ONAGRACEAE

Camissonia bistorta
southern suncup
Camissonia californica
false mustard

Clarkia unguiculata
elegant clarkia
Epilobium canum
California fuchsia
Epilobium ciliatum
green willow-herb

OXALIDACEAE

**Oxalis pes-caprae*
bermuda buttercup

PAEONACEAE

Paeonia californica
California peony

PLANTAGINACEAE

**Plantago lanceolata*
lance-leaved plantain
Plantago major
common plantain

PLANTANACEAE

Platanus racemosa
western sycamore

POLEMONIACEAE

Leptodactyon californicum
prickley phlox
Navarretia hamata
southern hooked navarretia

POLYGONACEAE

Chorizanthe staticoides
Turkish rugging
Eriogonum elongatum
tall buckwheat
Eriogonum fasciculatum var. *foliolosum*
California buckwheat

Eriogonum gracile
slender eriogonum
Lastarriaea coriacea
lastarriaea
**Polygonum arenastrum*
common knotweed
Pterostegia drymarioides
granny's hairnet
Rumex conglomeratus
whorled dock
**Rumex crispus*
curly dock

PORTULACAECAE

Claytonia perfoliata ssp. perfoliata
miner's lettuce

PRIMULACEAE

**Anagallis arvensis*
scarlet pimpernel

RANUNCULACEAE

Clematis ligusticifolia
virgin's bower
Delphinium cardinale
scarlet larkspur

RHAMNACEAE

Ceanothus crassifolius
hoary-leaved ceanothus

Rhamnus ilicifolia
holly-leaf redberry

ROSACEAE

Adenostoma fasciculatum
chamise
Cercocarpus betuloides
birch-leaf mountain mahogany
Heteromeles arbutifolia
Toyon
Potentilla glandulosa ssp. *glandulosa*
sticky cinquefoil
Rosa californica
California rose
**Rosa* sp.
ornamental rose
**Rubus discolor*
Himilayan blackberry
Rubus ursinus
California blackberry

RUBIACEAE

Galium angustifolium var. angustifolium
narrow-leaved bedstraw
Galium aparine
Common bedstraw

SALICACEAE

Populus fremontii
Fremont's cottonwood
Populus balsamifera ssp. *trichocarpa*
black cottonwood
Salix exigua
narrow-leaved willow
Salix lasiolepis
arroyo willow
Salix laevigata
red willow

SCROPHULARIACEAE

Antirrhinum coulterianum
white snapdragon
Castilleja foliolosa
wooly paintbrush
Castilleja minor ssp. *spiralis*
California threadtorch
Keckiella cordifolia
heart-leaved bush penstemon
Mimulus aurantiacus
bush monkeyflower
Mimulus brevipes
slope smiphore
Mimulus floribundus
showy monkeyflower
Mimulus cardinalis
scarlet mionkey flower
Mimulus pilosus
downy monkey flower
Penstemon centranthifolius
scarlet bugler
Scrophularia californica ssp. *floribunda*
California figwort

SOLANACEAE

**Nicotiana glauca*
tree tobacco
Solanum douglasii
Douglas' nightshade
Solanum xanti
chaparral nightshade

URTICACEAE

Urtica dioica ssp. *holosericea*
hoary nettle

VISCACEAE

Phoradendron macrophyllum
bigleaf mistletoe

ZYGPOPHYLLACEAE

**Tribulus terrestris*
puncture vine

CYPERACAEAE

Carex senta
rough sedge
Carex triquetra
triangular-fruit sedge
**Cyperus involucratus*
African umbrella sedge
Cyperus eragrostis
tall umbrella sedge

IRIDACEAE

**Iris* sp.
bearded iris
Sisyrinchium bellum
blue-eyed grass

JUNCACEAE

Juncus bufonius var. b*ufonius*
common toad rush
Juncus mexicanus
Mexican rush
Juncus xipiodes
iris-leaved rush
Juncus textilus
basket rush

LILIACEAE

Agave americana
century plant
**Agave attenuata*
ornamental agave
Aloe vera
medicinal aloe

Aloe sp.
Aloe
Allium haematochiton
red-skinned onion
Bloomeria crocea
common golden-stars
**Brunsvigea rosea*
belladonna lily
Calochortus plummerae
Plummer's mariposa lily
Calochortus clavatus var. *pallidus*
club-haired mariposa lily
Chlorogalum pomeridianum var. pomeridianum
amole
Dichelostemma capitatum ssp. *capitatum*
wild hyacinth
Yucca whipplei
our Lord's candle
Zigadenus fremontii
star lily

POACEAE

Achnatherum coronatum
giant needlegrass
Agrostis viridis
water bent
**Arundo donax*
giant reed
**Avena barbata*
slender wild oats
**Avena fatua*
wild oat
**Bromus cathartiacus*
rescue grass
**Bromus diandrus*
ripgut grass
**Bromus hordaceus*
soft chess
**Bromus madritensis ssp. rubens*
foxtail chess
**Cynodon dactyon*
Bermuda grass

**Hordeum murinum var. leporinum*
hare barley
Lamarckia aurea
goldentop
Leymus condensatus
giant wild rye
Leymus triticoides
beardless wild ryegrass
**Lolium multiflorum*
Italian ryegrass
Melica imperfecta
coast range melic
Muhlenbergia rigens
deergrass
Nassella lepida
foothill needlegrass
Nassella pulchra
purple needlegrass
**Pennisetum clandestinum*
kikuyu grass
**Poa annua*
wintergrass
**Pipatherum miliaceum*
smilo grass
**Polypogon monspeliensis*
rabbit's foot grass
**Schismus barbatus*
Mediterranean grass
**Vulpia bromoides*
falsebrome fescue
Vulpia microstachys var. m*icrostachys*
Pacific fescue
**Vulpia myuros var. hirsuta*
foxtail fescue

TYPHACEAE

Typha latifolia
broad-leaved cattail

APPENDIX B

SENSITIVE SPECIES REPORTS

SCANNED

October 7, 1999

Mr. Brad Henderson
Glenn Lukos Associates
23441 South Pointe Drive, Suite 150
Laguna Hills, Ca 92653

Dear Brad:

As requested, I have completed two diurnal and two nocturnal U.S. Fish & Wildlife Service protocol surveys for red-legged frogs (*Rana aurora draytonii*) on the proposed Chatsworth Ridge Estates project in Los Angeles County. Surveys were conducted in portions of Devil Canyon and Brown's Canyon

While habitat conditions in both canyons were plausible for red-legged frogs, none were found. Brown's Canyon contains perennial water with adequate shading but it lacked the deeper pools necessary for escape areas, and for tadpoles to safely metamorphose. Although full of mature willows the lower end of Devil Canyon contained less water and also lacked pools of the appropriate depth. Devil Canyon in particular may have supported red-legged frogs but may have disappeared due to the installation of two small dams. Predictably, these dams would have changed sediment deposition and erosional forces significantly. The only anurans found in both streams in relatively small numbers were Pacific tree frogs (*Hyla regilla*).

Surveys were conducted on Aug. 31, Sept. 5, and Sept. 18, 1999. Weather conditions were good with clear skies and maximum daytime temperatures about 85 degrees.

Should you have any questions, please call me at 714-544-6147. Thank you for the opportunity to work with you on this project.

Sincerely,

Peter H. Bloom

Peter H. Bloom
Research Biologist
3611 Hewes Avenue
Santa Ana, CA 92705

GLENN LUKOS ASSOCIATES
Regulatory Services

June 4, 1998

Kirk Waln
U.S. Fish and Wildlife Service
Ventura Field Office
2493 Portola Road, Suite B
Ventura, California 93003

SUBJECT: Submittal Requirements of Coastal California Gnatcatcher Surveys on Chatsworth Ridge Estates, Chatsworth, Los Angeles County, California.

Dear Mr. Waln:

This letter report summarizes the methodology and findings of surveys for the federally-listed threatened coastal California gnatcatcher (*Polioptila californica californica*) conducted by Glenn Lukos Associates, Inc. (GLA) in Los Angeles County, California. GLA was retained by Chatsworth Ridge Estates to determine the presence or absence of the coastal California gnatcatcher on the Chatsworth Ridge Estates project site.

SURVEY LOCATION

The Chatsworth Ridge Estates project site is located in northwestern Los Angeles County within the City of Chatsworth. The project site is located north of the 118 Freeway, east of Topanga Canyon, west of De Soto, and south of Oat Mountain. The project is depicted on the U.S. Geological Survey (USGS) 7.5 minute topographic map Oat Mountain, California (dated 1952 and photorevised 1969)[Exhibit 1]. The project covers an area of approximately 238.9 acres of which approximately 5 acres consist of coastal sage scrub and adjacent chaparral areas. Elevation on the project site ranges from 1200 to 1718 feet above sea level. All areas of coastal sage scrub and other habitats within a 100-foot radius were surveyed for the coastal California gnatcatcher.

PLANT COMMUNITIES

Plant communities within the project area included chaparral, coastal sage scrub (CSS), riparian woodland, eucalyptus, and oak woodland. The CSS onsite is of low quality and does not provide adequate nesting opportunities for the gnatcatcher. The coastal sage scrub occurs in a previously graded area near the middle of the site, and may represent an early-successional vegetation association. The CSS patches are small in size and are

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surrounded by either dense chamise chaparral or non-native grassland. Dominant plant species present within the coastal sage scrub included: California sagebrush (*Artemisia californica*), deerweed (*Lotus scoparius*), and black sage (*Salvia mellifera*). Other species found within the CSS included slender wild oats (*Avena barbata*), saw-toothed goldenbush (*Hazardia squarrosa*), and valley lessingia (*Lessingia glandulifera* var. *glandulifera*).

METHODOLOGY

Surveys for the coastal California gnatcatcher were conducted according to the guidelines issued by the U.S. Fish and Wildlife Service (1997). These guidelines stipulate that six visits be conducted within areas of suitable habitat, with at least seven days between site visits. Field surveys were performed by GLA biologist Amy L. Leverett (PRT-818321). Ms. Leverett was assisted by GLA biologist Bradley J. Henderson.

Surveys were conducted on March 30, April 6, 13, 20, 27, and May 4, 1998. The surveys covered all areas of coastal sage scrub as well as adjacent chaparral within the survey area. All areas were covered on foot by walking slowly and methodically along pre-determined transect routes. The location of each transect was based on vegetation and topographic conditions. The presence/absence of coastal California gnatcatchers was determined by identifying all birds by sight and call, then using a combination of taped California gnatcatcher vocalizations and "pishing" sounds. Taped vocalizations were played at intervals of approximately 200 feet or as needed, depending on the vegetation and topography in each area. Sensitive species sightings were recorded and mapped on 1 inch = 80 feet aerial photograph and then transferred to a 1 inch = 80 feet scale topographic map [Exhibit 2]. Weather conditions during the surveys were conducive to a high level of bird activity. Surveys were conducted from 6:45 a.m. to 12:00 p.m. Temperatures ranged from approximately 66 degrees Fahrenheit to 68 degrees Fahrenheit. Wind speeds ranged from 0-20 miles per hour during the surveys, averaging 3-7 miles per hour over the survey period.

RESULTS

During the surveys, no coastal California gnatcatchers were observed. Other birds commonly seen included California quail (*Callipepla californica*), rufous-crowned sparrow (*Aimophila ruficeps*), California towhee (*Pipilo crissalis*), spotted towhee (*Pipilo macularus*), wrentit (*Chamaea fasciata*), western scrub-jay (*Aphelocoma californica*), California thrasher (*Toxostoma redivivum*), blue-gray gnatcatcher (*Polioptila caerulea*), and mourning dove (*Zenaida macroura*).

Should you have any questions regarding the methodology or findings of this report, please do not hesitate to call me at (949) 837-0404.

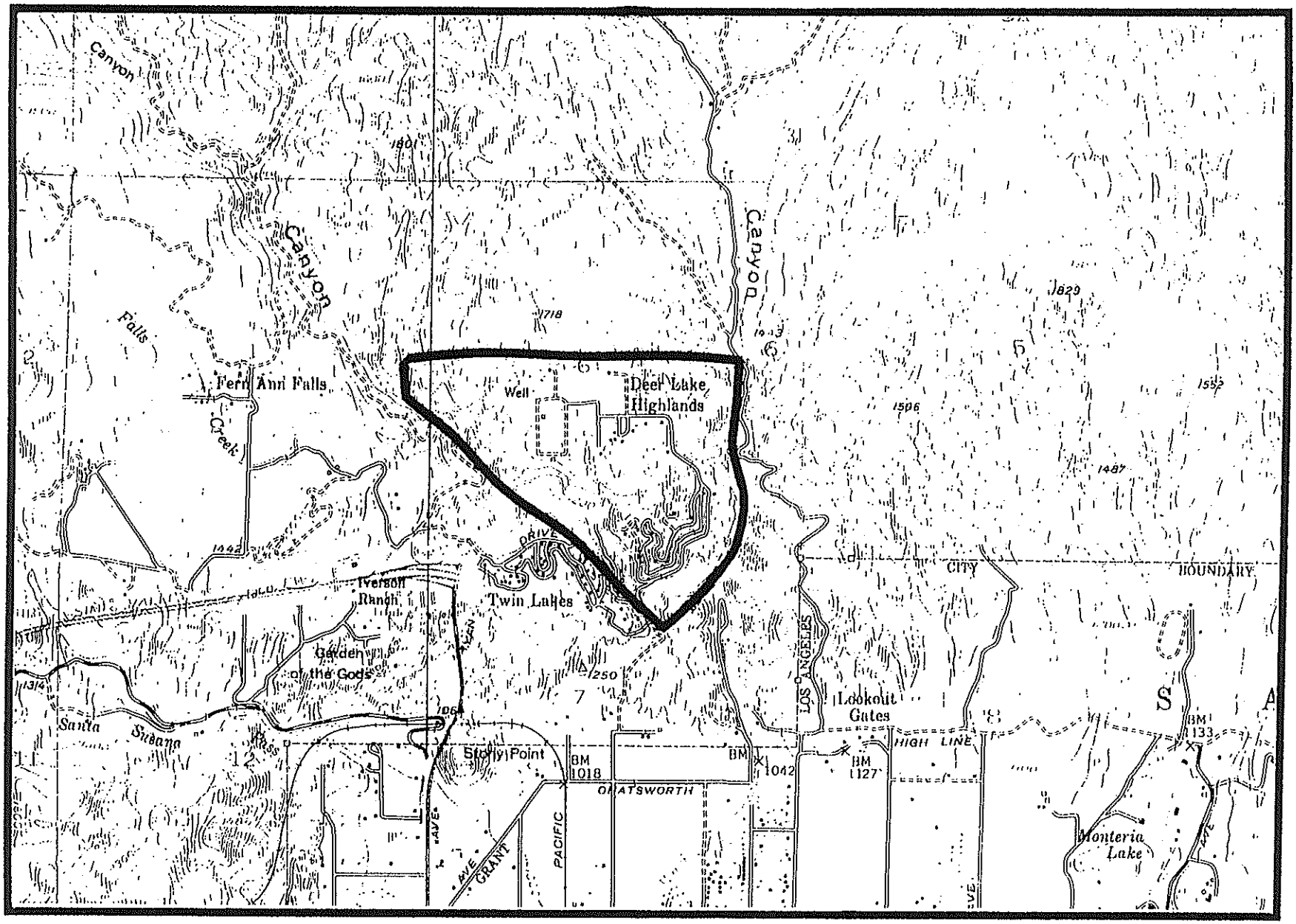
Sincerely,

Amy Leverett

Amy Leverett
Biologist/Regulatory Specialist

0286-1d.bio

Adapted from USGS Oat Mountain Quadrangle



NORTH

1000 2000 3000
FEET

CHATSWORTH RIDGE ESTATES

Vicinity Map

GLENN LUKOS ASSOCIATES

EXHIBIT 1

GLENN LUKOS ASSOCIATES
Regulatory Services

August 3, 2000

U.S. Fish and Wildlife Service
Carlsbad Field Office
2730 Loker Avenue West
Carlsbad, California 92008

SUBJECT: Submittal Requirements of Coastal California Gnatcatcher Surveys on Chatsworth Ridge Estates, Los Angeles County, California.

Dear Sir or Madam:

This letter report summarizes the methodology and findings of surveys for the federally-listed threatened coastal California gnatcatcher (*Polioptila californica californica*) conducted by Glenn Lukos Associates, Inc. (GLA) in Los Angeles County, California. GLA was retained by Chatsworth Ridge Estates to determine the presence or absence of the coastal California gnatcatcher on the Chatsworth Ridge Estates project site. Protocol Surveys were originally conducted in 1998, with no observations of the species. The results of the surveys were documented in a letter dated June 4, 1998 to Kirk Waln of the Ventura Field Office. The protocol surveys were repeated in 2000 to update information regarding the potential for the gnatcatcher to utilize the site.

I. SURVEY LOCATION

The Chatsworth Ridge Estates site is located in an unincorporated section of Los Angeles County [Exhibit 1], comprises approximately 238 acres and contains two blue-line drainages, Devil Canyon and Browns Canyon. The site is depicted on the U.S. Geological Survey (USGS) topographic map Oat Mountain, California [dated 1952 and photorevised in 1969]) [Exhibit 2]. The site is bounded on the west by Topanga Canyon Boulevard, the north by open space, on the east by Brown's Canyon Road, and the south by the 118 Freeway. The topography of the approximately 238-acre site ranges from relatively flat terrain to extremely steep slopes above the deeper canyons. The elevation of the site ranges from 1200 feet above mean sea level (MSL) to 1,560 feet above MSL. Portions of the property were previously developed as homes and equestrian facilities.

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Vegetation Associations

Seven vegetation associations (including ecotonal areas[1]) were identified within the project site. Vegetation communities identified include chamise chaparral, coastal sage scrub, coast live oak woodland, and willow woodland. Non-native vegetation communities include non-native grasslands and eucalyptus groves. The acreage for each vegetation association is provided in Table 1. Approximately 13.13 acres of the site have been previously graded or developed and support ruderal non-native species.

Table 1
Vegetation Associations

Vegetation Association	Total Acres
Chamise Chaparral	197.12
Coastal Sage Scrub/Non-Native Grassland	2.36
Coast Live Oak Woodland	7.97
Willow Woodland	9.72
Non-Native Grassland	2.10
Non-Native Grassland/Developed	5.38
Eucalyptus Grove	0.22
Previously Graded or Developed	13.13
Total	238.0[2]

Chamise Chaparral

Chamise (*Adenostoma fasciculatum*) and black sage (*Salvia mellifera*) are the dominant shrubs in this association. Other shrubs include blue elderberry (*Sambucus mexicana*), laurel sumac (*Malosma laurina*), Our Lord's candle (*Yucca whipplei*), California buckwheat (*Eriogonum fasciculatum*) and deerweed (*Lotus scoparius*). The understory is composed of annuals including non-native tocolote (*Centaurea melitensis*), common cryptantha (*Cryptantha intermedia*), various suncups (*Camissonia* spp.), common catchfly (*Silene gallica*), and various non-native grasses. Chamise chaparral occupies flat areas and slopes throughout most of the site, and is the predominant vegetation association observed at the Chatsworth Ridge Estates site. A total of approximately 197.12 acres of chamise chaparral has been identified on the site.

[1] Ecotonal areas are characterized by a blending of two or more distinct vegetation types.
[2] The 238-acre total includes approximately 15.5 acres of land recently deeded to the Santa Monica Mountains Conservancy in Devil Canyon and Browns Canyon.

Coastal Sage Scrub/Non-Native Grassland Ecotone

The coastal sage scrub on the Chatsworth Ridge Estates site is dominated by California sagebrush (*Artemisia californica*), deerweed (*Lotus scoparius*), and California buckwheat (*Eriogonum fasciculatum*). Other species found within or adjacent to the CSS included California aster (*Lessingia filaginifolia*), slender wild oats (*Avena barbata*), saw-toothed goldenbush (*Hazardia squarrosa*), black sage (*Salvia mellifera*) and chamise (*Adenostoma fasciculatum*).

The coastal sage scrub onsite occurs in a previously graded homestead near the middle of the site, and most likely represents a transitional early-successional vegetation association. It is likely that this area would gradually be replaced by chaparral species if left undisturbed as observed in many areas throughout the state (Mooney 1977)[3]. The total area of coastal sage scrub/non-native grassland identified on the site is approximately 2.36 acres.

Coast Live Oak Woodland

The dominant overstory species within this association is coast live oak (*Quercus agrifolia*). The understory includes shrubs such as toyon (*Heteromeles arbutifolia*), southern California black walnut, blue elderberry, poison oak, and non-native grasses. Coast live oak woodland onsite was most often observed adjacent to drainages, or on shaded, north-facing slopes. The total area of oak woodland identified onsite is approximately 7.97 acres. However, individual oak trees are found in most of the other vegetation associations on the site.

Willow Woodland

Dominant vegetation within this association includes arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata),*), mulefat (*Baccharis salicifolia*), and Fremont's cottonwood (*Populus fremontii*). Less common overstory species include black cottonwood (*Populus balsamifera ssp.* trichocarpa), western sycamore (*Platanus racemosa*), Southern California Black Walnut (*Juglans californica* var. *californica)* and occasional box elder (*Acer negundo* var. *californicum).* Adjacent mesic areas support scattered stands of coast live oak (*Quercus agrifolia).* The understory includes California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), and mugwort (*Artemisia douglasiana*). This association occurs in areas adjacent to the Browns Canyon and Devil Canyon drainages, characterized by areas of dense trees as well

[3] Mooney, Harold A. 1977. *Southern Coastal Scrub.* Terrestrial Vegetation of California. California Native Plant Society, University of California, Davis.

as more shrubby willow and mule fat in areas prone to stream scouring. The total area of willow woodland identified on the site is approximately 9.72 acres.

Non-Native Grassland

Non-native grassland on-site is dominated by slender wild oats, ripgut brome (*Bromus diandrus*), Black mustard (*Brassica* nigra), summer mustard (*Hirschfeldia incana),* common catchfly (*Silene gallica*), and tocolote (*Centaurea melitenis*). The non-native grassland identified on the site occupies approximately 2.10 acres and primarily occurs in areas of past disturbance. Areas surrounding previously developed homes are also dominated by non-native grassland and total approximately 5.38 acres.

Eucalyptus Grove

Scattered non-native eucalyptus trees are found in flat areas throughout the site and seedlings have begun to colonize riparian areas. A grove of mature blue gum (*Eucalyptus globulus*) and red gum (*Eucalyptus camaldulensis*) has been planted near Devil Canyon, presumably for fuel wood production. The total area of eucalyptus grove identified on the site is approximately 0.22 acre. This vegetation association includes an understory typically composed of weedy annual grasses and herbs. Scattered eucalyptus trees occupy most other vegetation associations in several locations.

Previously Developed/Graded Areas

Previously developed areas have been graded or repeatedly cleared of vegetation. Some areas exhibit a cover of bare earth and rocks, while other areas are dominated by ruderal plant species, many of them non-native. Summer mustard (*Hirschfeldia incana*), slender wild oat (*Avena barbata*), storksbill (*Erodium* spp.), and cheeseweed (*Malva parviflora*) are common non-natives colonizing these disturbed areas. Previously developed areas total 13.13 acres.

II. METHODOLOGY

Surveys for the coastal California gnatcatcher were conducted according to the guidelines issued by the U.S. Fish and Wildlife Service (1997). These guidelines stipulate that six visits be conducted within areas of suitable habitat, with at least seven days between site visits. Field surveys were performed by GLA biologist Bradley Henderson (TE-020025-0).

Surveys were conducted on May 12, 19, 26, June 6, 13, and 22, 2000. The surveys covered all areas of coastal sage scrub as well as adjacent chaparral within the approximately five-acre survey area. All areas were covered on foot by walking slowly and methodically along pre-

determined transect routes. The location of each transect was based on existing roads and horse trails that bisect the CSS and allow unobstructed views.

The presence/absence of coastal California gnatcatchers was determined by identifying all birds by sight and call, then using a combination of taped California gnatcatcher vocalizations and "pishing" sounds. Taped vocalizations were played at intervals of approximately 200 feet or as needed, depending on the vegetation and topography in each area. Sensitive species sightings were recorded and mapped on 1 inch = 80 feet aerial photograph and then transferred to a 1 inch = 100 feet scale topographic map [Exhibit 2]. Weather conditions during the surveys were conducive to a high level of bird activity. Surveys were conducted from 7:05 a.m. to 11:15 am. Temperatures ranged from approximately 57 degrees Fahrenheit to 75 degrees Fahrenheit. Wind speeds ranged from 0-7 miles per hour during the surveys. Table 2 summarizes survey times, temperature, and weather conditions.

Table 2
Summary of survey conditions

Date	Start Time	End Time	Temperature (F, start/end)	Windspeed (mi/hr)	Cloud Cover (%, start/end)
5/12	0705	0840	57/61	0-2 W	100/100 low clouds
5/19	0830	0955	62/64	2-4 N	0/0
5/26	0715	0830	63/65	0	85/25 low clouds
6/2	1000	1115	68/75	2-7 W	0
6/13	0730	0820	71/74	0	0
6/20	0730	0817	62/66	0-2 W	20/0 low clouds

III. RESULTS

During the surveys, no coastal California gnatcatchers or brown-headed cowbirds were observed. Birds that were commonly identified include California quail (*Callipepla californica*), California towhee (*Pipilo crissalis*), spotted towhee (*Pipilo macularus*), wrentit (*Chamaea fasciata*), western scrub-jay (*Aphelocoma californica*), California thrasher (*Toxostoma redivivum*), phainopepla (*Phainopepla nitens*), northern mockingbird (*Mimus polyglottos*), Bullock's oriole (*Icterus galbula*), bushtit (*Psaltriparus minimus*), lesser goldfinch (*Carduelis psaltria*), and mourning dove (*Zenaida macroura*).

IV. CONCLUSION

The CSS is of low quality and does not likely provide adequate nesting opportunities for the gnatcatcher. The coastal sage scrub occurs in a previously graded area near the middle of the site, and represents an early-successional vegetation association repeatedly disturbed by construction and fires. The CSS patches are small in size and are surrounded by either dense chamise chaparral or non-native grassland. While it is possible that gnatcatchers could use the site for foraging or dispersal, this behavior is unlikely given the lack of breeding habitat and known gnatcatcher occurrences in the area.

Should you have any questions regarding the methodology or findings of this report, please do not hesitate to call me at (949) 837-0404.

Sincerely,

GLENN LUKOS ASSOCIATES, INC.

Bradley J. Henderson
Biologist

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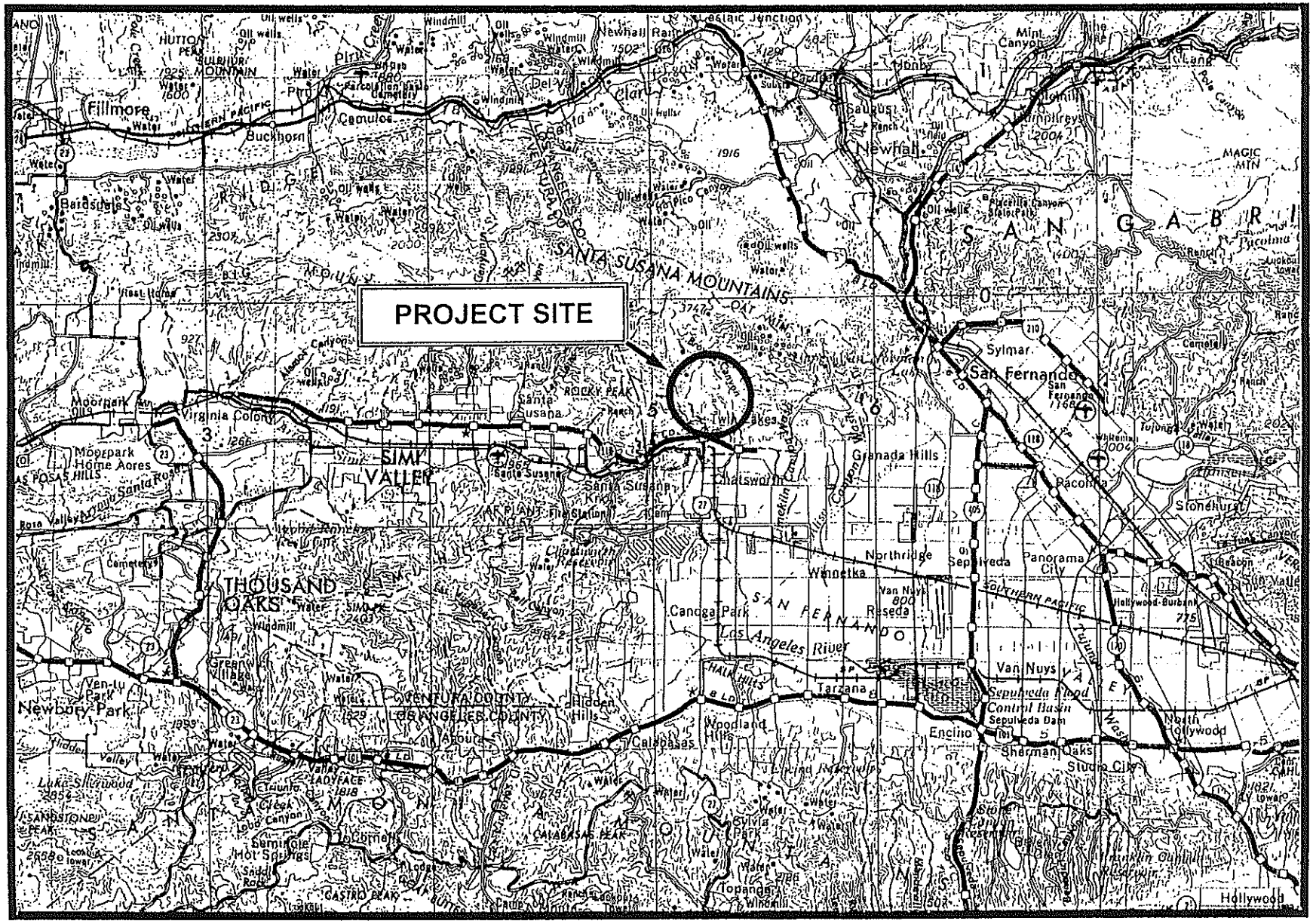
Adapted from USGS Los Angeles Quadrangle

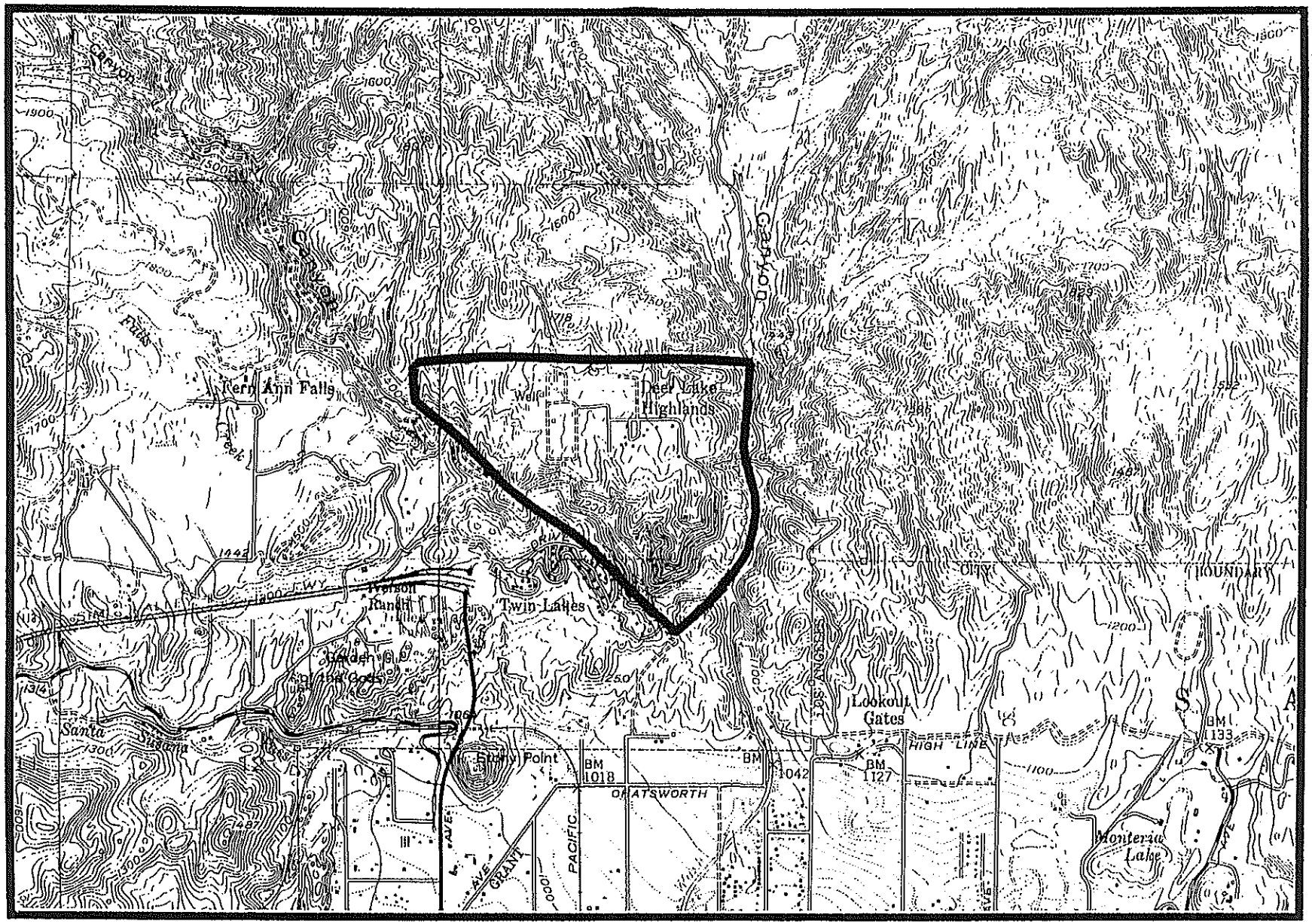


CHATSWORTH RIDGE ESTATES

Regional Map

GLENN LUKOS ASSOCIATES

EXHIBIT 1



Adapted from USGS Oat Mountain Quadrangle

CHATSWORTH RIDGE ESTATES

Vicinity Map

GLENN LUKOS ASSOCIATES

EXHIBIT 2

GLENN LUKOS ASSOCIATES
Regulatory Services

August 24, 1998

Kirk Waln
U.S. Fish and Wildlife Service
Ventura Field Office
2493 Portola Road, Suite B
Ventura, California 93003

SUBJECT: Submittal Requirements of Least Bell's Vireo Surveys on Chatsworth Ridge Estates, Chatsworth, Los Angeles County, California.

Dear Mr. Waln:

This letter report summarizes the methodology and findings of surveys for the federally-listed endangered least Bell's vireo (*Vireo bellii pusillus*) conducted by Glenn Lukos Associates, Inc. (GLA) in Los Angeles County, California. GLA was retained by Chatsworth Ridge Estates to determine the presence or absence of the least Bell's vireo on the Chatsworth Ridge Estates project site.

SURVEY LOCATION

The Chatsworth Ridge Estates project site is located in northwestern Los Angeles County adjacent to the City of Chatsworth. The project site is located north of the 118 Freeway, east of Topanga Canyon, west of De Soto, and south of Oat Mountain. The project is depicted on the U.S. Geological Survey (USGS) 7.5 minute topographic map Oat Mountain, California (dated 1952 and photorevised 1969)[Exhibit 1]. The project covers an area of approximately 238.9 acres of which approximately 17 acres consist of willow riparian areas. Elevation on the project site ranges from 1200 to 1718 feet above sea level. All areas of willow riparian woodland habitat located within the boundaries of the project site were surveyed for the least Bell's vireo [Exhibit 2].

PLANT COMMUNITIES

Plant communities within the project area included chaparral, coastal sage scrub (CSS), willow riparian woodland, eucalyptus, and oak woodland. The willow riparian woodland onsite is of high quality and provides adequate nesting and foraging opportunities for the vireo. The willow riparian woodland is dominated by arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), narrow-leaved willow (*Salix exigua*), western sycamore

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(*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), coast live oak (*Quercus agrifolia*). and mule fat (*Baccharis salicifolia*). Other species occurring within this habitat include Mexican elderberry (*Sambucus mexicana*), poison oak (*Toxicodendron diversilobum*), mugwort (*Artemisia douglasiana*), and California blackberry (*Rubus ursinus*).

METHODOLOGY

Surveys for the least Bell's vireo were conducted according to the guidelines issued by the U.S. Fish and Wildlife Service (1992). These guidelines stipulate that eight visits be conducted within areas of suitable habitat, with at least seven days between site visits between April 1 and July 31. Field surveys were performed by GLA biologist Amy L. Leverett-Henderson under appropriate weather conditions. Ms. Leverett-Henderson was assisted by GLA biologist Bradley J. Henderson.

Surveys were conducted on June 8, 15, 22, 29, July 6, 13, 20, and 27, 1998. The surveys covered all areas of willow riparian woodland located within the boundaries of the project site. All areas were covered on foot by walking slowly and methodically along the drainage. The presence/absence of least Bell's vireo was determined by identifying all birds by sight and call. No taped least Bell's vireo vocalizations were used. Weather conditions during the surveys were conducive to a high level of bird activity. Surveys were conducted from 5:30 a.m. to 11:00 a.m. Temperatures ranged from approximately 56 degrees Fahrenheit to 70 degrees Fahrenheit. Wind speeds ranged from 0-5 miles per hour during the surveys. averaging 0-2 miles per hour over the survey period.

RESULTS

During the surveys. no least Bell's vireo were observed. Other birds commonly seen included California quail (*Callipepla californica*), California towhee (*Pipilo crissalis*), spotted towhee (*Pipilo erythrophthalmus*), wrentit (*Chamaea fasciata*), western scrub-jay (*Aphelocoma coerulescens*), California thrasher (*Toxostoma redivivum*), Bewick's wren (*Thryomanes bewickii*), Hutton's vireo (*Vireo huttonii*), song sparrow (*Melospiza melodia*). lesser goldfinch (*Carduelis psaltria*), Cooper's hawk (*Accipiter cooperii*), Northern oriole (*Icterus galbula*), Northern flicker (*Colaptes auratus*), Costa's hummingbird (*Calypte costae*), phainopepla (*Phainopepla nitens*), bushtit (*Psaltriparus minimus*), black phoebe (*Sayornis nigricans*), Nuttall's woodpecker (*Picoides nuttallii*) and mourning dove (*Zenaida macroura*).

Should you have any questions regarding the methodology or findings of this report, please do not hesitate to call me at (949) 837-0404.

Sincerely,

Amy Leverett-Henderson

Amy Leverett-Henderson
Biologist/Regulatory Specialist

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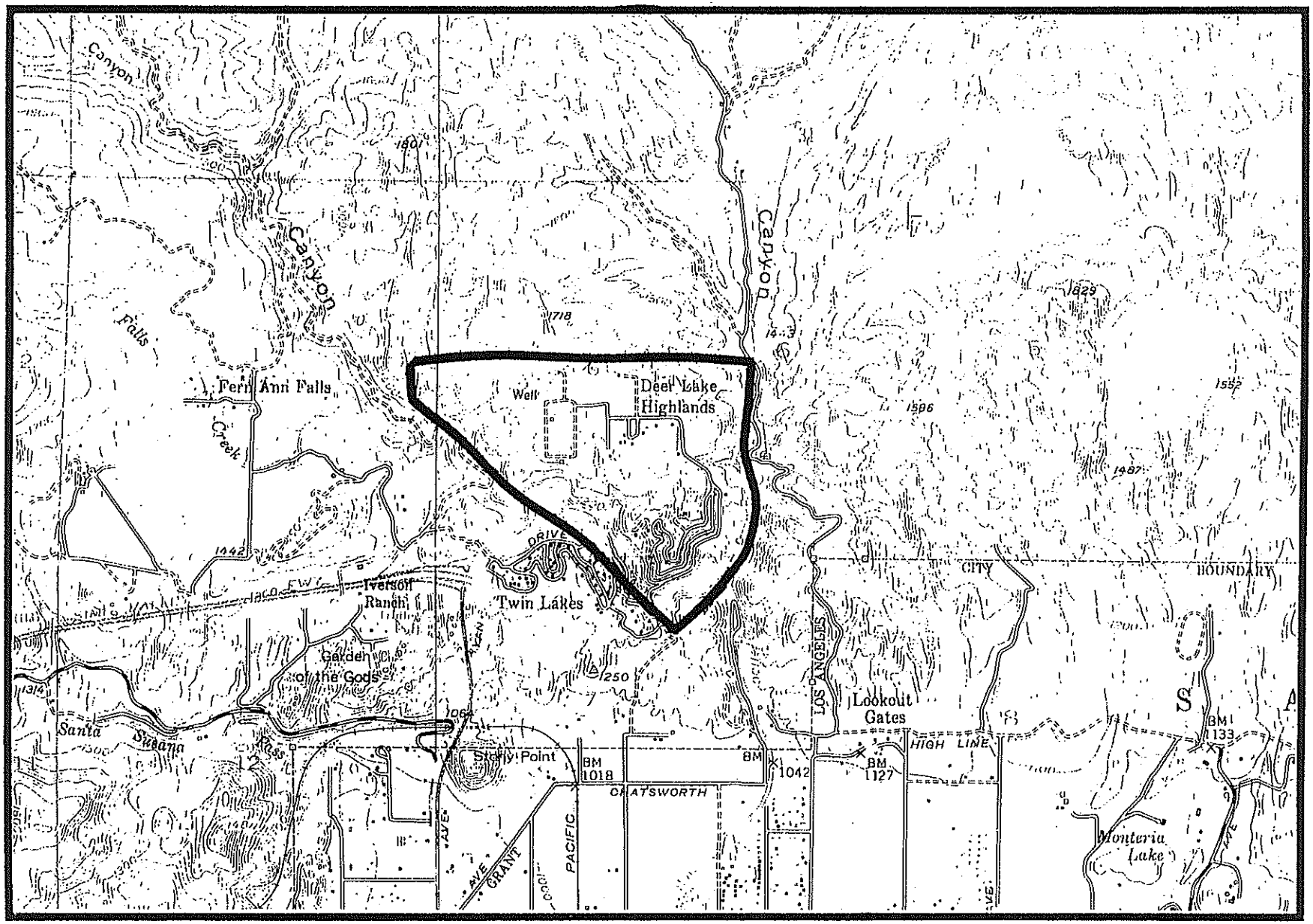
cc: Greg Walls, CDFG
Doug Krofta, USFWS



Adapted from USGS Oat Mountain Quadrangle

NORTH

1000 2000 3000
FEET

CHATSWORTH RIDGE ESTATES

Vicinity Map

GLENN LUKOS ASSOCIATES

EXHIBIT 1

GLENN LUKOS ASSOCIATES
Regulatory Services

September 21, 2000

Mr. Richard Garlinghouse
Presidio Chatsworth Partners LLC
595 Market Street, Suite 2400
San Francisco, California 94105

SUBJECT: Results of Protocol Surveys conducted for the Least Bell's Vireo on the Chatsworth Ridge Estates Project Site, Los Angeles County, California.

Dear Mr. Garlinghouse:

This letter report summarizes the methodology and findings of surveys for the federally-listed endangered least Bell's vireo (*Vireo bellii pusillus*) conducted by Glenn Lukos Associates, Inc. (GLA) for the above-mentioned site in Los Angeles County, California.

INTRODUCTION

The least Bell's vireo is a small, gray, migratory songbird which inhabits riparian habitats of nine southern California counties. The breeding season generally extends from April 10 through July 31. Decreases in populations of least Bell's vireo have been attributed to habitat degradation/destruction and cowbird parasitism. *Vireo belli pusillus* was officially designated as a state- endangered species on October 2, 1980 and achieved federally-endangered status on May 2, 1986.

SURVEY LOCATION

The Chatsworth Ridge Estates project in Los Angeles County, [Exhibit 1], comprises approximately 222.5 acres and is depicted on the U.S. Geological Survey (USGS) 7.5 minute topographic map Oat Mountain, California (dated 1952 and photo revised in 1969) [Exhibit 2]. The proposed project site is located in an unincorporated section of Los Angeles County near the City of Chatsworth. The topography of the 222.5-acre site consists of north-south ridges,

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canyons, and a relatively flat mesa characterized by dry washes and sandstone rock outcrops. The elevation of the site ranges from approximately 1,200 feet above mean sea level (MSL) in the southeastern section to approximately 1,560 feet above MSL in the northern section.

PLANT COMMUNITIES

Plant communities within the survey area included southern willow riparian woodland and oak woodland. The southern willow riparian woodland is of moderate to high quality, providing potential suitable nesting and foraging opportunities for least Bell's vireo.

Dominant vegetation within this association includes arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), mulefat (*Baccharis salicifolia*), and Fremont's cottonwood (*Populus fremontii*). Less common overstory species include black cottonwood (*Populus balsamifera ssp. trichocarpa*), western sycamore (*Platanus racemosa*), southern California black walnut (*Juglans californica* var. *californica)* and occasional box elder (*Acer negundo* var. *californicum).* Adjacent mesic areas support scattered stands of coast live oak (*Quercus agrifolia).* The understory includes California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), and mugwort (*Artemisia douglasiana*). This association occurs in areas adjacent to the Browns Canyon and Devil Canyon drainages, characterized by areas of dense trees as well as more shrubby willow and mule fat in areas prone to stream scouring. The total area of willow woodland identified on the site is approximately 9.72 acres. Much of the southern willow riparian habitat exhibits multi-layered structure with locally dense understory typically associated with least Bell's vireo habitat. Other areas are dominated by large riparian trees with a heavy canopy resulting in little understory due to heavy shading.

METHODOLOGY

Focused surveys for the least Bell's vireo were conducted by GLA biologists Brad Henderson and Jeff Ahrens according to the guidelines issued by the U.S. Fish and Wildlife Service[1]. These guidelines stipulate that a minimum of eight visits be conducted within areas of suitable habitat, with at least ten days between site visits.

---

[1] U.S. Fish and Wildlife guidelines for least Bell's vireo surveys recommend surveys of up to 50 hectares (approximately 120 acres) and no more than 3 linear kilometers (approximately 1.8 miles) per day, depending on site conditions (e.g., density and width of vegetation). U.S. Department of the Interior, Fish and Wildlife Service. 1999. Least Bell's Vireo Survey Guidelines, Published guidelines by Ecological Services Carlsbad Fish and Wildlife Office, 3 pages.

Protocol surveys were conducted on May 2, 12, 22, June 2, 13, 23, July 3, 13, and August 5, 2000.[2] The surveys covered all areas of mulefat scrub, southern willow scrub, and sycamore woodland. All surveys were begun within an hour of sunrise and completed before 11:00 A.M., in accordance with USFWS guidelines. All suitable areas were covered on foot by walking slowly and methodically through the riparian habitat. The presence/absence of least Bell's vireos was determined by identifying all birds by sight and call, aided by the use of binoculars. No taped vocalizations were used to elicit response from the vireos or any other species potentially present.

Weather conditions during the surveys were conducive to a high level of bird activity. Surveys were conducted from sunrise to 11:00 a.m. Temperatures ranged from approximately 51 degrees Fahrenheit to 84 degrees Fahrenheit. Wind speeds ranged from 0-2 miles per hour during the surveys, averaging one mile per hour over the survey period. Table 1 summarizes the survey dates and weather information for each survey date.

Table 1. Least Bell's Vireo Survey and Weather Information

Date	Observer*	Time (Hrs)	Temperature (°F)	Wind Speed (Mph)	Comments
05/02/00	BH	0711-1050	59-74	No wind	Clear skies
05/12/00	BH	0600-0905	54	2	High cloud cover
05/22/00	BH	0630-0930	57	2	Clear and sunny
06/02/00	BH & JA	0730-1100	64	2	Clear skies
06/13/00	BH & JA	0715-1040	63	0-2	Clear skies
06/23/00	JA	0600-0915	63-84	1-2	Clear skies
07/03/00	JA	0630-0955	59	No wind	Morning overcast
07/13/00	JA	0645-1025	51	0-1	Clear skies
08/05/00	JA	0700-1040	65	No wind	Clear skies

*BH refers to Brad Henderson. JA refers to Jeff Ahrens.

[2] Least Bell's vireo surveys were previously conducted for the Chatsworth Estates project on June 8, 15, 22, 29, July 6, 13, 20, and 27, 1998 by GLA biologist Amy Henderson. A letter report to Kirk Waln of the USFWS dated August 24, 1998 documents the results of the protocol least Bell's vireo surveys. The least Bell's vireo was not observed on the site during protocol surveys or at any other time during field work.

RESULTS

Least Bell's vireo was not detected on the site. Birds commonly observed within willow riparian woodland included: song sparrow (*Melospiza melodia*), house wren (*Troglodytes aedon*), lesser goldfinch (*Carduelis psaltria*), Nuttall's woodpecker (*Picoides nuttallii),* Pacific-slope flycatcher (*Empidonax difficilis*), Hutton's vireo (*Vireo huttoni),* California towhee (*Pipilo crissalis),* bushtit (*Psaltriparus minimus*), and western scrub-jay (*Aphelocoma californica*).

A complete list of birds identified on the site is attached as Appendix A.

Should you have any questions regarding the methodology or findings of this report, please call me at (949) 837-0404.

Sincerely,

Bradley J. Henderson
Biologist

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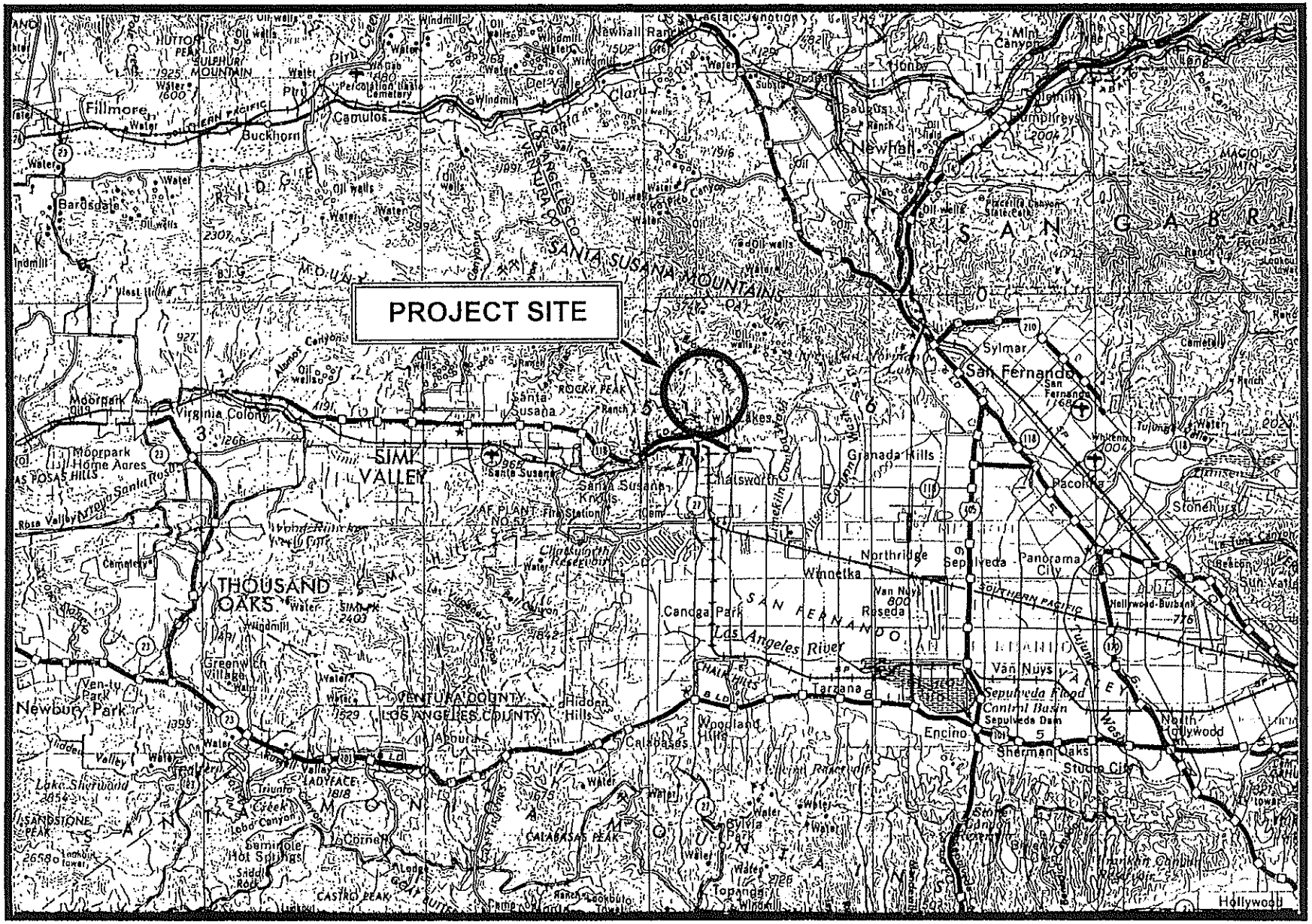
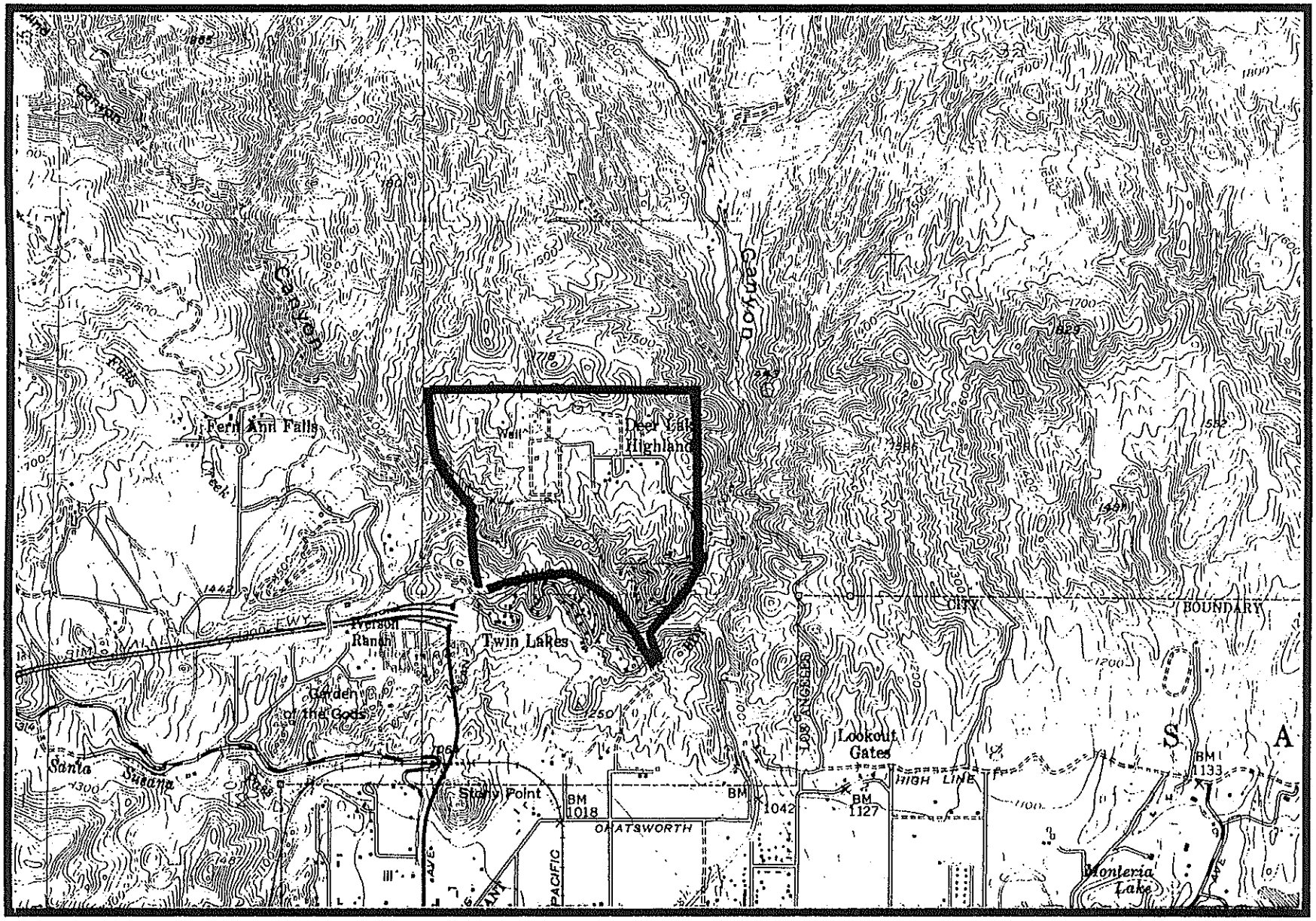
Adapted from USGS Los Angeles Quadrangle


PROJECT SITE
SANTA SUSANA MOUNTAINS
SIMI VALLEY
THOUSAND OAKS
Fillmore
Buckhorn
Camulos
Bardsdale
Moorpark
Virginia Colony
Santa Susana
Chatsworth
Granada Hills
Sylmar
San Fernando
Pacoima
Stonehurst
Northridge
Winnetka
Sepulveda
Panorama City
Canoga Park
Reseda
Van Nuys
Los Angeles River
Tarzana
Encino
Sherman Oaks
Studio City
North Hollywood
Hollywood
Newbury Park
Woodland Hills
Calabasas
Hidden Hills
VENTURA COUNTY
LOS ANGELES COUNTY
Sepulveda Flood Control Basin
Sepulveda Dam
Newhall
Saugus
Canyon
Lake Sherwood
LADYFACE
CASTRO PEAK
CALABASAS PEAK
Sylvia Park
Topanga
Wellwood-Burbank
Sun Valley
Tujunga
Lopez Canyon
Placerita Canyon State Park
Oil wells
Windmill
Water
Cemetery
Ranch
Lookout tower
Tank
Dam
Reservoir
Lake
Creek
Canyon
Valley
Hill
Mountain
Ridge
Pass
Junction
Station
Fire Station
Hot Springs
Saddle Rock
Seminole
La Corona
Ventu Park
Greenwich Village
Rosa Valley
Moorpark Home Acres
Las Posas Hills
Santa Susana Knolls
Chatsworth Reservoir
Chain Hills
Calabasas
Burbank
Glendale
Pacific Ocean
Southern Pacific
Santa Fe
Pacoima Wash
Tujunga Wash
Los Angeles River
Sylmar Canyon
Mint Canyon
Magic Mtn
Hutton Peak
Sulphur Mountain
Simi Pk 2403
Rocky Peak
Santa Susana
Lopez Canyon
Placerita Canyon
Sandstone Peak
Triunfo Creek
Lobo Canyon
Hidden Valley
Rocky Hill
Almos Canyon
Chatsworth Canyon
Tujunga Canyon
Sunland
Tujunga
Lake
Pacoima Canyon
Tujunga Canyon
Hidden Canyon



CHATSWORTH RIDGE ESTATES

Vicinity Map

GLENN LUKOS ASSOCIATES

EXHIBIT 2

APPENDIX A
BIRDS OBSERVED DURING LEAST BELL'S VIREO SURVEYS

ACCIPITRIDAE - HAWKS

Accipiter cooperii
Cooper's hawk
Buteo jamaicensis
red-tailed hawk
Buteo lineatus
red-shouldered hawk

FALCONIDAE - FALCONS

Falco sparverius
American kestrel

PHASIANIDAE - PHEASANTS & QUAILS

Callipepla californica
California quail

COLUMBIDAE - PIGEONS & DOVES

Zenaida macroura
mourning dove
Columbia livia
rock dove

TROCHILIDAE - HUMMINGBIRDS

Calypte anna
Anna's hummingbird
Archilochus alexandri
black-chinned hummingbird
Selasphorus sasin
Allen's hummingbird

PICIDAE - WOODPECKERS

Melanerpes formicivorus
acorn woodpecker
Picoides nuttallii
Nuttall's woodpecker
Picoides pubescens
downy woodpecker
Colaptes auratus

northern flicker

TYRANNIDAE - TYRANT FLYCATCHERS

Contopus sordidulus
western wood-pewee
Empidonax difficilis
Pacific-slope flycatcher
Sayornis nigricans
black phoebe
Myiarchus cinerascens
ash-throated flycatcher

APODIDAE - SWIFTS

Aeronautes saxatalis
white-throated swift

HIRUNDINIDAE - SWALLOWS

Stelgidopteryx serripennis
northern rough-winged swallow
Hirundo pyrrhonota
cliff swallow

CORVIDAE - JAYS & CROWS

Aphelocoma coerulescens
western scrub-jay
Corvus brachyrhynchos
American crow
Corvus corax
common raven

PARIDAE - TITMICE

Baeolophus inornatus
oak titmouse

SITTIDAE - NUTHATCHES

Sitta carolinensis
white-breasted nuthatch

AEGITHALIDAE - BUSHTITS

Psaltriparus minimus
bushtit

TROGLODYTIDAE - WRENS

Thryomanes bewickii
Bewick's wren
Troglodytes aedon
house wren

MUSCICAPIDAE - KINGLETS, GNATCATCHERS, THRUSHES & BABBLERS

Chamaea fasciata
wrentit

MIMIDAE - THRASHERS

Mimus polyglottos
northern mockingbird
Toxostoma redivivum
California thrasher

PTILOGONATIDAE - SILKY-FLYCATCHERS

Phainopepla nitens
phainopepla

VIREONIDAE - VIREOS

Vireo huttoni
Hutton's vireo
Vireo cassinii
Cassin's vireo

EMBERIZIDAE - WOOD WARBLERS, TANAGERS, BUNTINGS & BLACKBIRDS

Wilsonia pusilla
Wilson's warbler
Pheucticus melanocephalus
black-headed grosbeak
Piranga ludoviciana
western tanager
Pipilo crissalis
California towhee
Pipilo erythrophthalmus
spotted towhee
Melospiza melodia
song sparrow
Spizella atrogularis
black-chinned sparrow

Icterus galbula
Bullock's oriole

FRINGILLIDAE - FINCHES

Carpodacus mexicanus
house finch
Carduelis tristis
American goldfinch
Carduelis psaltria
lesser goldfinch
Carduelis lawrencei
Lawrence's goldfinch

Focused Survey for Southwestern Willow Flycatcher: Chatsworth Ridge Estates, Los Angeles County, California

Prepared for:
Glenn Lukos Associates
23441 South Pointe Drive, Suite 150
Laguna Hills, CA 92653
(714)837-0404

Contact: Amy Leverett

Prepared by:
Campbell BioConsulting
40950 Via Media
Temecula, CA 92591-1722
(909)506-4038

Contact: Kurt F. Campbell

24 July 1998

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Figure 1: Chatsworth Ridge Estates Project Site Vicinity 1a

Figure 2: Southwestern Willow Flycatcher survey area 1b

1.0 INTRODUCTION

This report presents methods and results of a focused survey for an Endangered species conducted for the Chatsworth Ridge Estates project, Chatsworth, California. A focused survey was performed to determine the presence or absence of Southwestern Willow Flycatcher (*Empidonax traillii extimus*) within project boundaries and a surrounding 30-meter (100-foot) buffer.

The survey area consists of a single approximately 17-acre (6.9-hectare) site located on the project site in the community of Chatsworth, in an unincorporated portion of Los Angeles County. This site is at the north end of Canoga Avenue between Topanga Canyon Boulevard and Browns Canyon Road (Figure 1). The site lies on the Oak Mountain, California, 7.5-minute U.S.G.S. quadrangle map and is on page 500, blocks 1A and 1B, of the current Thomas Bros. Guide for Los Angeles County (TBM 1997).

Southwestern Willow Flycatcher was not found on the site, and can be considered absent at this time. If onsite project actions are not completed by July 1999, additional studies would be necessary to confirm that the Southwestern Willow Flycatcher continues to be absent from the project site.

2.0 EXISTING CONDITIONS

The riparian habitat present on the study site consists largely of Willow-cottonwood riparian scrub and woodland, dominated by Red Willow (*Salix laevigata*) and Arroyo Willow (*Salix lasiolepis*), with Southern Mixed Chaparral on the surrounding slopes and extensive Coast Live Oak Woodland-Forest north of the project area. A moderate flow of water was present in the riparian area throughout the survey. Precise elevations were not determined, but appear to be between about 1200 and 1500 feet (365 and 457 meters).

3.0 FOCUSED SURVEY FOR SOUTHWESTERN WILLOW FLYCATCHER

The following sections present the methods, background and results of this focused survey conducted for the Chatsworth Ridge Estates project. This focused survey was conducted to determine the presence or absence of Southwestern Willow Flycatcher (*Empidonax traillii extimus*). Taxonomy and nomenclature for plants follows Hickman (1993), AOU (1998) for birds, and Laudenslayer et al. (1991) for all other terrestrial vertebrates. Habitat classification is based on Holland (1986).

3.1 Methods

From 30 May 1998 through 03 July 1998 a focused survey for Southwestern Willow Flycatcher was conducted in all potential habitat within the proposed project site. Willow Flycatcher is a state listed Endangered species, while the component subspecies breeding in southern California, Southwestern Willow Flycatcher, is a federally listed Endangered species.

All potential habitat on the entire project site was surveyed according to the current survey protocol (see below). Component floral species, their physical structure, and condition were evaluated based on both personal experience with, and published literature on this species' habitat requirements. See the discussion below for survey methods. Habitat structure was not analyzed quantitatively, and no attempt was made to define home ranges or territories. Potential habitat extending at least 30 meters (100 feet) beyond the project site boundaries was also examined to provide context.

The survey was conducted by two biologists: Stephen J. Myers (permit #PRT-804203) and Chet McGaugh (permit # PRT-836517). See Table 1 for dates, times and site conditions.

Table 1: Study Area Visits and Conditions for Southwestern Willow Flycatcher Survey.

Date	Times	Who	Conditions
30 May 98	0600 - 1000	S.J. Myers	46° - 68°F; cloud cover 0%, wind 0-3 mph (S)
20 June 98	0540 - 1030	S.J. Myers	58° - 69°F; cloud cover 100%, wind 0-2 mph (SW)
03 July 98	0615 - 1035	C. McGaugh	cloud cover 100%, wind calm

The published survey methodology (Sogge et al.1997) was followed. On the three survey visits, all potential habitat was carefully checked for this species; see beginning paragraphs of this Section for general description of field methods. The survey protocol to determine presence or absence of Southwestern Willow Flycatcher requires a federal 10(A)1(a) permit (see above for permit numbers).

This USFWS-adopted protocol includes the following four basic elements: (1) preparation: the surveyor must be familiar with the species' habitats, behavior, and identification; (2) timing: three visits must be made to all potentially occupied habitat, each in a separate window (15 - 31 May; 01 -21 June; 22 June - 10 July), and with each visit no closer together than at 5-day intervals; (3) methods: at each site surveyors should cautiously and conservatively broadcast recorded vocalizations of Willow Flycatchers; (4) surveys should be limited to the morning period between one hour before sunrise and 1000. Additional details on methods are provided in Sogge et al. (1997). All protocol methods were followed for the surveys conducted on the project site.

3.2 Background

This section presents a general and abbreviated discussion of the status, distribution, and breeding ecology of the species for which presence/absence focused surveys were conducted.

A small bird of muted colors, the Southwestern Willow Flycatcher (*Empidonax traillii extimus*) is an insectivore, taking insects on the wing or gleaning them from foliage. The species as a whole was given protection by the state of California as an Endangered species on 03 December 1990, and the Southwestern subspecies was federally listed as an Endangered species effective 29 March 1995.

This race of the Willow Flycatcher was originally described about 50 years ago (Phillips 1948), but our current understanding of its identification and range is based upon detailed work by Unitt (1987), which indicates that it breeds from western Texas west through southern California, north to southern Utah and southern Nevada, and south into extreme northern Mexico. Within California, it breeds from the south fork of the Kern River near the southern end of the Sierra Nevada, thence coastward from at least Santa Barbara County south to Baja California. The species as a whole is known to breed from near sea level to high mountain meadows, and this subspecies may be no exception in this regard. Winter range and habitats of *E.t. extimus* are almost completely unknown, but the species as a whole is known to winter from southern Mexico south at least to Panama (AOU 1998).

Southwestern Willow Flycatchers are normally present in southern California on breeding grounds beginning in early May and continuing through at least late July, though timing of local birds is obscured by more abundant migrants of other subspecies passing through the area. Migrants of subspecies other than *E.t. extimus* are very widespread, and uncommon to fairly common as they pass through southern California, mainly from late May through mid-June, and again from late July through September. The period in which migrants of other races are absent from southern California is approximately 14 June through 17 July (Unitt 1987).

As noted in the Federal Register final rule listing the species as endangered (USFWS 1995), the Southwestern Willow Flycatcher, "occurs in riparian habitats along rivers, streams, or other wetlands, where dense growths of willows (*Salix* spp.), *Baccharis* spp., Arrowweed (*Pluchea* spp.), buttonbush (*Cephalanthus* spp.), tamarisk (*Tamarix* spp.) Russian olive (*Eleagnus* spp.) or other plants are present, often with a scattered overstory of

cottonwood (*Populus* spp.) . . . Throughout the range of *E.t. extimus*, these riparian habitats tend to be rare, widely separated, small and/or linear locales, separated by vast expanses of arid lands. The Southwestern Willow Flycatcher has experienced extensive loss and modification of this habitat and is also endangered by other factors including brood parasitism by the Brown-headed Cowbird."

In describing nesting habitats, the Final Rule (USFWS 1995) also noted that the subspecies, "nests in thickets of trees and shrubs approximately 4 - 7 meters (13 - 23 feet) or more in height, with dense foliage from approximately 0 - 4 meters (13 feet) above ground, and often a high canopy cover percentage. The diversity of nest site plant species may be low (e.g., willows) or comparatively high . . . Nest site vegetation may be even- or uneven-aged, but is usually dense and structurally homogenous . . . Following modern changes in riparian plant communities, *E.t. extimus* still nests in native vegetation where available, but has been known to nest in thickets dominated by tamarisk and Russian olive . . . Nesting Willow Flycatchers of all subspecies generally prefer areas with surface water nearby . . . but *E.t. extimus* virtually always nests near surface water or saturated soil (Phillips et al. 1964, Muiznieks et al. 1994). At some nest sites surface water may be present early in the breeding season but only damp soil is present by late June or early July."

3.3 Results

Southwestern Willow Flycatcher was not found on the site, and can be considered absent at this time. However, the project site has potentially appropriate habitat and could provide habitat in the future for the Southwestern Willow Flycatcher. If onsite project actions are not completed by July 1999, additional studies would be necessary to confirm that the Southwestern Willow Flycatcher continues to be absent from the project site.

Two species of special interest were recorded on the project site during the surveys: Cooper's Hawk (*Accipiter cooperii*; state Species of Special Concern), and Ashy Rufous-crowned Sparrow (*Aimophila ruficeps canescens*, state Species of Special Concern). A single Cooper's Hawk was observed on 20 June, in addition to 3 juveniles and at least one adult seen on 03 July. A pair of Rufous-crowned Sparrows were observed on 30 May, and 6 individuals, including a juvenile, were noted on 20 June. No other legally sensitive or special interest species were recorded.

4.0 CONCLUSIONS

A focused survey was conducted for Southwestern Willow Flycatcher on a 17-acre (6.9-hectare) site in an unincorporated area of Los Angeles County for the Chatsworth Ridge Estates project. Southwestern Willow Flycatcher is a state and federally listed Endangered bird species breeding across the southwestern United States from southern California east to western Texas. Surveys were conducted in accordance with the current presence/absence survey protocol, by biologists qualified and holding current permits for such work. Southwestern Willow Flycatcher was confirmed to be absent at this time. Should project actions be delayed for more than one year after this survey was conducted (i.e., after July 1999), it will be necessary to re-confirm the status of this species on the project site.

Please note that this report is not intended as a general analysis of biological issues on the site, and is not intended to provide interpretations of significance in light of the California Environmental Quality Act or other environmental regulations at local, state or federal levels.

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Focused Survey for Southwestern Willow Flycatcher: Chatsworth Ridge Estates Project Los Angeles County, California

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26 September 2000

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1: Southwestern Willow Flycatcher Focused Survey Area . . . . . Attached

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A: Project Site Photographs . . . . . Attached

1•0 INTRODUCTION

This report presents information on a focused survey to determine presence or absence of Southwestern Willow Flycatcher (*Empidonax traillii extimus*) on a 17-acre (6.9-hectare) project site in an unincorporated area of Los Angeles County, California. The survey was conducted along reaches of Browns Canyon and Devil Canyon which lie within the project site; these two reaches are hereafter referred to as the, "survey area."

The survey area lies just within and immediately north of the community of Chatsworth in the City of Los Angeles; the areas outside the city are in unincorporated portions of Los Angeles County (Figure 1). The Browns Canyon reach is shown on page 500 (block B1) and page 480 (block B7) of the current Thomas Guide for Los Angeles County (Thomas Bros. 2000), while the Devil Canyon reach is shown on page 500 (blocks A1 and B1). Both reaches are also shown on the Oat Mountain, California, 7.5-minute U.S.G.S. quadrangle map (Oat Mountain 1992). The survey area consists of approximately 7050 linear feet of riparian habitat with an estimated average width of just under 50 feet, or a total of approximately 8 acres (about 3.1 hectares) of Willow Flycatcher potential habitat (Exhibit 1).

2•0 EXISTING CONDITIONS

For this report taxonomy and nomenclature follow Hickman (1993) for plants, AOU (1998) for birds species, Unitt (1987) and Browning (1993) for Willow Flycatcher subspecies taxonomy and distribution, and Laudenslayer et al. (1991) for non-avian terrestrial vertebrates. Natural community terminology generally follows Holland (1986).

The area of the focused survey consists of rolling foothills at the base of the Santa Susana Mountains of eastern Los Angeles County (Exhibit 1). Surrounding canyon slopes throughout the area support intact Southern Mixed Chaparral, with small numbers of scattered rural residences. Elevation within the study area along Devil Canyon ranges between approximately 1120 and 1230 feet (241 to 375 meters), and along Browns Canyon between approximately 1165 and 1230 feet (355 to 375 meters) above sea level. Overall, bank width varies between approximately 10 and 40 feet (3 to 12 meters), with potential habitat width estimated at 10 to approximately 100 feet (3 to 24 meters), though the average width is probably between 40 and 50 feet.

The Browns Canyon reach supports primarily Southern Cottonwood - Willow Riparian Forest, variably dominated by Red Willow (*Salix laevigata*), Arroyo Willow (*Salix lasiolepis*), and Coast Live Oak (*Quercus agrifolia*), with smaller amounts of Western Sycamore (*Platanus racemosa*). The understory in this reach is dominated by Mule Fat (*Baccharis salicifolia*) and sapling willows, with an herb layer dominated by California Mugwort (*Artemisia douglasiana*) and Western Ragweed (*Ambrosia psilostachya*) and smaller amounts of Horehound (*Marrubium vulgare*), grasses, and other annuals. Portions of this reach are constrained by shallow concrete banks and riprap. Overall habitat quality in this reach, with regard to potential for use by Southwestern Willow Flycatcher was judged to be moderate, based on vegetation structure, continuity with surrounding potential habitat, and disturbance levels.

The Devil canyon reach lies on either side of a concrete retention dam near the eastern boundary of the project site. Southern Cottonwood - Willow Riparian Forest is also present in this reach, but includes Goodding's Black Willow (*Salix gooddingii*), Fremont's Cottonwood (*Populus fremontii*), relatively more Giant Reed (*Arundo donax*), and less Coast Live Oak. Common understory plants included blackberry (*Rubus* sp.), sapling willows, phacelia (*Phacelia* sp.), Poison-oak (*Toxicodendron diversilobum*), California Mugwort (*Artemisia douglasiana*), and various annual grasses. Algae was very common in pools within the streambed. Overall habitat quality in this reach, with regard to potential for use by Southwestern Willow Flycatcher was judged to

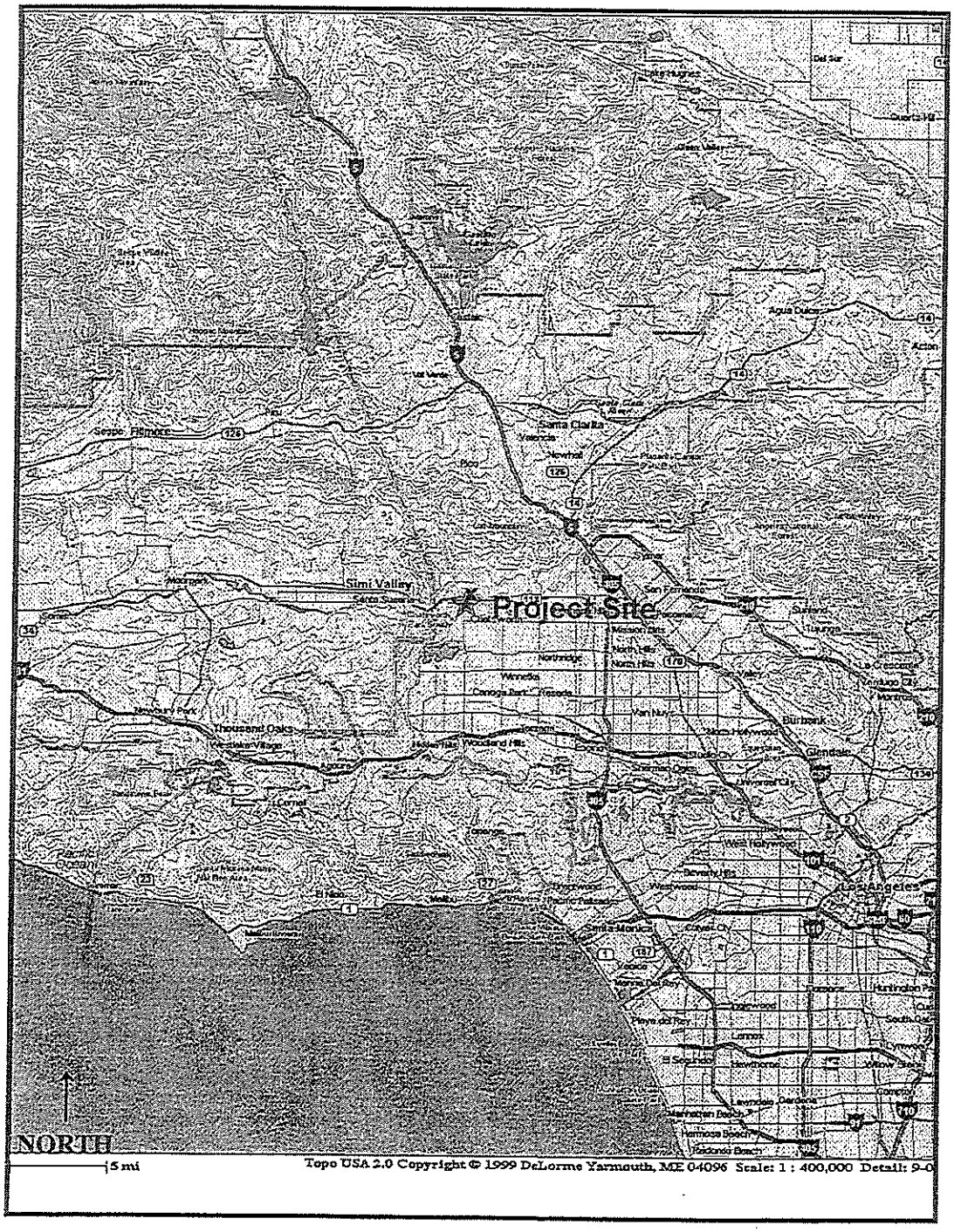

Figure 1

Project Site Vicinity
Chatsworth Ridge Estates Project, Los Angeles County, California

be moderate to low, based on vegetation structure (slightly more constrained in width and more open than in Browns Canyon), continuity with surrounding potential habitat, and disturbance levels.

On all three visits surface water was present in both drainages. Flow was variable during the survey period, with water present over as little as approximately 50-60 percent of Devil Canyon drainage length, but flowed throughout Browns Canyon drainage. The survey area is fairly lightly visited by people, with scattered hikers and vehicles along Brown's Canyon Road. None were seen along Devil Canyon drainage, though fairly fresh footprints from a single individual were seen on two of three visits.

During the survey, 73 species of vertebrate animals were detected in the survey area with totals of one amphibian, three reptile species, 14 mammal species, and 55 species of birds. The following species detected during the survey have special regulatory or management status: Cooper's Hawk (*Accipiter cooperii*; state Species of Special Concern), Western Yellow Warbler (*Dendroica petechia brewsteri*; state Species of Special Concern), and Ashy (=Southern California) Rufous-crowned Sparrow (*Aimophila ruficeps*; federal Species of Concern and state Species of Special Concern). A single pair of Coopers Hawks apparently nested in Devil Canyon (outcome unknown). A single Yellow Warbler noted on the first visit at the east end of the Devil Canyon reach was presumably a migrant as it was not noted again. Based on information from Browning (1994), this individual would most likely have been of the special status subspecies *Dendroica petechia brewsteri*). Rufous-crowned Sparrows were apparently present at low densities in the chaparral adjacent to the survey area throughout, visiting the riparian on a couple of occasions presumably for water.

Although no quantitative sampling was performed, bird species most commonly found during the survey visits were judged to be Anna's Hummingbird (*Calypte anna*), Bewick's Wren (*Thryomanes bewickii*), Wrentit (*Chamaea fasciata*), and House Finch (*Carpodacus mexicanus*).

3•0 FOCUSED SURVEY FOR SOUTHWESTERN WILLOW FLYCATCHER

The following subsections present background information, methods and results for this focused survey. This survey was conducted to determine the presence or absence of Southwestern Willow Flycatcher (*Empidonax traillii extimus*), following the current standard protocol (Sogge et al. 1997).

3•1 Background Information

The following information provides a relevant synopsis of the taxonomy, ecology and habitat requirements of Southwestern Willow Flycatcher, but is not intended to be exhaustive.

A small bird of muted colors, very similar in appearance to several other flycatchers, Willow Flycatcher (*Empidonax traillii*) is an insectivore, taking insects on the wing or gleaning them from foliage. The species as a whole was given protection by the state of California as an Endangered species on 03 December 1990, and the component subspecies breeding from southern California into western Texas, Southwestern Willow Flycatcher (*E.t. extimus*), additionally became a federally listed Endangered species as of 27 February, 1995 (USFWS 1995).

This subspecies (= "race") of the Willow Flycatcher was originally described about 50 years ago (Phillips 1948), but our current understanding of its identification and range is based upon detailed work by Unitt (1987), which indicates that it breeds from western Texas west through southern California, north to southern Utah and southern Nevada, and south into extreme northern Mexico. Within California, it breeds from the south fork of the Kern River near the southern end of the Sierra Nevada, thence coastward from at least Santa Barbara County

south to Baja California. The species as a whole is known to breed from near sea level to high mountain meadows, and this subspecies may be no exception in this regard. Winter range and habitats of Southwestern Willow Flycatcher are almost completely unknown, but the species as a whole is known to winter from southern Mexico south at least to Panama (AOU 1998).

Southwestern Willow Flycatchers are normally present in southern California on breeding grounds beginning in early May and continuing through at least late July, though timing of local birds is obscured by more abundant migrants of other subspecies passing through the area. Migrants of subspecies other than *E.t. extimus* are very widespread, and uncommon to fairly common as they pass through southern California, mainly from late May through mid-June, and again from late July through September. The period in which migrants of other subspecies are absent from southern California is approximately 14 June through 17 July (Unitt 1987).

As noted in the Federal Register final rule listing the species as endangered (USFWS 1995), the Southwestern Willow Flycatcher, "occurs in riparian habitats along rivers, streams, or other wetlands, where dense growths of willows (*Salix* spp.), *Baccharis* spp., Arrowweed (*Pluchea* spp.), buttonbush (*Cephalanthus* spp.), tamarisk (*Tamarix* spp.) Russian olive (*Eleagnus* spp.) or other plants are present, often with a scattered overstory of cottonwood (*Populus* spp.) . . . Throughout the range of *E.t. extimus*, these riparian habitats tend to be rare, widely separated, small and/or linear locales, separated by vast expanses of arid lands. The Southwestern Willow Flycatcher has experienced extensive loss and modification of this habitat and is also endangered by other factors including brood parasitism by the Brown-headed Cowbird."

3•2 Methods

From 29 May 1999 through 09 July 1999, Campbell BioConsulting conducted a focused survey for Southwestern Willow Flycatcher throughout all potentially suitable habitat within the survey area (Exhibit 1).

Surveys were conducted according to the current protocol for such work (see below). Component floral species, their physical structure, and condition were evaluated based on both personal experience with, and published literature on this subspecies' habitat requirements. See the discussion below for survey methods. Habitat structure was not analyzed quantitatively, and no attempt was made to define home ranges or territories. All habitats extending at least 30 meters (100 feet) beyond the survey area boundaries was also examined to provide context. All surveys were conducted by Kurt F. Campbell (permit # PRT-781485; exp. 18 Mar 2002). See Table 1 for dates, times and site conditions.

Table 1. Focused Survey Site Visits and Weather Conditions

Date	Times	Conditions
29 May 00	0530-0930	57°F (start); cloud cover 0%; wind calm; no dew; visibility good
11 June 00	0525-0900	53→73°F; cloud cover 0%; wind calm; no dew; visibility good
09 July 00	0525-0900	52→66°F; cloud cover 0→10%; wind calm; no dew; visibility good

The published survey methodology (Sogge et al. 1997) in effect at the time of the survey was followed. On all survey visits, all potential habitat was carefully checked for this species, including slow walking with frequent stops to listen and play taped Willow Flycatcher vocalizations. Tapes were played approximately every two minutes, or at distance intervals of approximately 75-100 feet (23-30 meters). At some points the habitat could be surveyed by walking along the road, while at other times it was necessary to walk at the riparian edge or to

carefully enter the riparian habitat in search of birds and vocalizations. The survey protocol to determine presence or absence of Southwestern Willow Flycatcher requires a federal 10(A)1(a) permit.

This USFWS-adopted protocol includes the following four basic elements: (1) preparation: the surveyor must be familiar with the species' habitats, behavior, and identification; (2) timing: three visits must be made to all potentially occupied habitat, each in a separate window (15 - 31 May; 01 -21 June; 22 June - 10 July), and with each visit no closer together than at 5-day intervals; (3) methods: at each site surveyors should cautiously and conservatively broadcast recorded vocalizations of Willow Flycatchers; (4) surveys should be limited to the morning period between one hour before sunrise and 1000. Additional details on methods are provided in Sogge et al. (1997). All protocol methods were followed for this survey.

The protocol for use within the entire range of the Southwestern Willow Flycatcher, including California, was modified shortly after the end of the current survey season (USFWS 2000), however changes in required procedure are stated to be applicable only to subsequent surveys.

3•3 Results

No Willow Flycatchers (of any subspecies) were detected in the survey area, and thus Southwestern Willow Flycatchers can be considered absent at this time. The nearest known breeding site in recent decades is from the Santa Clara River, roughly 12 to 15 miles north or northwest of the project site.

Part of the current protocol requirement for this species is to report on numbers and locations of all Brown-headed Cowbirds detected. Brown-headed Cowbirds (*Molothrus ater*) were detected on all three survey visits, as follows: 20 May, 3 males in Brown's Canyon and 1 male and 1 female in Devil Canyon; 11 June, none in Brown's Canyon and 5 males and 1 female in Devil Canyon; 9 July, none in Browns Canyon and 2 males in Devil Canyon. Because Brown-headed Cowbirds are not strongly territorial and home ranges are poorly defined, overlapping, and variable by time of day, often with separate foraging and egg-laying areas (Lowther 1993) exact locations of birds were not mapped in the field. In addition, anecdotal data such as that for cowbirds during a survey such as this are often poorly correlated to actual numbers of individual birds present (Verner 1985).

4•0 CONCLUSIONS

A focused survey was conducted for Southwestern Willow Flycatcher in approximately 8.1 acres (about 3.3 hectares) of potentially suitable habitat on the Chatsworth Ridge Estates project site, overlapping the northwestern edge of the City of Los Angles, Los Angeles County. Habitat quality with regard to potential for use by Southwestern Willow Flycatcher was judged to be moderate to low, based on defined habitat characteristics and surveyor experience. Southwestern Willow Flycatcher is a state and federally listed Endangered species breeding across the southwestern United States from southern California to western Texas. Surveys were conducted in accordance with the applicable presence/absence survey protocol. Southwestern Willow Flycatcher was confirmed to be absent at this time. Should project actions affecting remaining potentially suitable habitat be delayed for more than one year after this survey was conducted (i.e., after July 2001), we strongly recommend either conducting a new survey or holding an informal consultation with the U.S. Fish and Wildlife Service and California Department of Game to confirm any assumption of the continued absence of the species along the surveyed reaches of Browns Canyon and Devil Canyon.

Please note that this report is not intended as a general analysis of biological issues on the site, and is not intended to provide interpretations of significance in light of the California Environmental Quality Act or any other environmental regulations at local, state or federal levels.

5•0 CITED REFERENCES

Note: Citation and reference formats follow the name-year, or "Harvard", system (CBE 1994).

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APPENDIX A
PROJECT SITE PHOTOS

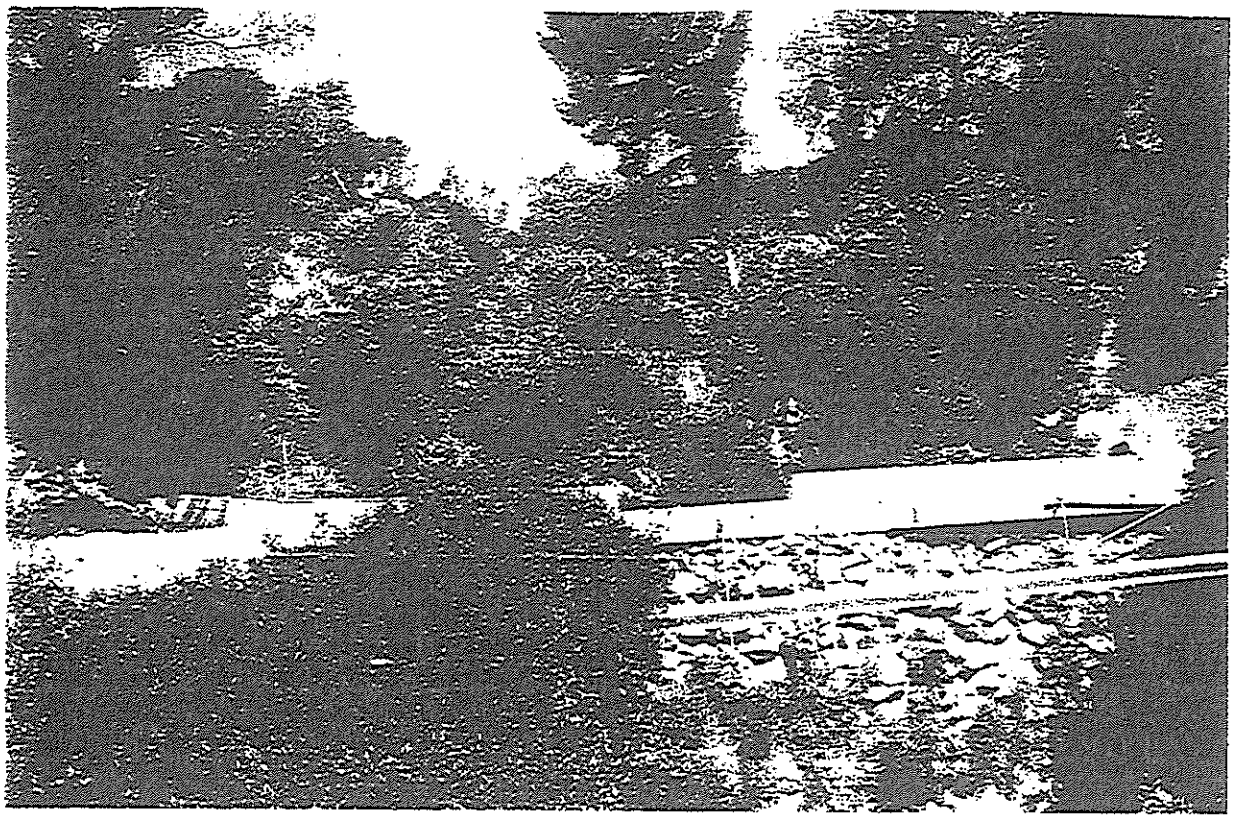

Photo 1. Devil Canyon at Saugus Road bridge, looking northwest. Note nonnative pines.

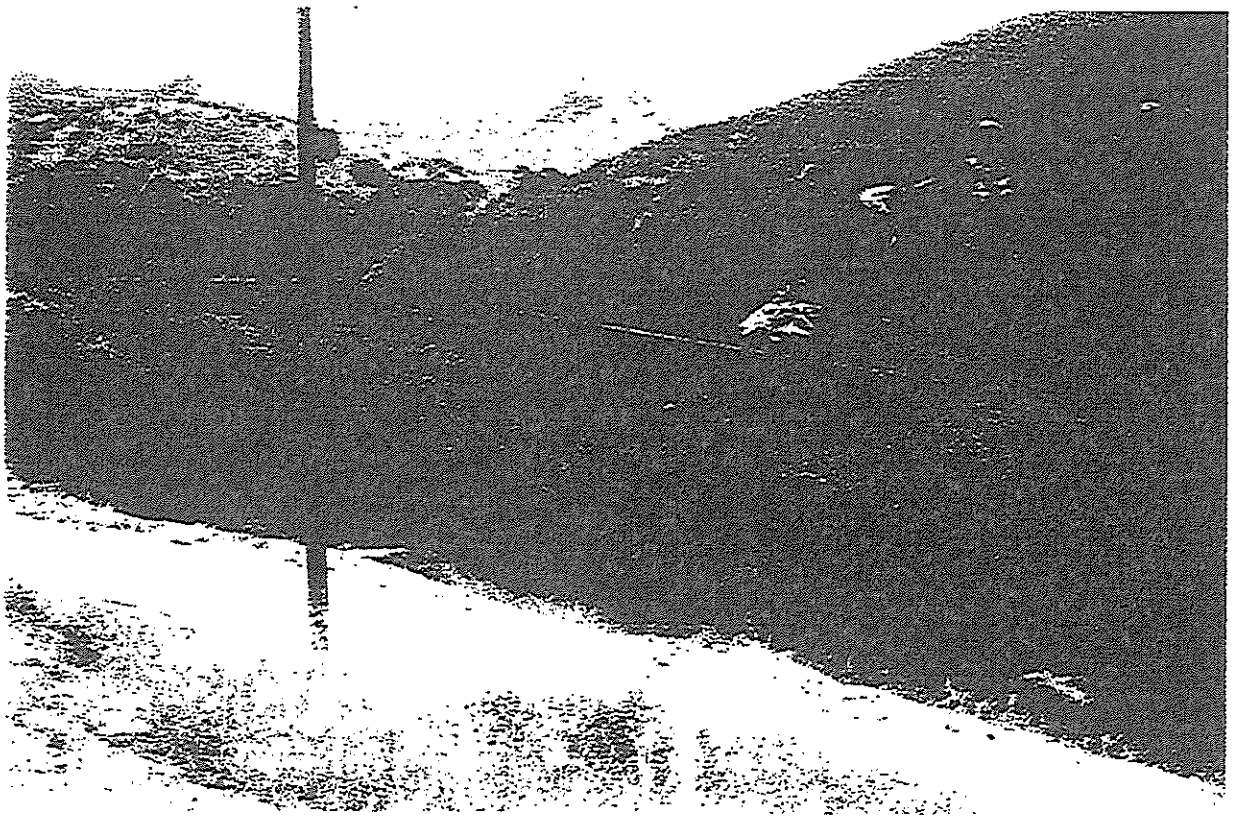

Photo 2. Devil Canyon, just northeast of Saugus Road bridge, looking east. This is the broadest area of riparian vegetation in the surveyed portion of this drainage.

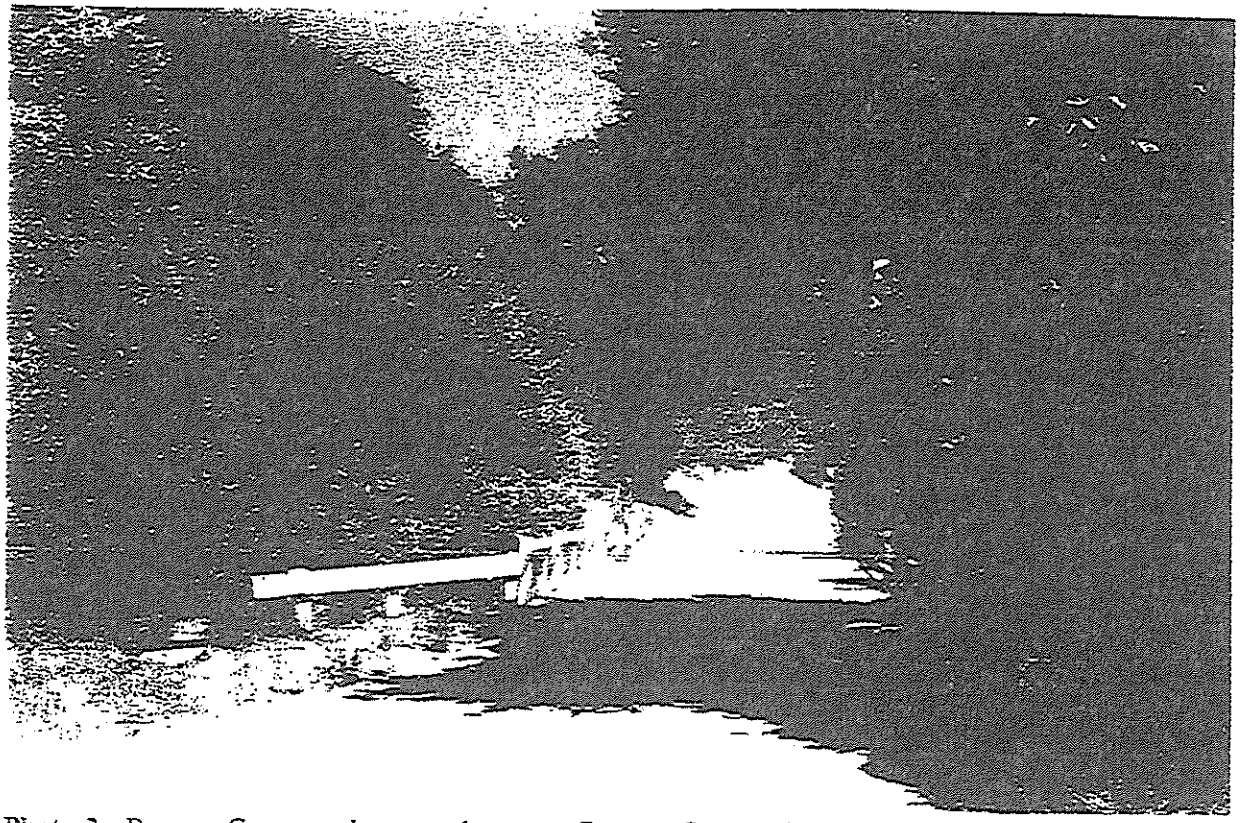

Photo 3. Browns Canyon where creek crosses Browns Canyon Road, looking northwest. This is the approximate starting point for coverage of this reach.

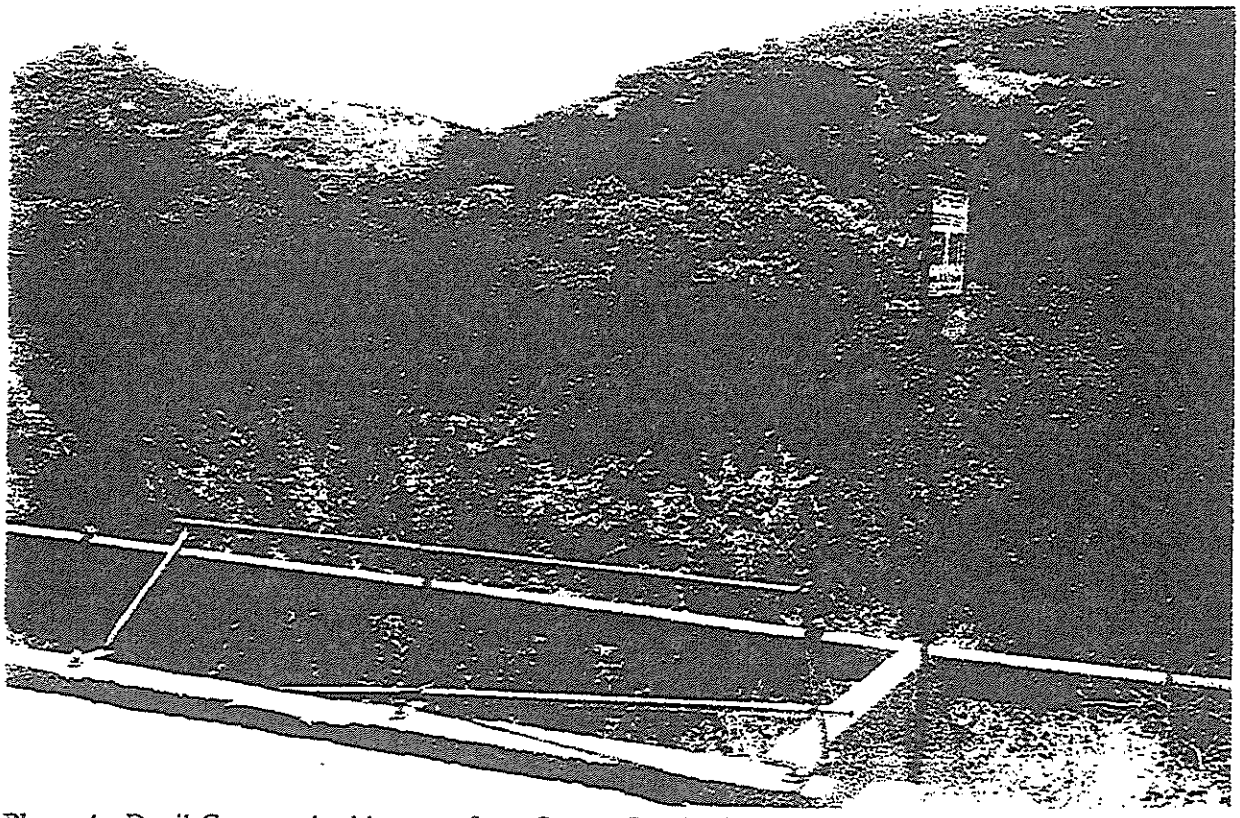

Photo 4. Devil Canyon, looking east from Saugus Road bridge, viewing the same riparian area as in the previous photo. Note Giant Reed (*Arundo donax*) in foreground.

Photo 5. Browns Canyon, fairly typical view of understory, looking northeast.

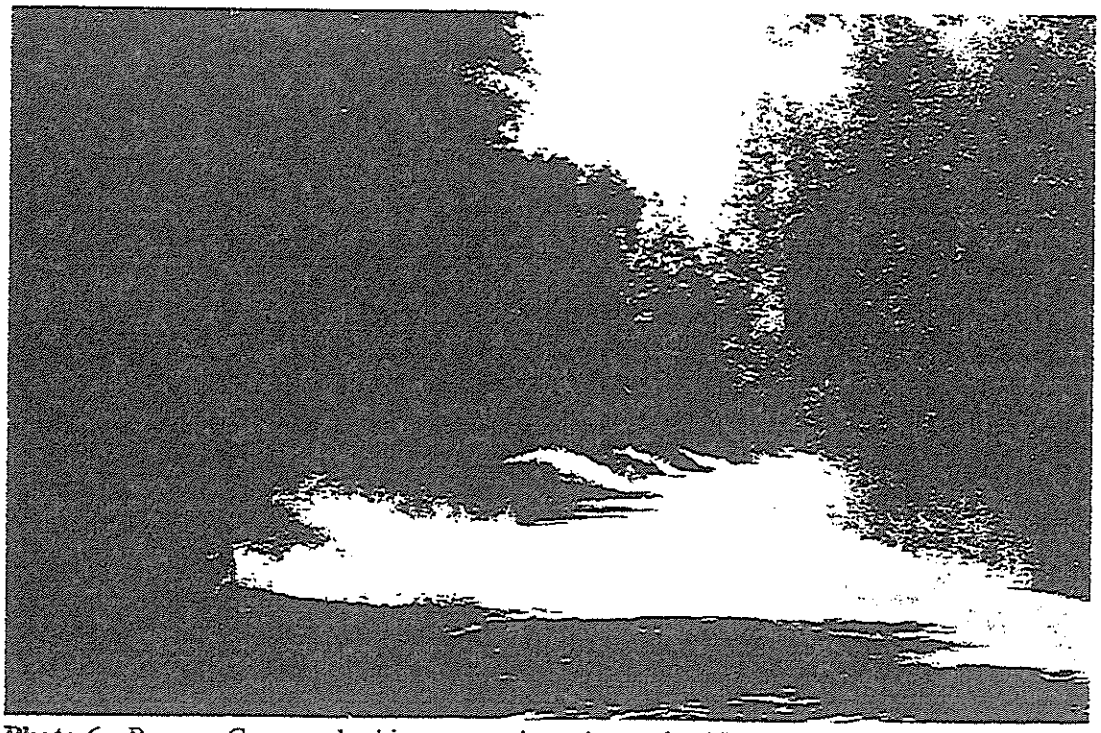

Photo 6. Browns Canyon, looking approximately south. Note Coast Live Oaks on left (where creek is flowing) and willows on right.

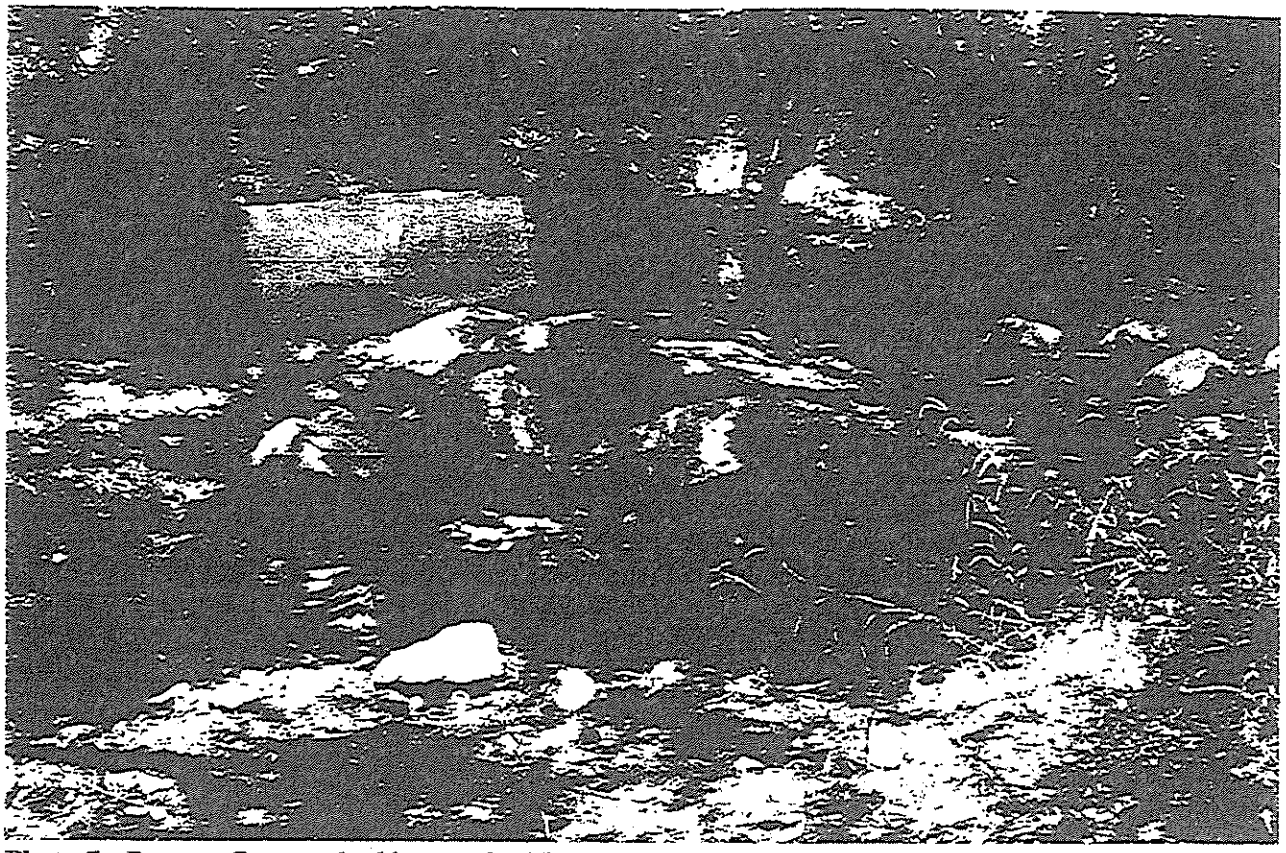

Photo 7. Browns Canyon, looking south. Note broken concrete and debris (e.g., refrigerator in upper left), which was moderate to light in volume over most of the survey area.

GLENN LUKOS ASSOCIATES
Regulatory Services

November 15, 2000 (Revised November 27, 2000)

Mr. Richard Garlinghouse
Presidio Chatsworth Partners LLC
595 Market Street, Suite 2400
San Francisco, California 94105

SUBJECT: Results of Biological Reconnaissance on 13-Acre Property Adjacent to the Chatsworth Ridge Estates Project Site, Los Angeles County, California.

Dear Mr. Garlinghouse:

Biologists from Glenn Lukos Associates, Inc. (GLA) examined the above-mentioned site on November 6, 2000 to evaluate potential biological and jurisdictional constraints associated with the property. The proposed project site is located in an unincorporated section of Los Angeles County near the City of Chatsworth [Exhibit 1]. The 13-acre site is depicted on the U.S. Geological Survey (USGS) 7.5 minute topographic map Oat Mountain, California (dated 1952 and photo revised in 1969) [Exhibit 2]. The topography of the site includes a manufactured slope adjacent to the terminus of Topanga Canyon Boulevard, a small gully, and a rocky peak sloping to and including Devil Canyon, a semi-perennial stream. The elevation of the site ranges from approximately 1,270 feet above mean sea level (MSL) in the southeastern section to approximately 1,600 feet above MSL in the middle of the property. Soils on the site consist of sandy loams weathered from sandstone bedrock, along with alluvial soils in drainages.

METHODOLOGY

Sensitive biological resources present, or potentially present were identified through a literature review using the California Natural Diversity Data Base (CNDDB) (2000). The brief field examination was focused on a number of objectives: (1) vegetation mapping; (2) a general floristic plant survey; (3) a general wildlife survey; and (4) a focused survey for Santa Susana tarplant. Because of the timing of GLA's examination of the property, the results provided in this letter report are preliminary and must be verified by in-season surveys for many of the sensitive species mentioned below.

Vegetation associations were mapped in the field directly onto acetate overlays of an 80-scale black-and-white aerial photograph of the site. Vegetation associations were mapped based upon descriptions provided by Holland (1986) with, as appropriate, modifications to more accurately

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characterize site conditions.

All plant species encountered during the field surveys were identified and recorded following the guidelines adopted by CNPS and CDFG, as described by Nelson (1994). Scientific nomenclature and common names used in this report follow Hickman (1993). When not available in Hickman, common names are taken from McAuley (1985), Roberts (1998), or Beauchamp (1986). As mentioned previously, the November survey would not have resulted in the detection of many annual species, or other species not in bloom at the time of the survey. Santa Susana tarplant (*Hemizonia minthornii*), a state-listed species, is known from the area and was the only target special-status plant capable of being detected in November. GLA therefore did conduct a focused survey for Santa Susana tarplant.

Wildlife species as detected during field surveys by sight, calls, tracks, scat, or other sign were recorded. No focused surveys for special-status wildlife were attempted, because November is outside the time frame required by protocols for virtually all target species potentially occurring on the site.

RESULTS

Vegetation

The site is dominated by three vegetation communities: chamise chaparral (10.62 acres), willow woodland (1.79 acres), and oak woodland/willow woodland ecotone (0.58 acre). The chaparral is dominated by chamise (*Adenostoma fasciculatum*), black sage (*Salvia mellifera*), laurel sumac (*Malosma laurina*), our Lord's candle (*Yucca whipplei*), California buckwheat (*Eriogonum fasciculatum*) hoaryleaf ceanothus (*Ceanothus crassifolius*) and deerweed (*Lotus scoparius*). The willow woodland is dominated by arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), mule fat (*Baccharis salicifolia*), and western sycamore (*Platanus racemosa*). The understory includes California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), and mugwort (*Artemisia douglasiana*). The oak/willow woodland ecotone includes a number of coast live oak (*Quercus agrifolia*) trees. Willow woodland (i.e., Southern Mixed Riparian Forest) is ranked as S2.1 ("very threatened"), with a small number of occurrences, individuals, or acres) by CDFG. All plant species recorded for the property are provided in Appendix A.

Santa Susana Tarplant

The CNDDB revealed several occurrences of Santa Susana Tarplant in the vicinity of the site and the Santa Susana Pass. Specifically, Occurrence Number 11 of the CNDDB is apparently very close to the site. The CNDDB states that Occurrence Number 11 is "near the north terminus of Topanga Canyon Boulevard. and the Simi Valley Freeway."

A cut slope at the end of Topanga Boulevard does support Santa Susana tarplant, but the three individuals noted were located west of the property on another parcel. Two of the three plants were still in bloom on November 6. While the portion of the cut slope on the property appears to be similar to the area west of the property, no Santa Susana tarplant was detected. The bottom third of the slope has been "weed-whipped", apparently for fuel modification. If this activity has been ongoing, it would likely have resulted in the extirpation of Santa Susana tarplant from the site. The three individuals found off site were above the zone of maintenance and appeared healthy. A second potential impact to tarplant in the vicinity is the prevalence of the non-native fountain grass (*Pennisetum setaceum*) that dominates the cut slope. This aggressive weed would likely prevent Santa Susana tarplant from becoming established on the slope. While there are some boulders and other rock outcrops on the remainder of the site representing potential habitat, no Santa Susana tarplant was detected.

Plummer's Mariposa Lily

Plummer's mariposa lily (*Calochortus plummerae*) is known from the adjacent property. Suitable soils, slope, aspect, and vegetative cover are present on the site. Approximately 30-40 dead fruiting stalks were identified as genus *Calochortus*, potentially *C. plummerae*, but a positive identification and assessment of numbers cannot be performed without flowering-season surveys.

Wildlife

The brief examination of the site revealed a limited number of wildlife species. Two special-status species were identified: Cooper's hawk (*Accipiter cooperii*) and ashy rufous-crowned sparrow (*Aimophila ruficeps canescens*). The Cooper's hawk is a CDFG Species of Special Concern. Cooper's hawks are found in woodland habitats. They prey primarily on birds but they are known to eat small mammals, reptiles, amphibians, insects and fish. The ashy rufous-crowned sparrow, also a CDFG Species of Special Concern, is a resident species frequently found in coastal sage scrub and in other xeric habitats. Like other sparrows, it primarily eats seeds and insects. A list of all the wildlife species detected on the site is provided in Appendix A.

Jurisdictional Areas

A small gully is located in the southern end of the property. This feature does not exhibit an ordinary high water mark (OHWM) and is therefore not subject to Corps/CDFG jurisdiction. A drainage on the west side of the property and Devil Canyon and associated riparian vegetation are subject to Corps and CDFG jurisdiction.

POTENTIAL CONSTRAINTS/SURVEY NEEDS

The 13-acre site may be added to the Chatsworth Ridge Estates development project. Pursuant to the California Environmental Quality Act (CEQA), existing biological resources would need to be documented. Likewise, an impact analysis would need to be performed for the portion of the 13-acre parcel proposed for development.

The following tasks may need to be completed for the project Final Environmental Impact Report (FEIR); boldface indicates tasks that would likely be required:

A. Floristic plant surveys and focused special-status plant surveys

1. **Braunton's Milkvetch (*Astragalus brauntonii*)**
2. **Nevin's Barberry (*Berberis nevinii*)**
3. **Catalina Mariposa Lily (*Calochortus catalinae***
4. **Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis***
5. **Plummer's Mariposa Lily-*Calochortus plummerae***
6. **San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina***
7. **Slender-Horned Spineflower (*Dodecahema leptoceras*)**
8. **Robinson's Pepper grass (*Lepidium virginicum* var. *robinsonii***
9. **Ocellated Humboldt Lily (*Lilium humboldtii* ssp. *ocellatum***
10. **Fish's Milkwort (*Polygala cornuta* var. *fishiae***

B. General wildlife surveys

C. Analysis of impacts to vegetation, wildlife, and special-status plants (if present)

D. Jurisdictional delineation for Devil Canyon and tributary drainage upstream from the debris dam (optional - would increase acreage of preserved jurisdictional areas for CEQA and agency permitting)

E. Focused surveys for red-legged frog, least Bell's vireo, southwestern willow flycatcher (It is unknown if these surveys would actually be required by the agencies, so far we have had no listed species elsewhere in Devil Canyon. Since the portion of Devil Canyon associated with the 13-acre parcel is to be preserved, this task is likely optional.)

F. Oak Tree survey

Task A and subtasks 1-10 above would have to be performed during the spring and early summer. Task B is usually performed during the spring and summer, but could probably be performed now. Task C would occur after tasks A and B were completed to the lead agency's satisfaction. Tasks D and F could be performed at any time and Task E must be performed in the spring/summer.

POTENTIAL IMPACTS

The latest version of the grading plans[1] depicts approximately 4.13 acres of impact to the 13-acre site. The impacted area is dominated by chamise chaparral. No other vegetation communities would be impacted by the proposed development.

Focused surveys will be conducted to determine whether the 13-acre site currently supports sensitive species. If sensitive species are identified on the property, the level of impacts will be determined at that time. If proposed development within the 13-acre site will impact sensitive resources, these impacts would be mitigated below a level of significance.

Corps/CDFG Jurisdiction.

The proposed development does not appear to impact jurisdictional areas.

Special-Status Plants

Of the plants species identified above, only Plummer's mariposa lily is likely to be identified within the propsed development area. If Plummer's mariposa lily is impacted by the proposed development, mitigation will consist of 1:1 replacement of individuals. A qualified restoration biologist/botanist(Project Monitor) will oversee all aspects of the Plummer's mariposa mitigation plan. The Project Monitor will mark individual plants during the spring or early summer with pin

[1] A new set of plans dated May 4, 2000 depicting the proposed development on the 13-acre parcel were transmitted to GLA on November 3, 2000.

flags to aid in the location of plants after fruits have matured. Seed and/or bulbs will be collected from onsite populations during the summer or fall, prior to site grading. Seed will be collected in late July or August, depending on the level of maturity of the seeds. Collected seeds will be stored for later propagation. In addition, bulbs of dormant plants will be dug up from areas with particularly dense populations of Plummer's mariposa during August or September and stored for later transplanting.

Propagated mariposa lilies typically germinate at approximately 80%. Therefore, at least 2,200 seeds and/or bulbs will be planted in a nursery to ensure that at least 1,700 plants are produced. Seed-propagated plants will be grown in the nursery for two years to allow the bulbs to reach optimal transplanting size. Bulbs collected from the field will be transplanted the fall/winter after collection to suitable locations within open space areas on the project site. In addition, any remaining seed will be hand broadcast into mitigation areas during the first or second fall/winter after collection.

The propagated plants, directly relocated bulbs, and remaining seed will be dispersed into appropriate habitats as directed by a restoration biologist. These areas will be chosen within or adjacent to existing Plummer's mariposa lily populations, and may include areas disturbed by grading of the project. All seeds and bulbs will be transplanted by the end of the second year after collection. A two-year monitoring program will be conducted to evaluate the mitigation sites and ensure that the 1:1 ratio has been achieved.

Special-Status Wildlife

Two special-status species have been identified from the 13-acre property: Cooper's hawk and ashy rufous-crowned sparrow. To mitigate for potential losses to these species, active nests will be avoided. Prior to any construction activity, the project applicant shall have a qualified biologist survey the project site for the presence of any occupied raptor nests. If such a nest is found, it shall be protected until nesting activity has ended to ensure compliance with Section 3503.5 of the California Fish and Game Code. Measures to ensure protection of the nesting raptor will be determined by the monitoring biologist and will depend on factors such as the species of raptor nesting and the construction schedule.

In addition, if grading or clearing of vegetation is scheduled to take place during the nesting season for migratory birds (March 15-August 15), a qualified biologist will survey areas to be graded no more than three days prior to the start of work. If active nests of migratory birds are located, measures to ensure protection of the nesting migratory bird will be determined by the monitoring biologist and will depend on factors such as the bird species and the construction schedule. Construction buffer zones for active raptor nests, if required, shall be a minimum of

500 feet and 200 feet for passarines.

Through the implementation of these mitigation measures, development of the 13-acre parcel would not result in significant impacts to biological resources.

Should you have any questions regarding the methodology or findings of this report, please call me at (949) 837-0404.

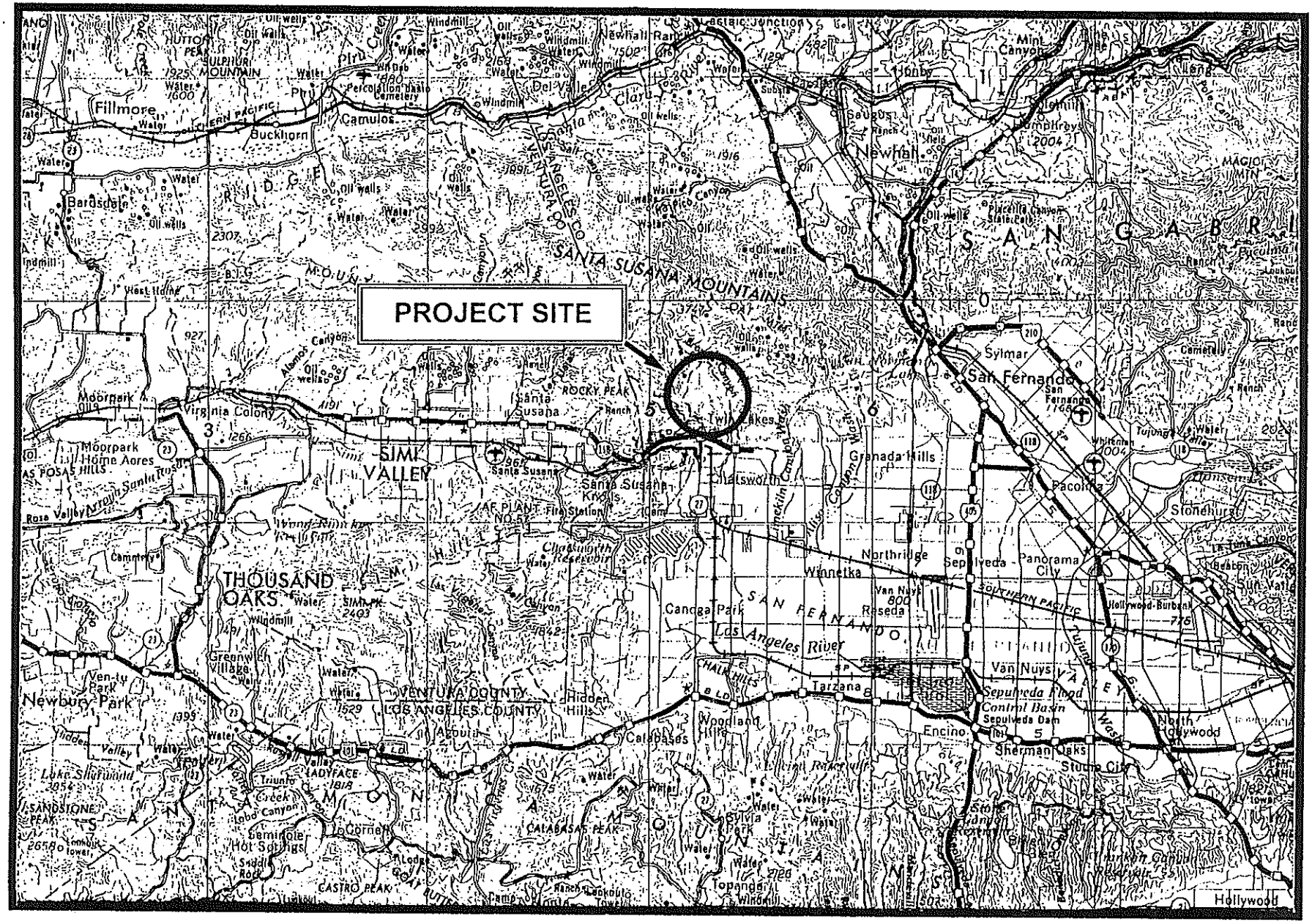
Sincerely,

Tony Bomkamp

Tony Bomkamp
Senior Biologist

s:0286-3e.rpt

Adapted from USGS Los Angeles Quadrangle



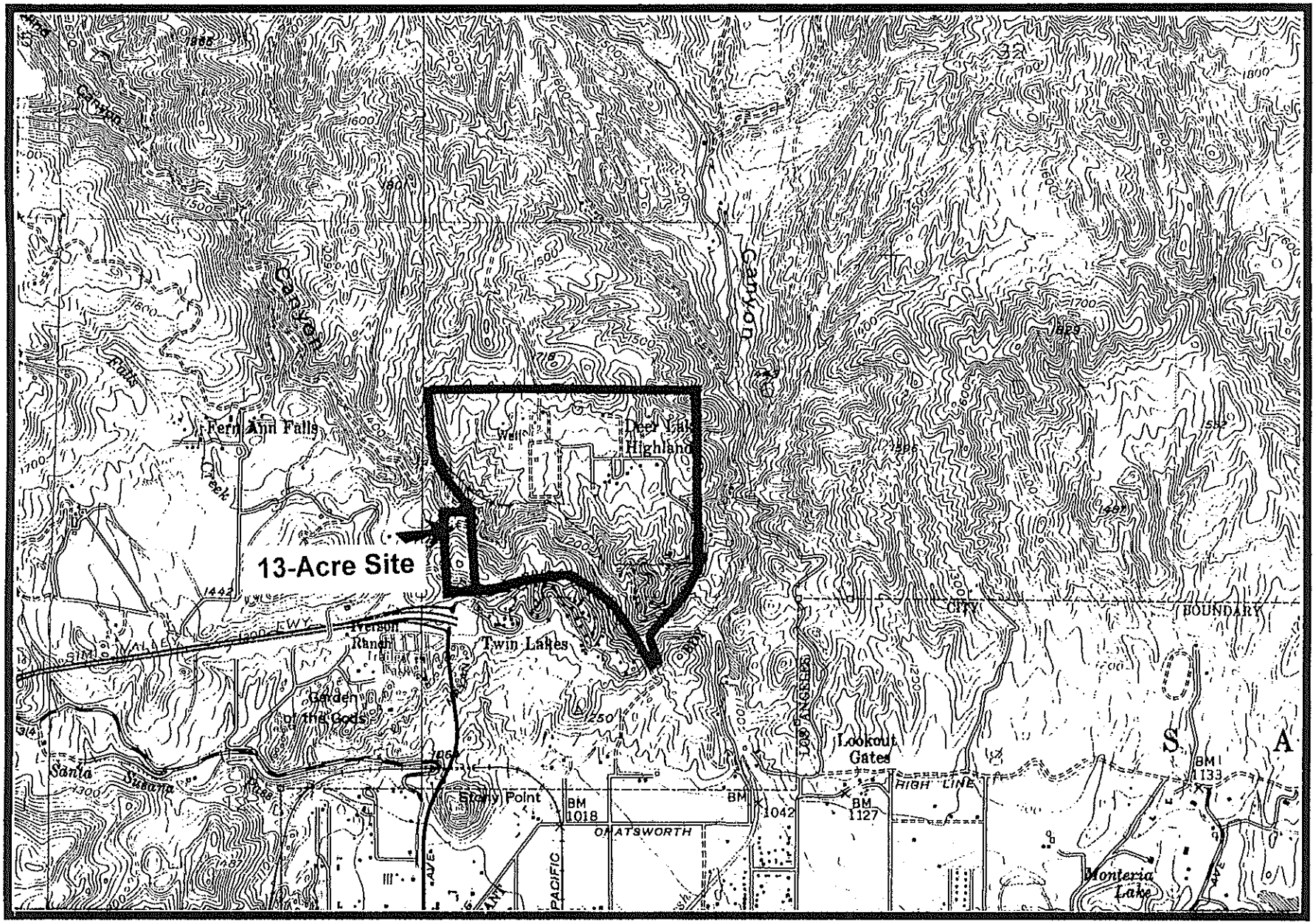
CHATSWORTH RIDGE ESTATES

Regional Map

GLENN LUKOS ASSOCIATES

EXHIBIT 1

Adapted from USGS Oat Mountain Quadrangle



NORTH

0 1000 2000 3000
FEET

CHATSWORTH RIDGE ESTATES

Vicinity Map

GLENN LUKOS ASSOCIATES

EXHIBIT 2

APPENDIX A
FAUNAL AND FLORAL COMPENDIA
INTRODUCTION TO FLORAL AND FAUNAL SURVEY

Floral taxonomy used in this report follows the Jepson Manual (Hickman 1993) and, for sensitive species, the California Native Plant Society's Rare Plant Inventory (5th Edition) (Skinner and Pavlik 1994). Additional common plant names are taken from Munz (1974), Beauchamp (1986), and Roberts (1998). Vertebrates identified in the field by sight, calls, tracks, scat, or other signs are cited according to the nomenclature of Collins (1997) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

FAUNAL COMPENDIUM[2]

LEGEND

STATUS

+ Presence of animals noted by direct sighting, call identification or observation of tracks, scat or other signs.

* Non-native

TERRESTRIAL VERTEBRATES

AMPHIBIANS

HYLIDAE - TREEFROGS

Pseudacris regilla
Pacific treefrog

REPTILES

IGUANIDAE - IGUANID LIZARDS

Sceloporus occidentalis
western fence lizard
Uta stansburiana
side-blotched lizard

BIRDS

ACCIPITRIDAE - HAWKS

Accipiter cooperii
Cooper's hawk
Buteo lineatus
red-shouldered hawk

PHASIANIDAE - PHEASANTS & QUAILS

Callipepla californica
California quail

COLUMBIDAE - PIGEONS & DOVES

Zenaida macroura
mourning dove

CUCULIDAE - CUCKOOS & ROADRUNNERS

Geococcyx californianus
greater roadrunner

TROCHILIDAE - HUMMINGBIRDS

Calypte anna
Anna's hummingbird

TYRANNIDAE - TYRANT FLYCATCHERS

Sayornis nigricans
black phoebe

CORVIDAE - JAYS & CROWS

Aphelocoma coerulescens
western scrub-jay

TROGLODYTIDAE - WRENS

Thryomanes bewickii
Bewick's wren

MUSCICAPIDAE - KINGLETS, GNATCATCHERS, THRUSHES & BABBLERS

Regulus calendula
ruby-crowned kinglet
Polioptila caerulea
blue-gray gnatcatcher
Chamaea fasciata
wrentit

MIMIDAE - THRASHERS

Mimus polyglottos
northern mockingbird

EMBERIZIDAE- WOOD WARBLERS, TANAGERS, BUNTINGS & BLACKBIRDS

Dendroica coronata
yellow-rumped warbler
Pipilo crissalis
California towhee
Pipilo erythrophthalmus
spotted towhee
Aimophila ruficeps
rufous-crowned sparrow
Melospiza lincolnii
Lincoln's sparrow
Zonotrichia leucophrys
white-crowned sparrow

FRINGILLIDAE - FINCHES

Carduelis psaltria
lesser goldfinch

MAMMALS

LEPORIDAE - HARES & RABBITS

Sylvilagus audubonii
desert cottontail

SCIURIDAE - SQUIRRELS

Spermophilus beecheyi
California ground squirrel

GEOMYIDAE - POCKET GOPHERS

Thomomys bottae
Botta's pocket gopher

CRICETIDAE - NEW WORLD RATS AND MICE

Neotoma lepida
desert woodrat

CANIDAE - WOLVES & FOXES

Canis latrans
coyote

PROCYONIDAE - RACCOONS

Procyon lotor
raccoon

FLORAL COMPENDIUM – CHATSWORTH RIDGE ESTATES

The floral compendium lists species identified on the project site.

*** = non-native species**

PTERIDACEAE

Pellaea andromedifolia
coffee fern

SELAGINELLACEAE

Selaginella bigelovii
Bigelow's mossfern

ANACARDIACEAE

Malosma laurina
laurel sumac
Rhus ovata
Sugar bush
**Schinus molle*
Peruvian pepper tree
Toxicodendron diversilobum
poison oak

ASTERACEAE

Ambrosia acanthicarpa
sand-bur
Artemisia douglasiana
mugwort
Artemisia biennis
weedy wormwood
Artemisia californica
California sagebrush
Baccharis salicifolia
mulefat
Brickellia californica
California brickellbush
**Centaurea melitensis*
tocalote

**Conyza bonariensis*
little horseweed
Gazania linearis
gazania
Gnaphalium bicolor
bicolor cudweed
Gnaphalium canescens ssp. benolens
fragrant everlasting
Hazardia squarrosa var. grindeliodes
sawtooth goldenbush
Heterotheca grandiflora
telegraph weed
**Lactuca serriola*
prickly lettuce
Lessingia filaginifolia var. filaginifolia
California-aster
Senecio flaccidus var. *douglasii*
Douglas' senecio
Solidago californica
California goldenrod
Stephanomeria exigua
Twiggy wreath plant

BRASSICACEAE

**Hirshfeldia incana*
short-pod mustard
Lobularia maritima
sweet alyssum

CACTACEAE

**Opuntia ficus-indica*
Indian fig
Opuntia littoralis
coast prickly-pear

CAPRIFOLIACEAE

Sambucus mexicana
Mexican elderberry
Symphoricarpos mollis
spreading snowberry

CARYOPHYLLACEAE

**Silene gallica*
common catchfly

CHENOPODIACEAE

**Salsola tragus*
Russian thistle

CISTACEAE

Helianthemum scoparium
California rock-rose

CRASSULACAE

Dudleya lanceolata
coastal dudleya

CUCURBITACEAE

Marah marcrocarpus var. macrocarpus
wild cucumber

CUSCUTACEAE

Cuscuta californica var. californica
dodder

ERICACEAE

Arctostaphylos glandulosa
eastwood manzanita

FABACEAE

Lotus scoparius
deerweed
Lupinus succulentus
arroyo lupine
Melilotus alba
white sweetclover

**Medicago polymorpha*
California burclover
**Spatium junceum*
Spanish broom

FAGACEAE

Quercus agrifolia
coast live oak

GERANIACEAE

**Erodium cicutarium*
red-stemmed filaree
**Erodium botrys*
long-beaked filaree

HYDROPHYLLACEAE

Phacelia ramosissima
branching phacelia

LAMIACEAE

Salvia mellifera
black sage

MALVACEAE

**Malva parviflora*
cheeseweed

ONAGRACEAE

Epilobium canum
California fuchsia

PLANTANACEAE

Platanus racemosa
western sycamore

POLEMONIACEAE

Gilia angelensis
angel's gilia
Leptodactyon californicum
prickly phlox

POLYGONACEAE

Chorizanthe staticoides
Turkish rugging
Eriogonum elongatum
tall buckwheat
Eriogonum fasciculatum var. *foliolosum*
California buckwheat

RANUNCULACEAE

Clematis ligusticifolia
virgin's bower

RHAMNACEAE

Ceanothus crassifolius
hoary-leaved ceanothus
Rhamnus ilicifolia
holly-leaf redberry

ROSACEAE

Adenostoma fasciculatum
chamise
Heteromeles arbutifolia
Toyon
Rubus ursinus
California blackberry

RUBIACEAE

Galium angustifolium var. angustifolium
narrow-leaved bedstraw

SALICACEAE

Salix exigua
narrow-leaved willow
Salix lasiolepis
arroyo willow
Salix laevigata
red willow

SCROPHULARIACEAE

Castilleja foliolosa
wooly paintbrush
Mimulus aurantiacus
bush monkeyflower

SOLANACEAE

**Nicotiana glauca*
tree tobacco
Solanum douglasii
Douglas' nightshade

ZYGPOPHYLLACEAE

**Tribulus terrestris*
puncture vine

CYPERACAEAE

Eleocharis acicularis var. *acicularis*
small spikerush

JUNCACEAE

Juncus textilus
basket rush

LILIACEAE

Calochortus sp. prob. *plummerae*
Plummer's mariposa lily?
Yucca whipplei
our Lord's candle

POACEAE

Achnatherum coronatum
giant needlegrass
**Arundo donax*
giant reed
**Avena barbata*
slender wild oats
**Bromus diandrus*
ripgut grass
**Bromus hordaceus*
soft chess
**Bromus madritensis ssp. rubens*
foxtail chess
**Cynodon dactyon*
Bermuda grass
Lamarckia aurea
goldentop
Leymus condensatus
giant wild rye
Melica imperfecta
coast range melic
Nassella lepida
foothill needlegrass
Nassella pulchra
purple needlegrass
**Pennisetum setaceum*
fountain grass
**Pipatherum miliaceum*
smilo grass
**Polypogon monspeliensis*
rabbit's foot grass

APPENDIX C

NATIONWIDE PERMIT AUTHORIZATION

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

March 27, 2000

REPLY TO
ATTENTION OF.

Office of the Chief
Regulatory Branch

Presidio Chatsworth Partners, LLC.
c/o Glenn Lukos Associates
23441 South Pointe Drive, Suite 150
Laguna Hills, California 92653

Dear Mr. Lukos:

This is in reply to your application (File No. 2000-00951-AOA) dated February 11, 2000, for a Department of the Army Permit to impact 0.41 acres of waters of the United States for the construction of storm drains, debris basins and the placement of compacted earthen material associated with a 500-unit residential development (Chatsworth Ridge Estates) in unnamed tributaries to Devil and Brown Canyon near the City of Chatsworth, Los Angeles County, California.

The Corps of Engineers has determined that your proposed activity, along with the attached special conditions, complies with the terms of nationwide permit NW26 [Federal Register, Dec.13, 1996, pp.65874-65922] for discharges of dredged or fill material into headwaters and isolated waters provided that the activity meets all of the following criteria in the permit terms and conditions (Enclosure). For the purposes of this NWP, the acreage of loss of waters of the United States includes the filled area plus waters of the United States that are adversely affected by flooding, excavation or drainage as a result of the project. The 3 acre and 1/3 acre limits of NW 26 are absolute, and cannot be increased by any mitigation plan offered by the applicant or required by the District Engineer. Whenever any other NWP is used in conjunction with this NWP, the total acreage of impacts to waters of the United States of all NWPs combined, can not exceed 3 acres.

However, at this time we do not have sufficient information to determine whether your proposed activity complies with the nationwide permit General Conditions described in Part 330, Appendix A(C)

Until you receive written notification from the Corps that the outstanding General Condition listed above has been met, you are not authorized to begin your proposed activity. This letter of provisional verification is valid for a period not to exceed two years unless the nationwide permit is modified, reissued, revoked, or expires before that time. Presently, all nationwide permits are scheduled to expire on February 11, 2002 except nationwide permit 26 which is currently scheduled to expire on June 7, 2000. However, the Corps has extended the expiration date for projects previously approved under nationwide permit number 26 to February 11, 2002 (See March 9, 2000, Federal Register, 65 FR 12818). As a result, this letter of verification is valid until February 11, 2002. It is incumbent upon you to remain informed of

changes to the nationwide permits. We will issue a public notice announcing the changes when they occur.

If you have any questions, please contact Aaron Allen of my staff at (213) 452-3413.

Sincerely,

Richard J. Schubel
for David J. Castanon
Chief, North Coast Section
Regulatory Branch

Enclosure

APPENDIX D

DRAFT CHATSWORTH RIDGE ESTATES MITIGATION PLAN FOR PLUMMER'S MARIPOSA LILY AND SENSITIVE BIOLOGICAL ISSUES

Presidio Rancho

Mitigation Plan
for
Illumina's Mariposa Lily and Sensitive Biological Resources

Prepared for:
PRESIDIO CHATSWORTH PARTNERS, LLC
595 Market Street, Suite 2400
San Francisco, California 94105

© 1999, California Academy of Sciences

Prepared by:

ENVICOM CORPORATION
28328 Agoura Road
Agoura Hills, California, 91301

October 24, 2001

DEERLAKE RANCH
MITIGATION PLAN
for
PLUMMER'S MARIPOSA LILY AND SENSITIVE BIOLOGICAL RESOURCES

Prepared for:

PRESIDIO CHATSWORTH PARTNERS, LLC
595 Market St., Suite 2400
San Francisco, California 94105
Attn: Mr. Richard E. Garlinghouse, Principal

Prepared by:

ENVICOM CORPORATION
28328 Agoura Road
Agoura Hills, California 91301
(818) 879-4700

October 19, 2001

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I.	INTRODUCTION	1
II.	SUMMARY OF BIOLOGICAL RESOURCES	6
III.	OVERVIEW OF PLUMMER'S MARIPOSA LILY	11
IV.	PLUMMER'S MARIPOSA LILY SALVAGE, PROPAGATION, AND RESTORATION	12
V.	OFFSITE HABITAT PRESERVATION	16

FIGURES

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Figure 2	Project Vicinity	4
Figure 3	Site Plan	5

I. INTRODUCTION

Overview

The Deerlake Ranch Mitigation Plan provides a comprehensive program of project-initiated measures that avoid, minimize, and compensate for impacts to the Plummer's Mariposa Lily, oak and riparian woodland, and other sensitive plants and wildlife. The primary objective of the mitigation described herein is to decrease impacts of project development on sensitive biological resources to less than significant, as defined by the California Environmental Quality Act (CEQA). With review and acceptance of the plan by the County of Los Angeles, the mitigation measures herein are incorporated by reference into the Draft Environmental Impact Report (EIR). Upon receiving public comments to the Draft EIR, if required, revisions would be published in the Final EIR. Further, this plan provides mitigation suitable for integration in the project's California Department of Fish and Game (CDFG) Section 1603 Agreement, Army Corps Nationwide Permit, and California Section 401 Water Quality Certification.

Mitigation Goals for Biological Resources

Mitigation goals for the proposed project are based on a tiered approach of avoidance, minimization, and compensation. The current and proposed achievement of each goal is highlighted[1] below.

Avoidance - Project redesign facilitated avoidance of the majority of onsite wetlands, riparian and oak woodland, and other sensitive habitats. Through the preservation of these onsite drainages, additional resources were also avoided including wildlife linkages, sensitive wildlife, and potential nesting sites of sensitive birds, such as the Cooper's Hawk. In addition, upland areas of the site containing numerous Plummer's mariposa lilies are proposed as open space to preserve natural resources as well as this sensitive plant. Much of the avoided sensitive habitats would be dedicated to the Santa Monica Mountains Conservancy.

Minimization – Impacts on wetlands and riparian woodland are also minimized through the inclusion of buffer zones from the boundary of the stream-side tree canopy (which also excludes most of the area from fuel-modification impacts). Other minimization efforts include limited use of night lighting, use of native vegetation in landscaping, and purchase of additional property to provide a second access rather than crossing sensitive habitats.

Compensation - To compensate for unavoidable impacts to sensitive biological resources, the applicant proposes to purchase offsite property(s), as approved by the County of Los Angeles and CDFG for natural habitat preservation. The site(s) would function as a nature preserves, be dedicated to a government agency or conservation organization, or be placed under a conservation easement and retained by the applicant. The criteria for an offsite mitigation site(s) includes the presence of occupied and potential Plummer's mariposa lily habitat, and the existence of other sensitive habitats as described in the following sections. Further, the property(s) must support foraging and/or breeding habitat for the sensitive wildlife species observed on the project site.

In addition to the above, the project would initiate a program of Plummer's mariposa lily seed and bulb salvage, propagation, and transplanting. The purpose of this program is to retrieve a sizable portion of the onsite bulbs for use in both onsite and offsite habitat enhancement. Another component of this effort is researching and documenting methods that lead to successful long-term establishment of transplanted bulbs. This includes seeds and bulbs collected and transplanted directly to a site within the same year, stored bulbs, and bulbs grown from site-collected seed in a nursery.

[1] For additional details on avoidance and minimization, please refer to the project Draft EIR.

The salvage program will consist of the following components:

A. Prior to grading, collect seed from a random selection of all visible and accessible plants, salvage all flagged/mapped bulbs and any uncovered during removal. Collect a minimum of 4,000 (this represents a little over a 2:1 replacement ratio of the single greatest population count conducted onsite to date). If 4,000 bulbs do not inhabit the project site, collect all bulbs found.

B. Store all seeds and bulbs at a qualified native plant nursery.

C. Use 40% of the bulbs for transplantation to onsite and offsite preserved habitat in the fall/winter immediately following salvage.

D. Propagate 20% of the bulbs and all seed at a qualified native plant nursery to collect seed for starting new plants that will be transplanted to preserved areas both onsite and offsite.

E. Store for a period of 5 years 40% of the bulbs for annual or bi-annual planting in preserved areas, as determined by a qualified biologist.

F. Maintain all transplanted bulbs, including weed control.

G. Conduct monitoring and reporting.

Plummer's mariposa lily- Calculation of Acreage of Habitat and Population Size

Onsite surveys of the Plummer's mariposa lily population and habitat have been conducted over the last three years including Summer 2001. Preliminary results indicate that the above ground lily population ranges from approximately 400 individuals (Envicom Corporation 2001) to approximately 1,800 individuals (Glen Lukos & Associates 1999/2000). The number of individual plants not blooming in any particular season likely accounts for this difference in population size from year to year. Because of this variation from year to year in above appearance of ground stalks and flowers, a map is currently being prepared that integrates the previous years' findings with this year's survey. To produce the map, each accessible plant or cluster, are being located in the field using engineering survey techniques. In this manner, the locations are linked to the site-specific topography, thus the bulbs can then be relocated, and salvaged, even if no above ground stalk is visible. In addition, site surveys estimate the acreage of Plummer's mariposa lily habitat (potential and occupied) to be 61.04 acres. With this acreage calculation there will be a direct nexus between impacts to habitat and the acreage of mitigation land that would assist in reducing project impacts to this sensitive plant to less than significant.

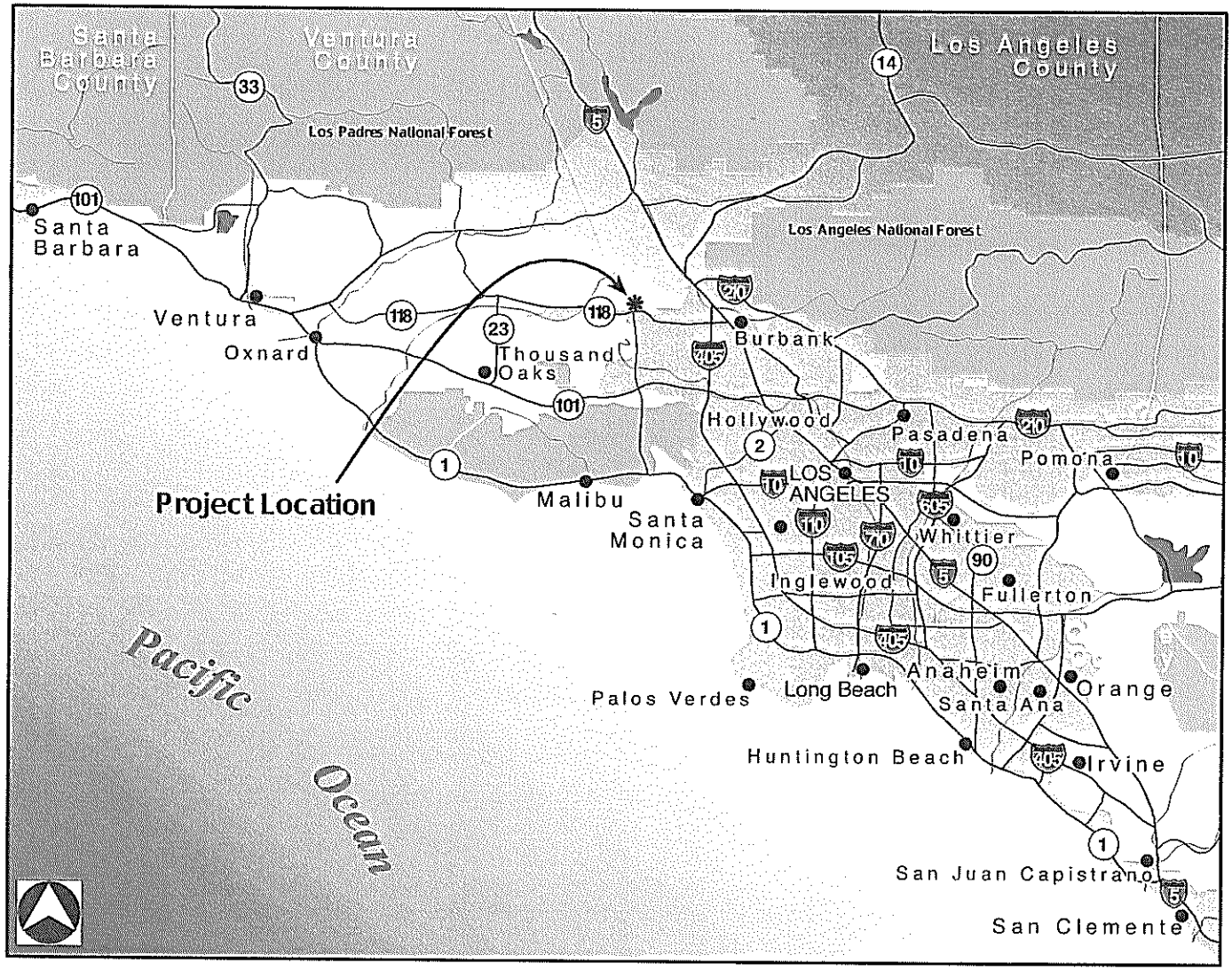
Project Description

Location/Site Conditions

Deerlake Ranch is located within the northwestern San Fernando Valley area of Los Angeles County, specifically in the south-facing foothills of the Santa Susana Mountains (**Figure 1**). The project comprises approximately 230 acres of undeveloped land (**Figure 2**). This site is located on a mesa, the Deerlake Highlands, and has an average elevation of approximately 1,325 feet above sea level. This plateau is generally flat with rolling hills and is bordered on the north by steep and rugged hills that trend westward. Devil Canyon borders the plateau to the south and west, which bisects the project site. Browns Canyon borders the plateau to the east. Soils on the site consist of sandy soils weathered from sandstone bedrock, along with alluvial soils in drainages. Portions of the property were previously developed and/or graded for homes, roads, and equestrian trails.

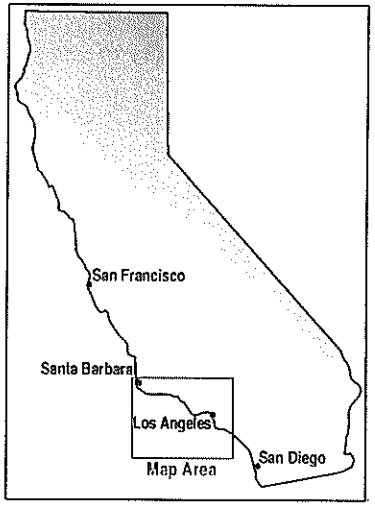
Project Characteristics

The project would consist of 485 single-family homes on a total of 230 acres (**Figure 3**). The project proposes to impact a total of 176.44 acres of vegetation for project construction. This consists of 153.90 acres of permanent impact and 22.54 acres of partial impact from fuel modification, as required by the County. The impacts on natural habitat include mass grading, remedial grading, road construction, fuel modification, and utility easements.



Legend

- Urban Areas
- Forest or Park Lands
- Military
- Freeways
- Major Highways
- Major Drainages



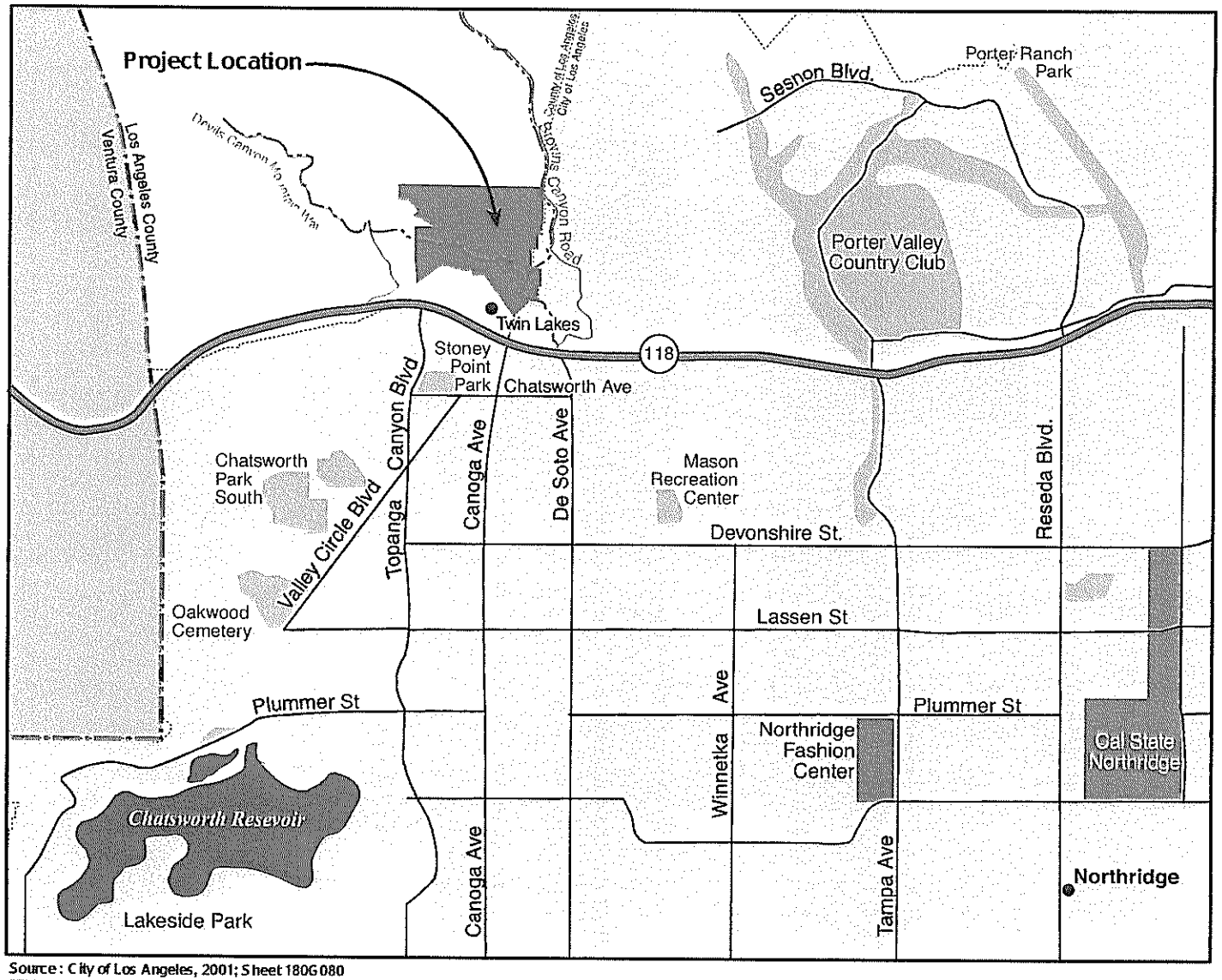
Source: HDR Engineering, 2001; Map Not to Scale

HDR

Project Location

ENVICOM CORPORATION

FIGURE 1



Source: City of Los Angeles, 2001; Sheet 180G080

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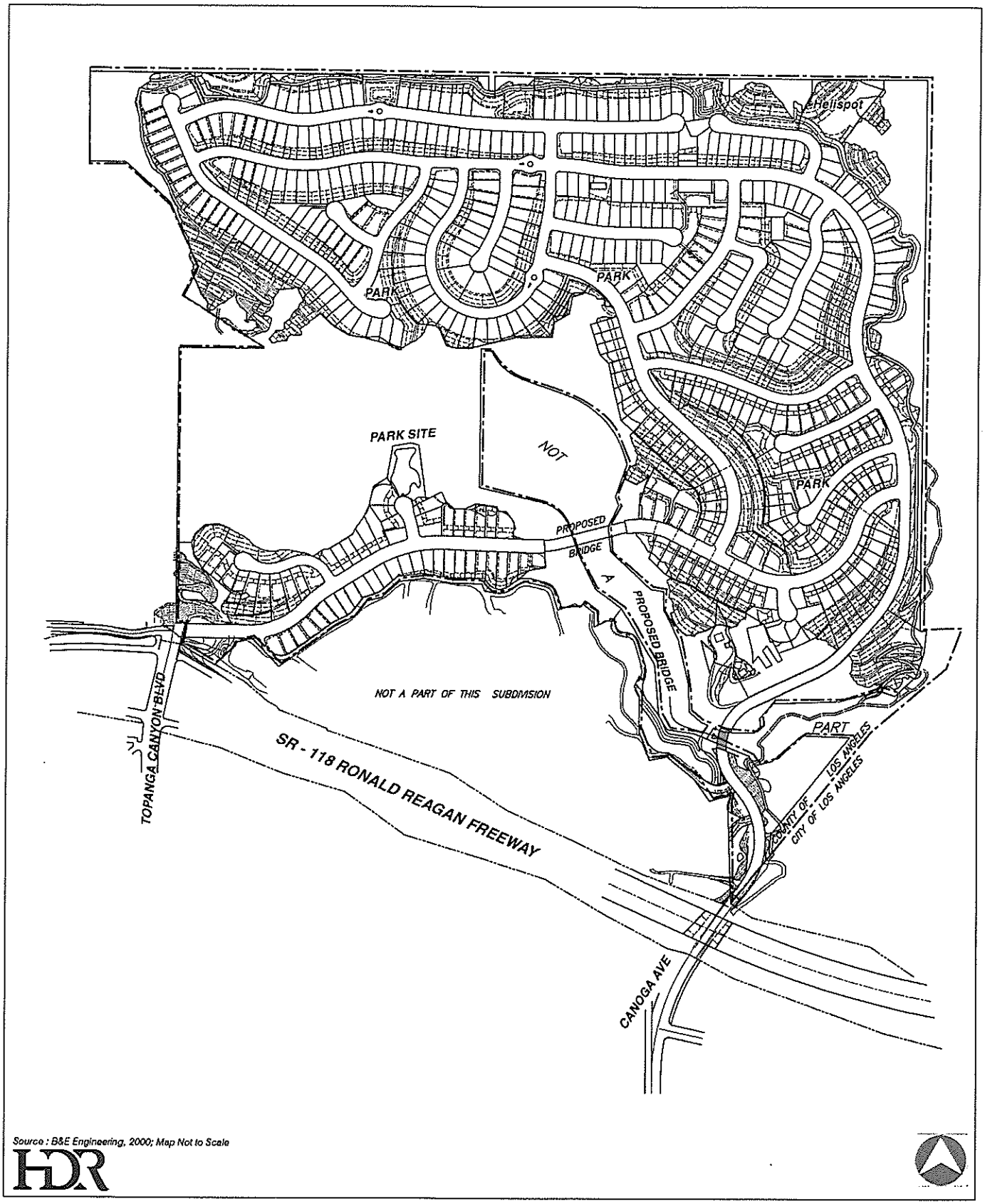
Project Vicinity

ENVICOM CORPORATION

FIGURE 2



Source : B&E Engineering, 2000; Map Not to Scale

HDR

Proposed Site Plan

ENVICOM CORPORATION

FIGURE 3

II. SUMMARY OF BIOLOGICAL RESOURCES

Introduction

The 230.58 acre site consists of native and non-native vegetation that supports a variety of native wildlife species within diverse habitats and vegetation communities. In addition, the Deerlake Ranch site provides niches for wildlife including nesting, foraging, resting, and cover. The removal of native vegetation will change the functions and values of the site and the surrounding open space. Wildlife composition on the newly built site will change to animals associated with human habitation such as the house finch, raccoon, house mouse, and others. Therefore, by understanding the existing resources, it is possible to "replace" a few of the less complex values, such as food sources. While, however, the landscaped slopes of the future Deerlake Ranch will not resemble the existing natural condition, the newly established plant communities can provide, to a minor degree habitat for animals. This summary of biological resources provides the reader with the background needed to understand the conditions of the project site.

Glen Lukos Associates conducted biological field surveys on the approximate 230-acre site during March to August 1998, June 1999, April through July 2000, and November through December 2000. The following information was acquired from the *Biological Technical Report - Deerlake Ranch Development Project – Los Angeles County, California* prepared by Glen Lukos Associates December 28, 2000. Please refer to this document for a more detailed account of the fieldwork and literature review.

Plant communities

Vegetation consists of chaparral, coastal sage scrub, coast live oak woodland, non-native grassland over the upland areas, and in Devil Canyon a well-developed willow riparian forest that traverses from northwest to southeast across the property. This willow riparian forest converges with Brown's Canyon just offsite, to the east. There are numerous sandstone rock outcrops scattered over the landscape. Non-native vegetation includes annual grasses and eucalyptus groves.

Chaparral

The predominant species of the chaparral are chamise (*Adenostoma fasciculatum*), mountain mahogany (*Cercocarpus betuloides*), laurel-leaf sumac (*Malosma laurina*) and black sage (*Salvia mellifera*). Chamise chaparral occupies flat areas and slopes throughout most of the site and is the predominant vegetation association. A total of approximately 190.73 acres of chamise chaparral has been identified on the project site. Other shrubs include Mexican elderberry (*Sambucus mexicana*), Our Lord's candle (*Yucca whipplei*), California buckwheat (*Eriogonum fasiculatum*) and deerweed (*Lotus scoparius*). The understory is composed of annuals including non-native tocolote (*Centaurea melitensis*), common cryptantha (*Cryptantha intermedia*), various suncups (*Camissonia* ssp.), common catchfly (*Silene gallica*), and various non-native grasses.

Coastal sage scrub

The total area of coastal sage scrub identified on the project site is approximately 2.39 acres and is dominated by California sagebrush (*Artemisia californica*), deerweed (*Lotus scoparius*), and California buckwheat (*Eriogonum fasiculatum*). The understory is composed of slender wild oats (*Avena barbata*), tocolote, and other mostly non-native herbaceous species. The coastal sage scrub occurs in a previously graded homestead near the middle of the site.

Non-native Grassland/Previously Disturbed

The project site includes approximately 7.56 acres of non-native grassland. Non-native grassland and disturbed soils consist of ripgut brome (*Bromus diandrus*), slender wild oats (*Avena barbata*), black mustard (*Brassica nigra*), summer mustard (*Hirschfeldia incana*), common catchfly (*Silene gallica*), and tocolote. Scattered non-native eucalyptus trees are found in flat areas throughout the site and

seedlings have begun to colonize riparian areas. The project site consists of approximately 0.18 acres of eucalyptus grove.

Previously developed areas that have been graded or repeatedly cleared of vegetation on the project site total approximately 13.53 acres. Some areas exhibit bare earth and rocks, while other areas are dominated by plant species such as summer mustard, slender wild oats, storksbill (*Erodium* spp.), and cheeseweed (*Malva parviflora*).

Coast Live Oak Woodland

The total area of oak woodland on the project site is approximately 5.73 acres with the dominant overstory species being coast live oak (*Quercus agrifolia*). However, individual oak trees are found in other vegetation associations on the site. The understory includes shrubs such as toyon (*Heteromeles arbutifolia*), Southern California black walnut (*Juglans californica*), Mexican elderberry, poison oak (*Toxicodendron diversilobum*), and non-native grasses. Coast live oak woodland on site was most often observed adjacent to drainages, or on shaded, north facing slopes.

Willow Woodland

The total area of willow woodland on the project site is approximately 9.88 acres. Dominant vegetation within this association includes arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), mule flat (*Baccharis salicifolia*), and Freemont's cottonwood (*Populus fremontii*). Less common overstory species include black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), western sycamore (*Platanus racemosa*), Southern California black walnut and occasional box elder (*Acer negundo* var. *californicum*). Willow woodland occurs in areas adjacent to the Devil Canyon drainage and smaller tributaries. The habitat has been invaded by non-native giant reed (*Arundo donax*) in parts of lower Devil Canyon.

Oak Woodland/Willow Woodland

This association is characterized by small stands dominated by coast live oak and willows (*Salix* ssp.) found on terraces above Devil Canyon Creek, primarily upstream from the Devil Canyon debris dam. The total area on the project site is approximately 0.58 acres.

Wildlife

Wildlife use of the site is high due to the variety of vegetation types. Refer to the *Biological Technical Report* prepared by Glen Lukos Associates for a detailed account of species present and methodology used to determine their presence.

Amphibians

Willow and oak woodland habitats support the amphibian species identified on the project site. These areas provide potential habitat for amphibian species adapted to drier conditions. Amphibians often require a source of standing water, which is found on site intermittently, however some species can survive in drier climates in moist environments such as leaf litter, fallen logs, or burrowing in the soil. Only two amphibian species were observed on site: Pacific treefrog (*Pseudacris regilla*) and western toad (*Bufo boreas*). Additional amphibian species that could potentially occur onsite include the Pacific slender salamander (*Batrachoseps pacificus*), California newt (*Taricha torosa*), ensatina (*Ensatina eschscholtzii*), arboreal salamander (*Aneides lugubris*), and black-bellied salamander (*Batrachoseps nigriventris*).

Reptiles

Coastal sage scrub and chaparral communities identified onsite are utilized nearly year-round by a large number of reptile species. Species identified during site surveys include the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburniana*), southern alligator lizard

(*Gerrhonotus multicarinatus*), western skink (*Eumeces skiltonianus*), California whipsnake (*Masticophis lateralis*), gopher snake (*Pituophis melanoleucus*), orange-throated whiptail (*Cnemidophorus hyperthrus*), and western rattlesnake (*Crotalus viridus*).

The reptile species identified within the grassland communities onsite are expected to vary over the course of the year depending on abundance of grasses and availability of cover. Species observed during site surveys include the western fence lizard, side-blotched lizard, and western rattlesnake.

Riparian communities tend to exhibit low reptile species diversity. However, reptiles were identified near the edge of the intermittent drainages. These included southern alligator lizard, California whipsnake, side-blotched lizard, and western fence lizard.

Birds

Birds were the most widely observed vertebrate on the project site. The scrub communities onsite are generally composed of low dense vegetation, which provides breeding habitat for resident bird species. Commonly observed species include the California towhee (*Pipilo crissalis*), wrentit (*Chamaea fasciata*), Bewick's wren (*Thryomanes bewickii*), Anna's hummingbird (*Calypte anna*), western scrub jay (*Aphelocoma coerulescens*), and California thrasher (*Toxostoma redivivum*). Migratory species that utilize coastal sage scrub at various times include the white-crowned sparrow (*Zonotrichia leucophrys*), song sparrow (*Melospiza melodia*), and golden-crowned sparrow (*Zonotrichia atricapilla*).

Onsite chaparral vegetation provides habitat for species such as the western scrub-jay, California thrasher, wrentit, Bewick's wren, California quail, California towhee, and Anna's hummingbird. Migratory species include the white-crowned sparrow, Costa's hummingbird (*Calypte costae*), and fox sparrow (*Passerella iliaca*).

Grassland communities provide habitat for resident and migratory species such as the house finch (*Carpodacus Mexicana*), horned lark (*Eremophila alpestris*) and lark sparrow (*Chondestes grammacus*).

Sensitive bird species identified onsite include Cooper's hawk (*Accipiter cooperii*), western yellow warbler (*Dendroica petechia brewsteri*), and ashy rufous-crowned sparrow (*Aimophil ruficeps canescens*).

Mammals

The combination of chaparral, coastal sage scrub, grassland, and riparian communities provides habitat for numerous mammal species. Species identified include Audubon's cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), deer mouse (*Peromyscus maniculatus*), bobcat (*Lynx rufus*), gray fox (*Uroycon cinereoargenteus*), and California vole (*Microtus californicus*).

Sensitive Vegetation Communities

Coastal sage scrub is considered a sensitive vegetation type throughout much of Southern California primarily in regions known to support the federally-listed threatened coastal California gnatcatcher. Coastal sage scrub has an S3.1 (between 10,000 and 50,000 extant acres and high level of threat) ranking by the CDFG. Approximately 2.39 acres of coastal sage scrub habitat has been identified onsite. The onsite community of coastal sage scrub habitat has been highly disturbed from fire impacts and is in a degraded condition. The proposed project would remove the total 2.39 acres of coastal sage scrub existing onsite. Protocol surveys determined that no California gnatcatchers are located onsite.

Willow Woodland is ranked as S2.1 ("very threatened"), with a small number of occurrences, individuals, or acres) by CDFG. This site supports approximately 9.88 acres of willow woodland in Devil Canyon. The proposed project would remove 0.02 acre for grading and 0.01 acre for fuel modification. This type of habitat is known to support a wide diversity of wildlife.

Coast Live Oak Woodland is not listed by CDFG as a sensitive vegetation type. However, the County of Los Angeles has identified the habitat as sensitive. At least one area in the northern portion of the project site has burned recently and is dominated by young trees. In general, the larger trees are associated with canyons and north-facing slopes. The project site supports 5.73 acres of coast live oak woodland, of this amount, 1.30 acres would be impacted by the proposed project.

Sensitive Plant Species

Focused surveys were conducted for special-status plant species with the potential to occur on the project site. These surveys of the project site identified two special-status plant species inhabiting the area: Plummer's mariposa lily (*Calochortus plummerae)* and southern California black walnut (*Juglans californica*) and one County-considered sensitive plant, coast live oak.

Plummer's mariposa lily is a federal Species of Concern and a CNPS 1B species. A detailed description of the Plummer's mariposa lily, project impacts, and mitigation for the lily is presented in the following sections.

Southern California black walnut is listed as a CNPS List 4. Scattered individuals of this species have been identified on the site in Devil Canyon. The project would not remove any walnut trees.

Coast live oaks have been identified on the project site, which is subject to County of Los Angeles Oak Tree Ordinance (No. 93-0018). A total of 353 oak trees over eight inches in diameter at breast height were surveyed on the project site. The project proposes removal of 65 oak trees for construction purposes, of which none are heritage oaks. The County of Los Angeles designates coast live oaks as "sensitive."

Ten other special status species have the potential to occur in this habitat, however they were not identified during the surveys. These species include Brauton's milkvetch (*Astragalus brauntonii*), Nevin's barberry (*Berberis nevinii*), Catalina mariposa lily (*Calochortus catalinae*), Slender mariposa lily (*Calochortus clavatus*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), Slender-horned spineflower (*Dodecahema leptoceras*), Santa Susana tarplant (*Hemizonia minthornii*), Robinson's pepper grass (*Lepidium virginicum* var. *fishiae robinsonii*), Ocellated Humboldt lily (*Lilium humboldtii ssp. ocellatum*), and Fish's milkwort (*Polygala cornuta*).

Sensitive Wildlife

The project site does not support any federally or state listed endangered, threatened, or rare species.

History of Protocol Surveys

Wildlife species were detected and recorded during field surveys by sight, calls, tracks, scat, nests or other signs. Species with the potential to occur, but not observed during USFWS protocol surveys include California red-legged frog (*Rana aurora draytonii*), Two-Striped Garter snake (*Thamnophis hammondii*), San Diego horned lizard (*Phrynosoma coronatum blainvillei*), Southwestern willow flycatcher (*Empidonax traillii extimus*), Coastal California gnatcatcher (*Polioptila californica*), and Least Bell's vireo (*Vireo billi pusillus*).

Sensitive Species

Protocol and focused surveys were conducted for special-status wildlife species with the potential to occur on the project site. These special-status wildlife species were identified: Cooper's hawk, ashy rufous-crowned sparrow, western yellow warbler, San Diego horned.

Sensitive Non-Federally or State Listed Species

Cooper's hawk is a state Species of Concern and is found in woodland habitats. They were observed onsite throughout the 1998 and 2000 field seasons. Fledglings were commonly observed in lower Devil Canyon during field work in 2000.

Ashy rufous-crowned sparrow is a state Species of Concern and a year-round resident of Southern California. At least three to four pairs of ashy rufous-crowned sparrows were identified on the site primarily near Devil Canyon in 1998, and 2000, with a single observation in the Deer Lake Highlands portion of the site in 1999. No nesting pairs of ashy-rufous crowned sparrow were identified on the site during 1998, 1999, or 2000, but since the birds have been seen in multiple years, it is assumed that some nesting occurs on site.

Western yellow warbler is a state Species of Concern and a migratory songbird nesting in riparian habitats. It was observed sporadically during Spring and Fall migration. Nesting activity was not observed.

San Diego horned lizard is a state Species of Concern. Observed by Envicom Corporation in May and June of 2001.

Federal and/or State Listed Species (Onsite Surveys Conducted With Negative Results)

California red-legged frog was not observed on the project site. It is a federally-listed threatened species that is found from Humbolt, Shasta, and Trinity counties along the western third of the state to the Mexican border. This species is also found along the western slope of the Sierra Nevada range south to Mariposa County. Surveys conducted in Browns and Devil Canyons in 1999 resulted in no observations of this species.

Southwestern willow flycatcher was not observed on the project site. It is a federally and state listed endangered small, migratory songbird found in riparian habitats. The southwestern willow flycatcher breeds from the south end of the Sierra Nevada range to Baja California and east to western Texas. Surveys conducted in 1998 did not result in observations of this species. Focused surveys were repeated in 2000, however the species was not observed.

Coastal California gnatcatcher was not observed on the project site. It is a federally listed threatened species and occurs in many areas of cismontane Southern California from Ventura County to San Diego County. These birds are not common in the vicinity of the project site but have been identified in Simi Valley/Moorpark and in the Sylmar area. Surveys were conducted in 1998 for the coastal California gnatcatcher according to the guidelines issued by the USFWS (1997). During surveys, which covered all areas of coastal sage scrub, no California gnatcatchers were observed on the site. The gnatcatcher surveys were repeated in 2000. This species has not been observed on the site during protocol surveys or at any other time.

Least Bell's vireo was not observed on the project site. It is a federally and state listed endangered small, migratory songbird found in riparian habitats. The Least Bell's vireo was once throughout the Central Valley extending to Baja California. The species has been depleted due to the loss of riparian habitat and the increase in brown-headed cowbird nest parasitism. Protocol surveys conducted in 1998 did not result in observations of least Bell's vireo. Focused studies for this species were repeated in the spring/summer of 2000.

III. OVERVIEW OF PLUMMER'S MARIPOSA LILY

Plummer's mariposa lily (*Calochortus plummerae* ssp. *plummerae*)
Status: CNPS List 1B R-E-D Code 2-2-3 NDDB (S3.2) threatened

Literature Reviewed and Status

References used for the description, distribution, and status of the species are: the Jepson Manual, Hichman (ed.), 1993, Wildflowers of the Santa Monica Mountains, McCauley, Rare Plummer's mariposa lily of California, Peggy Lee Fiedler, 1996, interview with horticulturist at Rancho Santa Ana Botanical Garden, 2001, interview with Elana Benge at Tree of Life Nursery, 2001, interview with David Tibor-Rare Plant Biologist at the California Native Plant Society, 2001, The American Horticulture Society Encyclopedia A-Z of Garden Plants, Christopher Brickwell and Judith D. Zuk (eds.), Growing California Native Plants, Marjorie G. Schmidt, and The Genus Calochortus in California: Part II, McDonald, Fremontia 25:1, 1997.

Plant species status is derived from the California Native Plant Society (CNPS) List, which categorizes the relative degree of concern or threat to individual plant species, and the California Natural Diversity Data Base (NDDB). The R-E-D Code is an assessment of the rarity, endangerment, and distribution of these species. The NDDB, a program in the Department of Fish and Game, is an inventory of the locations of the state's rarest species and natural communities. The NDDB (S3.2) status indicated species for which NDDB has 21-100 reported locations, or 3,000 -10,000 individuals are known, but which are threatened. Plummer's mariposa lily is rare throughout its range. It is judged to be vulnerable under present circumstances or to have a high potential for becoming so because of its limited or vulnerable habitat, its low numbers of individuals per population, and its limited number of populations.

Species Description

Plummer's mariposa lily grows from a tunicated bulb, with a fibrous bulb coat; stems slender, generally branched, not bulbiferous, 30-60 cm high; leaves 2-4 dm long, 10-15 mm wide, usually withered at antithesis; flowers 2-6, bell-shaped, erect, 3 sepals, 30-50 mm, long-tapered; 3 petals, 30-40 mm, white to pink to rose, drying purplish, margin toothed (rarely fringed), long-yellow-hairy in wide central band, nectary round, slightly depressed, bordered with ring of orange hairlike processes; 6 stamens, 3 united carpels from 1 pistil, 3 stigmas, flowers May-July; seed capsules erect, 5-7 cm long, 5-8 mm thick, many seeds in 2 rows per chamber, generally flat, whitish-yellow. Plummer's mariposa lily flowers multiple times from one bulb, but may not flower every year. The bulb may be in a resting state for one to two years.

Habitat Preferences

Plummer's mariposa lily, endemic to California, is found in dry rocky places, often in brush, below 5000 feet. Typical habitat types include coastal sage scrub, chaparral, foothill woodland, and yellow pine forest and valley grassland from the Santa Monica Mountains to the San Jacinto Mountains. It is found in Los Angeles, Ventura, Riverside, and San Bernardino Counties.

Plummer's mariposa lily do well in a light, sandy, porous soil. It is supported by soils derived from sandstone bedrock. This species prefers soil low in organics. Soil samples taken from the Deerlake Ranch Development Project site were analyzed and results indicate that the preferred soil is alkaline with very low levels of nitrogen, potassium, sulfur, boron, and soluble calcium. The pH values range from 7.41 to 7.30. The site where the greatest number of Plummer's mariposa lily is found has a pH of 7.41. The salinity values are low at 0.1 millimho/cm. Low salinity is indicative of low fertility. Besides low fertility, magnesium is high. Magnesium is limiting the uptake of potassium and calcium. Plant growth can occur in infertile soil, but the rate of growth is quite slow. Fertilization is recommended when propagating bulbs and seeds.

IV. PLUMMER'S MARIPOSA LILY SALVAGE, PROPAGATION, AND RESTORATION

If available, a minimum of 4,000 bulbs, or all bulbs uncovered that are located on the project site shall be salvaged and collected prior to grading. Seed shall be collected prior to grading for direct application and use in growing plants at a qualified native plant nursery. Every attempt shall be made to conduct the salvage operation during the appropriate season (late summer /early fall months subsequent to flowering), if feasible. Both short and long-term storage of the bulbs at a qualified native plant nursery shall immediately follow collection. Stored bulbs will serve multiple functions. Bulbs in short term storage shall be replanted directly to locations onsite *that are outside of the fuel modification zone* and to offsite mitigation land(s) in the fall/winter after salvage. The qualified native plant nursery will also propagate seeds and bulbs. Seed shall be collected from the flower of these bulbs for production of new plants. The site-collected and seed-grown bulbs will also serve as a stock to be transplanted at later dates. Bulb stock is necessary to serve as a back up for bulbs that do not survive transplantation and to provide diversity to the preserved sites. Bulbs from the reserve shall be transplanted to appropriate locations each year or bi-annually over a five-year period as determined by a qualified biologist. Plummer's mariposa lily shall be stored at the nursery for 5 years to ensure the success of transplantation. If after 5 years the program is a success (60% survival of out planted bulbs) then the remaining bulbs shall be planted. This plant has been very successful in nurseries in the past and therefore, bulbs are expected to survive for the length of time specified. The percent of total bulbs collected to be used for each purpose is presented below.

- 40% of the bulbs shall be transplanted in the fall/winter following salvage;
- 20% of the bulbs shall be grown for seed collection;
- 40% of the site-collected bulbs shall be used for transplantation over the five-year monitoring period (which may be extended depending on the success of the program); and,
- All seed-grown bulbs shall be transplanted.

Provided below is a step by step outline for undertaking the procedures described above.

Step 1: Salvage of Bulbs Prior to Grading

The applicant shall contract with a qualified, County-approved native plant specialist to salvage the bulbs from the site.

- Prior to the beginning of any grading or scraping operation, collect seed and salvage all flagged and uncovered plants.
- Bulbs shall ideally be salvaged in the course of the summer, but can be successfully salvaged at other times during the year. The preferable time to salvage is after the bulbs have flowered, but this is not crucial to the success of transplantation. A previous project required the salvage to occur during March and the bulbs had a high success rate. Collect seed in late summer to early fall.
- Bulbs shall be placed in a polyethylene bag containing a small quantity of native soil.
- Bulbs and seed shall be stored in a cool, dark location, free from rodent predation, until planted in containers or transplanted. Use of a refrigerator is recommended.
- Salvaged bulbs shall be contract-grown by a qualified native plant nursery.
- A qualified biologist shall monitor all salvage operations.

Step 2: Propagation Technique for Nursery Seed-Collection (20% of total bulbs collected)

All salvaged seeds and bulbs shall be delivered to a qualified native plant nursery for propagation and storage.

Methods for planting seed-collection bulbs

- Bulbs shall be planted in containers in the fall, with onset of cooler weather.
- Bulbs can be individually planted in deep liners (leach tubes), or planted in groups of up to 10 bulbs in one-gallon pots.
- Bulbs shall be planted to depth of 2-4 inches, or at a depth typical of those bulbs salvaged, with pointed end upward.
- The larger bulbs shall be planted the deepest.
- Medium of sterile soil can be amended with bulb fertilizer such as Lily Miller Bulb and Bloom, or 49er Bulb Fertilizer
- Containers shall be placed on benches and protected from rodent predation with wire cage. Rodents will eat the bulb, while deer, grasshoppers, snails, and slugs will eat the foliage.
- Part shade or filtered shade preferable during heat of day. More specifically, ensure that the base of the plant is shaded and the top, especially the flower, is in the sun.
- Watering cycle can be regular (2-3 times per week) through late spring. Water freely when in growth; water sparingly as the leaves die back; provide dry conditions when dormant (summer). Plants should not be watered in summer. If they are, they will rot and not appear the next year.

Collection and Propagation of Seed from site and Nursery Grown Bulbs

Seeds shall be collected from bulbs specified for this purpose. Seed collection shall occur after the plants have flowered and the flowers have dried. Flowering usually occurs between May and July and therefore, seed collection should occur between August and September. A seed collection of Plummer's mariposa lily is a high priority for its successful restoration, and growing these site-collected bulbs in a nursery, and collecting any seed produced can be considered the most reliable method of acquiring this seed.

- Seed shall be contract-grown by a nursery experienced with calcochortus propagation.
- Seed collections shall be made from any bulbs that flower. These seed collections can be stored for future propagation.
- No pretreatment of seed necessary due to mild climate of collection site. As explained by Hugh P. McDonald, (Genus Calochortus in California, Part II, Volume 25:1, Fremontia, January 1997) seeds of species from the high mountains or from eastern California may require cold stratification to germinate, whereas the same seeds from a mild climate do not require this treatment.
- Use a light, well-drained, sterile potting soil.
- Fertilizer such as Lily Miller Bulb and Bloom or 49er Bulb Fertilizer shall be incorporated into potting soil. Seed should be planted 1/4 to 1/2 inch under the surface of soil.
- Part shade or filtered shade preferable during heat of day.
- Propagation flats shall be protected from rodent predation.
- Watering cycle can be regular (2-3 times per week) through the late spring. Plants should not be watered in summer.
- Plantlets can be teased-apart into small groups and planted into individual pots when second season of growth has commenced.
- Entering third season, plants should be ready for transplantation to the onsite preserved lily habitat and/or the offsite mitigation property, as appropriate. This shall be determined by a qualified biologist, and may bloom the following spring.

Step 3: Restoration Program (following successful propagation)

Immediate Transplantation of Stored Bulbs

Bulbs salvaged from the site and held in short term storage can be transplanted as soon as the following autumn. The bulbs should not require extensive care from the nursery as long as the transplantation sites are available.

Transplantation of Site-Collected and Nursery Seed- Grown Bulbs

Site-collected bulbs shall be kept in cold storage and transplanted on an annual or bi-annual cycle to the onsite and offsite preserved habitat. For plants grown from seed, a minimum of three years in propagation at a native plant nursery is required. This is necessary to allow sufficient time for the bulbs to grow large enough to produce flowers. After the plants begin to flower they are ready for transplantation.

Timing of Transplantation to the Mitigation Site and/or Onsite Preserved Lily Habitat

The plants should be planted in the fall, with the onset of the cool, rainy season in a soil that contains some moisture. This condition should be best met if the plantings are delayed until a significant rainstorm has moistened the soil of the restoration site. A majority of the bulbs should be in an active state of growth.

Method of Transplantation

The plants can be installed with a deep spade. Soil should be in firm contact with the root ball, not allowing any air pockets to remain. The plants should be planted to the full depth of their containers, while keeping the upper soil level consistent with the final grade of the slope. With the restoration soil moist, no further watering should be necessary.

Management Guidelines

Monitoring

Plummer's mariposa lily shall be monitored closely for a minimum of five years to ensure successful growth. Restoration sites should be investigated in the winter and fall of each year. During the investigation the individual plants will be counted to determine the success rate. Little research has been completed on this species and therefore, it would be beneficial to monitor the plants closely not only to ensure successful growth, but also to document observations for future use. A qualified County-approved biologist shall conduct the monitoring. Additional information including surrounding vegetation and any intrusive weeds observed should be documented as well.

Plummer's mariposa lily does not require a great deal of maintenance. They do not need to be watered at any time during the year. Weed maintenance should be minimal on restoration sites, but the area should be monitored for weeds invasion that could impair the growth of the plant.

Exotic Plant Eradication

The management emphasis is to control exotic, weedy, non-native species within areas populated by Plummer's mariposa lily or areas used onsite or offsite transplantation. While the plan recognizes that complete eradication of exotic plants is unlikely, ongoing maintenance efforts will greatly reduce the cover and type of non-native plants that out-compete Plummer's mariposa lily for light, space, and nutrients.

The process of restoration of Plummer's mariposa lily will require regular monitoring to identify the expected and unknown, however anticipated problem exotic species. For each newly found exotic, weedy species, measures will have to be developed and executed for control on an as-needed basis.

Weeds shall be removed before they produce seed. This will assist in reducing future maintenance efforts, as, if well managed in the transplantation phase, weeds will be out-competed by Plummer's mariposa lily. Hand pulling is the preferred method of control for exotic species. Limited use of selected herbicides, however, can also be employed. All weeded material should be removed form the site. Herbicide is specified for weed species that may re-sprout from roots or rhizomes, or for areas where work crews cannot effectively work.

V. OFFSITE HABITAT PRESERVATION

Mitigation Value

The applicant is committed to undertaking actions that fully compensate for impacts to sensitive biological resources including the lily. Therefore, offsite habitat preservation shall be required in combination with onsite mitigation measures to achieve a less than significant finding to sensitive biological resources under CEQA. The project mitigation approach focuses on the lily as one of the "keystone" species for offsite preservation in conjunction with its salvage, propagation, and transplantation to both suitable onsite and offsite habitat. This combination of habitat preservation and the salvage, propagation, and transplantation of the lily to both onsite open space and purchased mitigation land would effectively reduce impacts to less than significant for this sensitive plant.

In addition, the other "keystone" element of an offsite mitigation property would be the inclusion of riparian willow and oak woodland and coastal sage scrub to compensate for the loss of these habitats with project implementation. The proposed project would remove the total 2.39 acres of coastal sage scrub existing onsite. While the coastal sage onsite is degraded, a 2:1 offsite mitigation ratio (4.78 acres) is recommended given the importance of this habitat to wildlife. The project site also supports 5.73 acres of coast live oak woodland, of this amount 1.30 acres would be impacted by the proposed project. Using a 2:1 mitigation ratio results in the need to preserve 2.60 acres offsite.

In regards to the 9.88 acres of willow scrub/woodland onsite, the proposed project would impact 0.02 acre for grading and 0.01 acre for fuel modification. Using a 4:1 mitigation ratio, a total of 0.12 acre would be required for offsite compensation. In addition, a total of 353 oak trees and one heritage tree exist on the project site. The project proposes removal of 65 oak trees for construction purposes. As the oak trees function as woodland habitat, offsite preservation of 65 existing oak trees (a 1:1 ratio) is recommended. This mitigation would be in addition to the County of Los Angeles Oak Tree Ordinance requirements in order to compensate for the loss of habitat values.

In summary, the offsite mitigation property(s) shall support, at a minimum the following habitat types:

- Plummer's mariposa lily (62 acres of potential and/or occupied habitat);
- Coastal sage scrub- 4.78 acres (represents a 2:1 mitigation ratio);
- Coast live oak woodland – 2.60 acres (represents a 2:1 mitigation ratio);
- Oak trees – 65 trees (represents additional mitigation above that required by the County of Los Angeles to account for impacts to the biological functions of oak trees) and,
- Willow woodland – 0.12 acre (represents a 4:1 mitigation ratio).

In regards to the following sensitive wildlife observed onsite, the project shall implement the measures listed below:

Migratory/Nesting Birds – For both the Cooper's hawk, Ashy rufous-crowned sparrow, Western yellow warbler and for any other nesting bird protected by the Migratory Bird Treaty Act, surveys shall be conducted by a qualified biologist to locate nesting sites. This work shall be completed prior to vegetation disturbance, with one final field investigation immediately before the start of grubbing. If any nesting birds are located, a 100-foot buffer shall be delineated and no disturbance shall occur in this zone until the nestling have fledged.

Cooper's hawk – This species is known to occur in suburban areas that are densely vegetated, thus attracting songbirds, the primary food of the Cooper's Hawk. Therefore, with appropriate native plant landscaping, songbirds should continue to be attracted to the site providing a food source within close proximity of potential nesting areas. With avoidance of the riparian and oak woodland

habitats, no direct impacts on nesting sites are anticipated (trees are the preferred nesting sites of this species and many other hawks found in the area).

Ashy rufous-crowned sparrow - Landscaping of the site shall include native sage scrub (coastal) within common areas that are not subject to fuel modification. This is because the Ashy rufous-crowned sparrow prefers dense vegetation with high cover. In addition, the Devil Canyon area, where they were observed the most, shall be preserved as natural habitat.

Western yellow warbler – Landscaping of the site shall include native plants, including native oaks, cottonwoods, and willows. The trees and native plants attract insects, thus providing a food source for this migratory species. While no nesting activity was observed onsite, preservation and management of the riparian corridor onsite could provide potential nesting opportunities. Therefore, to protect this bird and other species using the riparian areas, no recreational activities including trails, bikes, dog walking, or any other activity that could disturb the use of this area by sensitive species shall be allowed.

Level of Significance after Mitigation

With implementation of the onsite avoidance and minimization measures, in combination with offsite habitat preservation the project impact's to the sensitive biological resources described herein would be reduced to a less than significant level.

Potential Offsite Mitigation Properties

Consultation With Government and Non-Profit Entities

Envicom Corporation has contacted numerous private and public agencies to identify potential preservation sites including the Santa Monica Mountains Conservancy, the Nature Conservancy, the National Park Service, and the Mountains Restoration Trust. Mrs. Roary Skay and Mr. Paul Edleman were contacted at the Santa Monica Mountains Conservancy in June 2001.

The Santa Monica Mountains Conservancy indicated there is a high probability that suitable sites are available for purchase and preservation. Envicom Corporation also consulted with Ms. Melanie Beck at the National Park Service on June 27, 2001 and Mr. Fredrick Schmid of the Mountains Restoration Trust on June 26, 2001.

Surveys of Potential Sites

In addition to researching properties known to the resource agencies and conservation groups, Envicom Corporation conducted surveys of adjacent properties to the north of the site. The purpose of these surveys was to identify locations of the lily and to investigate the presence of other sensitive resources (i.e. riparian habitat). Three potential preservation and transplantation sites for the lily and sensitive resources have been identified at this time. One site supports an extensive riparian woodland.

Two sites contained Plummer's mariposa lily in flower and are consistent with the vegetation and site orientation found in the project area (i.e. south facing slopes). The sites are suitable for both habitat preservation and transplantation because: 1) Plummer's mariposa lily were found onsite; 2) the existence of appropriate soil types; and 3) and other species known to coexist with the lily are present. The habitat on these two properties consist of open chaparral with predominantly chamise and black sage, which is indicative of areas that will support the salvaged bulbs; as well as oak woodland, riparian woodland, coastal sage scrub, and wetland/stream habitat.

APPENDIX H

OAK TREE REPORT

PRELIMINARY OAK TREE REPORT

SUBJECT

VESTING TENTATIVE TRACT NO. 53138
Chatsworth Ridge Estates
(Case No. 99-239 & OTP 99-239)
Los Angeles County, CA

PREPARED FOR:

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PREPARED BY:

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Original Date: April 17, 2000
1st Revision Date: June 23, 2000
2nd Revision Date December 20, 2000

LNDG Project No.: 2190-02

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OBJECTIVES

The objective of this report is to determine the potential impacts from the proposed project on the existing oak trees on the site, for Vesting Tentative Tract No. 53138, Phases I and II and to recommend appropriate mitigation measures. This determination included the following:

1. Determining the conditions of the trees addressed (see the **FIELD OBSERVATION** sheets);
2. Providing guidance to minimize any encroachments upon the saved trees.

OAK SPECIES

The 353 oaks noted in this report are of the species *Quercus agrifolia*, commonly known as the Coast Live Oak.

METHODS of STUDY

Qualifications of the oak trees were done by the work of Poly Associates in 1998; and by L. Newman Design Group, Inc. (LNDG) on February 3, 2000, November 8, 2000 and December 11, 2000. The following tasks were performed:

1. 303 oak trees were tagged with numbered metal tags. These tags are affixed to the side of the tree and correspond to those numbers on the **OAK TREE LOCATION MAP**.

   A. The oak trees inventoried by Poly Associates are tagged: 1-285 including 263A, 265A, 266A, 267A, 269A, 274A, 279A.

   B. The oak trees inventoried by LNDG were tagged 1A, 1B, 202A-202G, 261A and 261B.

   C. Approximately 50 oak trees were found in a 13-acre portion of land that has recently been added to the original site. These were not tagged but were noted on the plan.

2. Live tree trunk diameters of 8" and larger for a single trunk and 12" and larger (of at least two trunks) for a multi-trunk, were measured at 4½' above existing grade, and were assessed for plant quality.

3. The driplines (tree's canopy) were field measured at four compass directions equidistant around the circumference of the tree.

All the inventoried trees were field located on a topographic map (scale: 1"=50'), initially prepared by B&E Engineers, and subsequently transposed onto the tentative tract map also prepared by B&E Engineers. Refer to the enclosed **OAK TREE LOCATION MAPS** herein for the tree locations.

PROJECT LOCATION

This proposed residential development is located in the Chatsworth unincorporated area ("Thomas Guide 2000" page 500 // sections A-1 & B-1) of Los Angeles County, CA.

OAK TREE ORDINANCE

Oak trees (of the genus *Quercus*) within the County of Los Angeles are protected by law. County Ordinances #88-0157, #93-0017, and #93-0018; makes the cutting moving, removal, or encroachment into the Protected Zone of an Oak tree without a permit a misdemeanor. The Protected Zone shall mean that area within the dripline of an Oak tree and extending there from to a point at least 5' outside the dripline, or 15' from the trunk(s) of a tree, whichever distance is greater. The major thrust of the Oak Tree Policy (OTP) was established to recognize Oak trees as significant, historical, aesthetic and valuable ecological resources, and as one of the most

picturesque trees in Los Angeles County, lending beauty and charm to the natural and man-made landscape, enhancing the value of property, and the character of the communities in which they exist. In addition, the OTP intends to create favorable conditions for the preservation and propagation of this unique, threatened plant heritage, particularly those trees which may be classified as 'Heritage Oak Trees', for the benefit of current and future residents of Los Angeles County. It is the intent of the OTP to maintain and enhance the general health, safety, and welfare by assisting in counteracting air pollution, and in minimizing soil erosion and other related environmental damages. The OTP is also intended to preserve and enhance property values by conserving and adding to the distinctive and unique aesthetic character of many areas of Los Angeles County in which Oak trees are indigenous.

If replacements are required, they shall consist of a minimum of two 15-gallon Oak specimens (from Los Angeles, Orange, or Ventura County nursery-grown stock) that measure: 1) at least 1" diameter on a single trunk tree, or 2) a combination of the 2 largest trunks that measure at least 1" diameter on a multiple trunk tree; as measure at 1' above the base.

RESULTS of STUDY

1. Physiological Condition of the Oaks

The physiological condition of trees is detailed in the **FIELD OBSERVATION** sheets contained within this report. All recommendations made on the field forms relate only to the specific dates of the fieldwork.

2. Summary of Data/Plan Review

A. There are 303 Coast Live Oak trees (**none of which are Heritage Oak trees**) on the project site, which were evaluated as part of this report. There are approximately 50 additional oak trees in the 13 acres recently added to the site.

B. In order to construct this project 65 Coast Live trees will require removal. The following is a list of the causes for removal. Note: since the time that Poly Associates conducted their field review, the proposed project plan has been revised. However, individual tree characteristics remain unchanged.

Tree No.	General Location
2	"B" Street
8	on slope southeast of Lots 84-89
9	on slope southeast of Lots 84-89
10	on slope southeast of Lots 84-89
16	Lot 85
17	Lot 50
18	Lot 110
19	"N" Street
20	Lot 107
21	Lot 106
23	on slope north of Lot 93
25	on slope east of Lot 95
26	on slope east of Lot 95
41	Lot 150
42	Lot 148
43	Lot 147
44	"V" Street
45	"V" Street

46	Lot 52
47	Lot 52
48	Lot 52
49	Lot 52
50	Lot 51
51	Lot 51
52	"V" Street
53	"V" Street
54	"R" Street
55	Lot 9
56	Lot 12
57	on slope south of Lot 30
68	north side of Lot 133
72	north side of Lot 132
170	"A" Street Bridge
196	on slope south of Lot 83
197	on slope south of Lot 83
199	on slope south of Lot 83
200	on slope south of Lot 83
201	on slope south of Lot 83
202	on slope south of Lot 83
202A	Lot 82
202B	Lot 81
202C	Lot 81
202D	Lot 69
202E	Lot 69
202F	Lot 67
202G	on slope east of Lot 66
247	on slope east of Lot 93
249	on slope east of Lot 93
250	on slope east of Lot 93
251	on slope east of Lot 93
252	on slope east of Lot 93
253	on slope east of Lot 93
254	on slope east of Lot 93
255	on slope east of Lot 93
256	Lot 93
257	Lot 94
258	slope east of Lot 94
259	Lot 94
260	Lot 95
261	Lot 50
280	Lot 110
281	on slope east of Lot 101
282	on slope south of Lot 85
284	Lot 95
285	Lot 95

C. Drip lines on the **OAK TREE LOCATION MAP** are schematic only (see the **FIELD OBSERVATION** sheets within this report for this information).

3. **Specific Overall Mitigation Recommendations**

A. In accordance with the above information, the following mitigation is proposed: a minimum of 130 15-gallon Oak specimen trees shall be planted on this site as replacement trees for the 65 required Oak tree removals.

B. Replacement trees shall be properly maintained for a period of 2 years and replaced by this project developer if fatality occurs during that period.

C. Oak Tree Planting Plan

1. The Landscape Architect/Designer for this project shall design into the "native undisturbed landscape area" these replacement Oak trees. In "native undisturbed landscape areas", which will be noted on the future "Landscape Architectural Plans" and/or "Restoration Plans", where new nursery grown trees are to be planted, trees may be up to a density of no closer than 20' apart.

2. The irrigation system to water these newly planted replacement trees shall be compatible with the watering requirement of the project's indigenous Oak trees.

D. Any County approved work within the Protected Zones of the saved Oak trees, including pruning, shall be under the observation of a qualified Arborist.

E. Copies of the final "Oak Tree Report" and the "Los Angeles County approved Oak Tree Permit" shall be maintained on-site during all site construction.

F. As development occurs around the saved Oak trees, they will become dependent upon the future residents for their care and preservation. All construction activities shall be conducted in accordance with the following established **PRESERVATION PROGRAM**. This program was developed to control the impacts to each tree and to protect them from any unnecessary and unscheduled damage. All Oak tree mitigation techniques shall be observed on-site by of a qualified Arborist. The following list of recommendations, if followed, should insure that the saved Oak trees would remain as valuable assets to the community.

1. **Tree Protection**

a. The trees within 50' of proposed grading shall be fenced at their "Protected Zones", or at the location of their approved encroachment, with a minimum 4' high chainlink fence, or an acceptable alternative, before any site grading commences. No equipment storage, debris drip, etc., shall take place within any tree Protected Zone. This fence shall not be moved and/or removed without certification from a qualified Arborist and approved by the Los Angeles County Forester.

b. Any brush clearance within the driplines shall be completed by handwork only.

2. **Dead Wood Removal and/or Pruning** (only if needed)

a. Dead wood removal is the removal of dead wood from within the tree, while structural pruning for clearance and/or safety pruning of hazardous limbs should only be done if approved by the Los Angeles County Forester. All pruning shall

be done be a qualified Arborist on an "as needed basis" and is subject to the approval by the Los Angeles County Forester.

b. Pruning wounds shall not be sealed unless required by the Los Angeles County Forester.

c. Climbing "gaffs" **shall not** be used by any tree climber except to reach an injured climber or when removing a tree).

3. **Water & Fertilization** (only if needed)

a. The water and fertilization frequency shall be done on an "as needed basis" and is subject to the approval of the Los Angeles County Forester.

b. Native Oak trees are in a dormant state during the summer months and do not required regular or constant watering (or fertilizing). Watering is normally contemplated only following long periods of extreme drought.

c. Fertilization of these native oak trees may be detrimental in general drought conditions. The addition of fertilizer into a maintenance program may promote temporary growth "flushes" at a time when the tree would normally be maintaining regular growth or to even reduce the number of green leaves present. The greater amounts of foliage the tree has the higher the needs of watering requirements may occur.

4. **Disease & Pests** (only if needed)

a. During all phases of construction, the health of the trees shall be monitored by a qualified Arborist for signs & symptoms of disease. These problems, if they arise, shall be remedied as prescribed.

b. If bees are encountered and they become a problem in any on-site oak trees, they shall be removed by a professional beekeeper.

5. **Grading within the Protected Zone**

a. No grading shall take place within the Oak tree Protected Zones without the approval of the Los Angeles County Forester. If grading is approved within the Protected Zone, a qualified Arborist **shall** be present during all work. This shall initially be done by handwork.

b. All pruned roots shall consist of clean-cut surfaces at a 90° angle and shall not be sealed unless approved by the Los Angeles County Forester.

6. **Other Considerations**

a. As reference material, refer to the leaflet (P09-88) titled "Oak Tree Care and Maintenance," as prepared by the Los Angeles County Fire Department – Forestry Division.

b. **Do Not:** 1) Nail grade stakes or anything else to any native Oak tree; 2) Remove natural leaf mulch within any native Oak dripline, unless absolutely necessary; and/or, 3) Apply herbicides within the Protected Zone of any native Oak tree.

b. The dust accumulation on the tree's foliage (from nearby construction) shall be hosed off during construction, under the advice from a qualified Arborist.

NOTICE of DISCLAIMER

The report represents the independent opinion of the signatory consultant (L. Newman Design Group, Inc.). The trees discussed herein were generally reviewed for physical, biological function and aesthetic conditions. This examination was conducted in accordance with presently accepted industry procedures, which are a ground-plane macro-visual observation only. No extensive micro-biological, soil-root excavations, upper crown examination nor internal tree investigations were conducted and therefore, the reporting herein reflects the overall visual appearance of the trees on the date reviewed and no warranty is implied as to the potential failure, health or demise of any part of or whole of any tree described in the report. Records may not remain accurate after our inspection due to unknown causes of changeable deterioration of the reviewed site.

Respectfully Submitted,

L. Newman Design Group, Inc.
ASLA California State License #1314

John Oblinger
OAK TREE CONSULTANT

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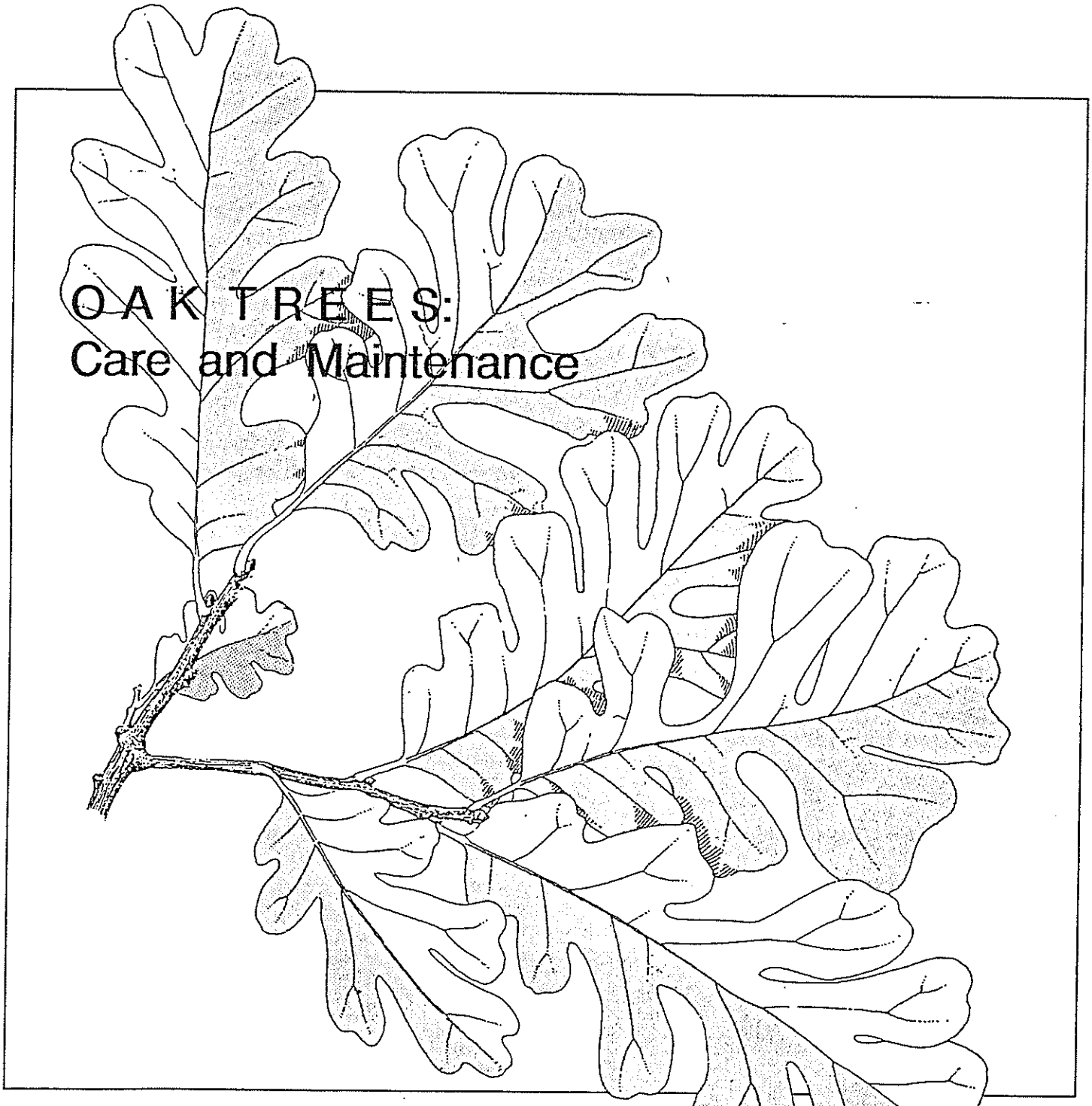
OAK TREES:
Care and Maintenance
(Leaflet P09-89, prepared by LACFD-FD)



OAK TREES: Care and Maintenance

This Oak Tree Care and Maintenance Guide offers basic information and practical guidelines aimed at the preservation and continued health and survival of oak trees in the residential landscape.

Increasing pressure for development is changing the Oak Woodlands of Los Angeles County. Heritage oaks which once survived in open rolling hills are now being preserved or replanted and incorporated into the community.

How do we protect these trees during the planning and development process, and insure their survival once they are in the home garden?

The Oak Tree

Oak trees in the residential landscape often suffer decline and early death due to conditions that are easily preventable. Damage can often take years to become evident, and by the time the tree shows obvious signs of disease it is usually too late to help.

Improper watering, especially during the hot summer months, and disturbance to critical root areas are most often the causes. This booklet will provide guidelines on where these critical areas lie and ways to avoid disturbing them, as well as information on long term care and maintenance of both natural and planted oaks. Lists of additional resources for more information and demonstration areas to visit are also included.

The Oak Tree Ordinance

The Los Angeles County Oak Tree Ordinance has been established to recognize oak trees as significant historical, aesthetic, and ecological resources. The goal of the ordinance is to create favorable conditions for the preservation and propagation of this unique and threatened plant heritage. By making this part of the development process, healthy oak trees will be preserved and maintained.

The Los Angeles County Oak Tree Ordinance applies to all unincorporated areas of the County. Individual cities may have their own ordinances, and their requirements may be more stringent.

Permit Requirements:
Under the Los Angeles County Ordinance, a person shall not cut, destroy, remove, relocate, inflict damage, or encroach into the *protected zone* (see text) of any tree of the oak tree genus without first obtaining a permit.

Damage includes but is not limited to:

- burning
- application of toxic substances
- pruning or cutting
- trenching
- excavating
- paving
- operation of machinery or equipment
- changing the natural grade.

Section 22.56.2050: Oak Tree Permit Regulations, Los Angeles County.
Date of Adoption: September 13, 1988

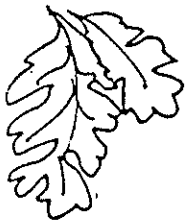
For more information on the Oak Tree Permit, contact:
The Los Angeles County Dept. of Regional Planning
320 W. Temple Street
Los Angeles CA 90012
(213) 974-6401

Types of oaks commonly found in Los Angeles County:

Many kinds of oak trees are native to Los Angeles County. A few of the more common ones are shown below, but *all* oak trees are covered by the oak tree ordinance.

Older oaks which have thrived under the natural rainfall patterns of dry summers and wet winters often can't handle the extra water of a garden setting. These trees must be treated with special care if they are to survive.

Those oaks that have been planted into the landscape or sprouted as volunteers tend to be more tolerant of watered landscapes. While these vigorous young trees may grow 1 1/2 to 4 feet a year in height under good conditions they are not as long-lived. Once established these trees would benefit from the same special care outlined in this guide.



Valley Oak
QUERCUS LOBATA

LARGE DECIDUOUS TREE 60'-75' HIGH, BROADLY SPREADING 50'-80' WIDE.

LEAVES: DEEP GREEN, 3"-4" LONG; PAPER-LIKE TEXTURE WITH DEEP ROUNDED LOBES ON THE LEAF EDGE.

TENDS TO FAVOR VALLEY BOTTOMS; FOR THIS REASON THE VALLEY OAK HAS DISAPPEARED FROM THE LANDSCAPE MORE RAPIDLY, IMPACTED SEVERLY BY AGRICULTURE and URBAN DEVELOPMENT.

Coast Live Oak
QUERCUS AGRIFOLIA

LARGE EVERGREEN TREE WITH A BROAD, ROUND SHAPE AND LARGE LIMBS. 30'-70' HIGH, 35'-80' WIDE.

LEAVES: GLOSSY GREEN, 1"-3" LONG; SPINY, ROUNDED, AND HOLLY-LIKE; BUT DISTINCTLY CUPPED OR CURLED UNDER AT THE EDGES.

Interior Live Oak
QUERCUS WISLIZENII

EVERGREEN TREE 30'-75' HIGH OR A SHRUB 8'-10' HIGH IN CHAPARRAL AREAS. HAS A FULL, DENSE ROUNDED SHAPE, NOT BROAD OR WITH LARGE LIMBS LIKE A COAST LIVE OAK. THEY TEND TO GROW IN CLUMPS RATHER THAN AS A SINGLE TREE.

LEAVES: DARK GREEN, 1"-4" LONG. EDGES EITHER SMOOTH OR SPINY, BUT ALWAYS FLAT— NOT CURLED UNDER.

OTHER COMMON OAKS:
CALIFORNIA BLACK OAK; QUERCUS KELLOGGII
CANYON LIVE OAK; QUERCUS CHRYSOLEPIS
ENGELMANN OAK; QUERCUS ENGELMANNII

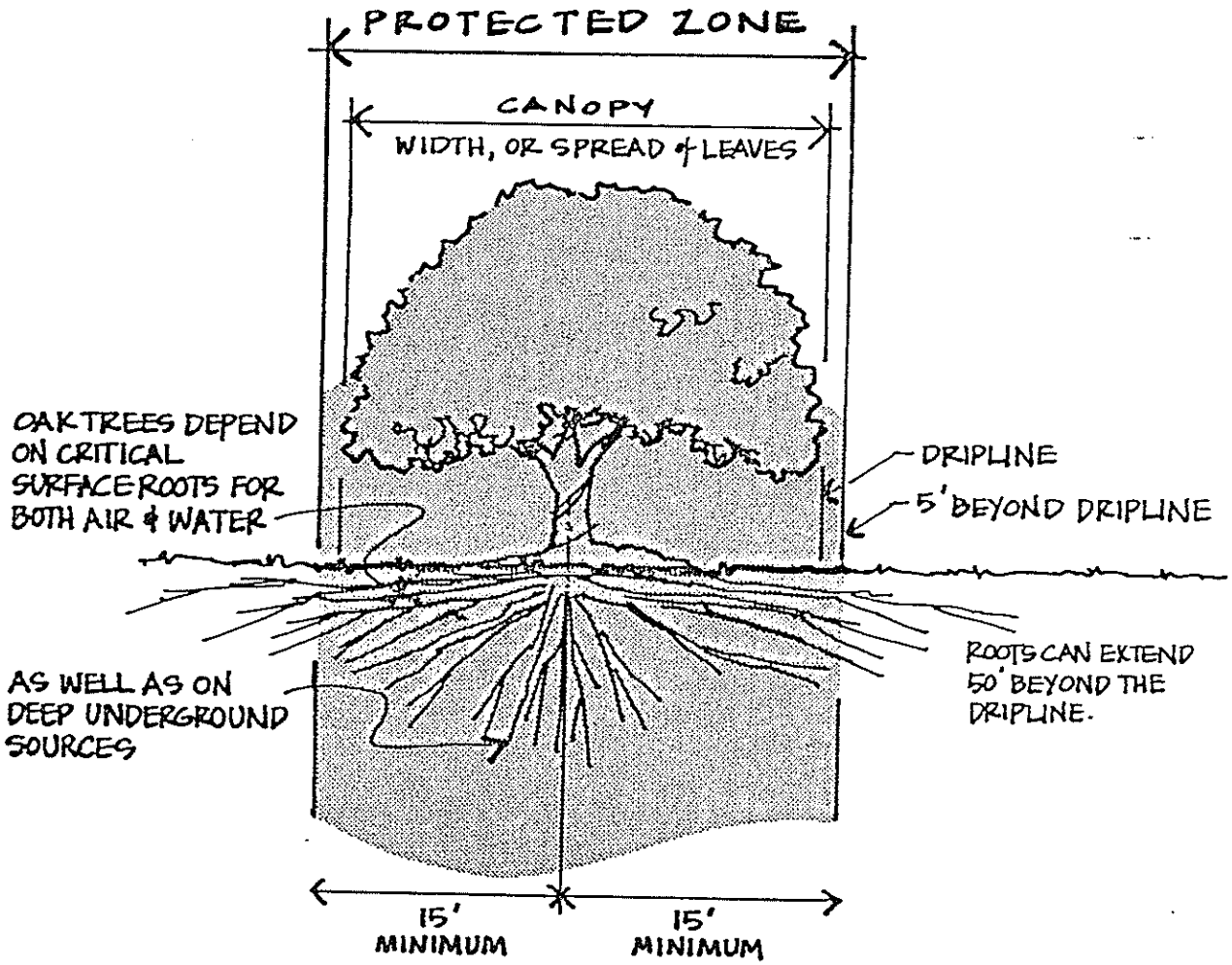
THE PROTECTED ZONE

The *protected zone* defines the area most critical to the health and continued survival of an oak tree. Oaks are easily damaged and very sensitive to disturbances that occur to the tree or in the surrounding environment.

The root system is extensive but surprisingly shallow, radiating out as much as 50 feet beyond the spread of the tree leaves, or *canopy*. The ground area at the outside edge of the canopy, referred to as the *dripline*, is especially important: the tree obtains most of its surface water and nutrients here, as well as conducts an important exchange of air and other gases.

The protected zone is defined in the Oak Tree Ordinance as follows:

> "The Protected Zone shall mean that area within the dripline of an oak tree and extending therefrom to a point at least 5 feet outside the dripline or 15 feet from the trunk, whichever distance is greater."



CONSTRUCTION ACTIVITY WITHIN THE PROTECTED ZONE

Changes in Grade

Any change in the level of soil around an oak tree can have a negative impact. The most critical area lies within 6' to 10' of the trunk: no soil should be added or scraped away. Water should drain away from this area and not allowed to pond so that soil remains wet at the base.

Retaining walls designed to hold back soil above or below an existing tree should be avoided if at all possible, especially within the protected zone. These types of structures cause critical areas at the dripline to be buried, or require that major roots be severed. Water trapped at the base of the tree could lead to root rot or other impacts, and to the decline and premature death of a highly valued landscape tree.

Construction activities outside the protected zone can have damaging impacts on existing trees. Underground water sources can be cut off due to falling water tables, or drainage may be disrupted.

Trenching

Digging of trenches in the root zone should be avoided. Roots may be cut or severely damaged, and the tree 'can be killed.

If trenches must be placed within the protected zone, utilities can be placed in a conduit which has been bored through the soil, reducing damage to the roots. Insist that as many utilities as allowed be placed in a single trench, instead of the common practice of digging a separate trench for each individual line.

Trenching can also be accomplished using hand tools or small hand held power equipment to avoid cutting roots. Any roots exposed during this work should be covered with wet burlap and kept moist until the soil can be replaced.

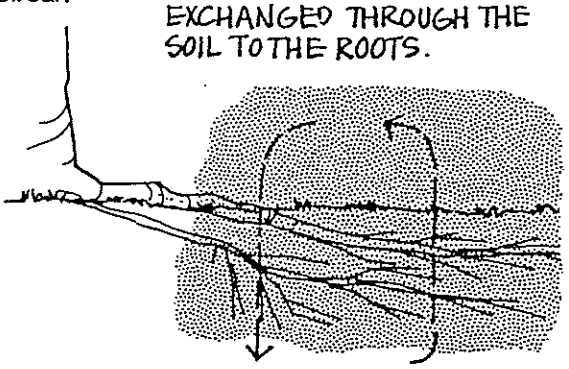
Soil Compaction and Paving

The roots depend upon an important exchange of both water and air through the soil within the protected zone. Any kind of activity which compacts the soil in this area blocks this exchange and can have serious long term negative effects on the tree.

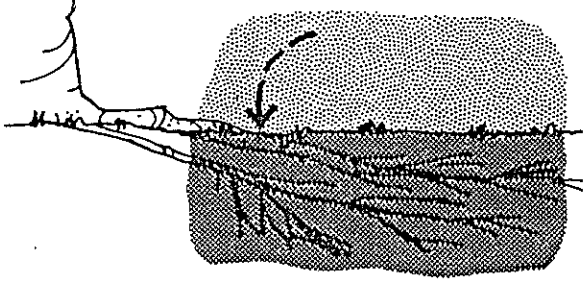
If paving material must be used, some recommended surfaces include brick paving with sand joints, or ground coverings such as wood chips (note the advantages of natural materials for providing nutrients under *mulching*).

SOIL COMPACTION

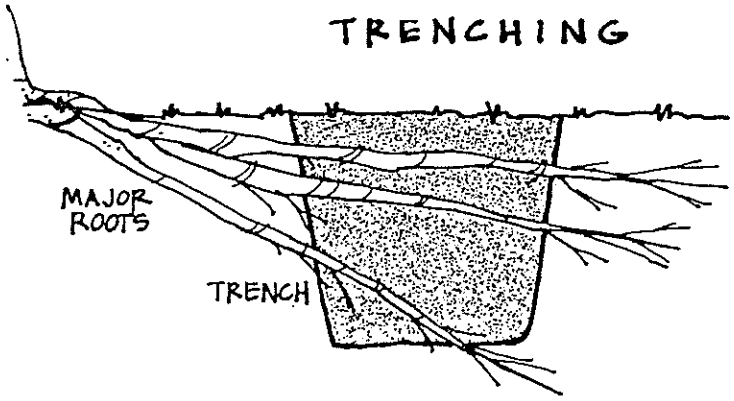
BOTH AIR and WATER ARE EXCHANGED THROUGH THE SOIL TO THE ROOTS.



HOWEVER, IF THE SOIL HAS BEEN COMPACTED, THIS EXCHANGE CANNOT OCCUR.



TRENCHING



INSIDE THE TRENCH, PLACE UTILITY CONDUIT BETWEEN OR UNDERNEATH MAJOR ROOTS.

MAINTENANCE

Watering

The key is prevention – *do not overwater.* Improper watering is often overlooked as the cause of tree death because it can take years for the damage to show. Once the tree shows obvious signs of decline, it is often too late to correct the problem.

The seasonal weather pattern for this region is one of dry summers and winter rain. Oak trees are naturally drought tolerant and adapted to this cycle. If the tree is vigorous and thriving it should not require any additional water.

If the natural source of surface or underground water has been altered, some supplemental water may be indicated, but proceed with caution. The goal of any watering schedule for oak trees should be to supplement natural rainfall and it should occur only when the tree would normally receive moisture. This might be in the winter, if rains are unusually late, or in spring if rainfall has been below normal levels.

Overwatering, especially during the summer months, causes a number of problems which can lead to decline and eventual death of the tree. It creates ideal conditions for attacks of Oak Root Fungus by allowing the fungus to breed all year. In addition, both evergreen and deciduous oaks grow vigorously in the spring and naturally go dormant in the summer. Extra water only encourages new tip growth which is subject to mildew. Oaks need this period of rest.

Newly planted oaks may need supplemental watering during their first few summers. After they become established water should be applied according to the previous guidelines.

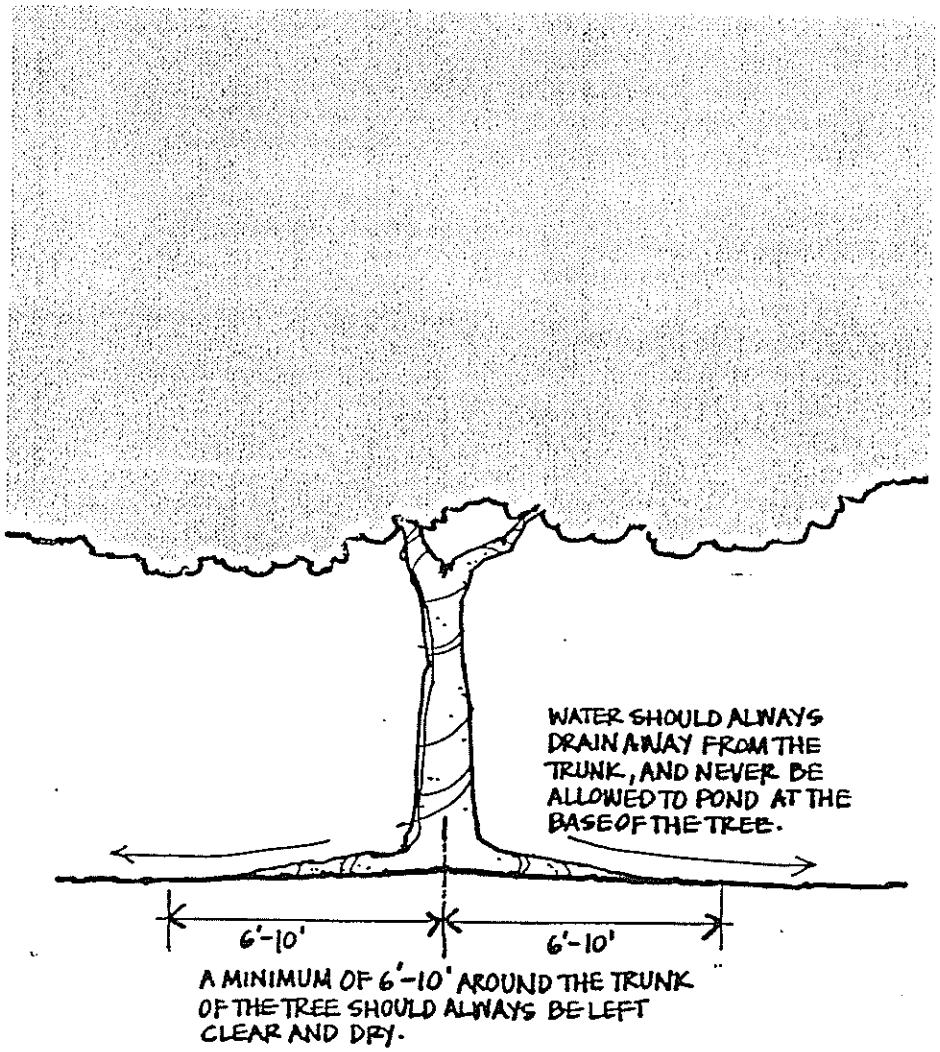
Pruning

For oak trees, the periodic removal of dead wood during periods of tree dormancy should be the only pruning needed. Any cutting of green wood opens scars that could allow the entry of organisms or disease.

Before pruning obtain the advice of a certified arborist or other professional and consult the local city or county where the tree is located to find out what regulations apply. Pruning of both live and dead wood can sometimes require a permit.

Mulching

Leaf litter from the tree is the best mulch and should be allowed to remain on the ground within the protected zone. Crushed walnut shells or wood chips can be used, but the oak leaves that drop naturally provide the tree with a source of nutrients. Avoid the use of packaged or commercial oak leaf mulch which could contain oak root fungus. Redwood chips should not be used due to certain chemicals present in the wood.



Diseases and Pests

Trees that are stressed, especially because of improper watering practices, are prone to certain diseases and attacks by pests.

The most damaging of these diseases is the Oak Root Fungus *Armillaria mellea.* Occurring naturally in the soil, the fungus thrives under wet conditions and dies back in the summer when soils dry out. This is why summer watering of oaks can be a deadly practice. As noted in the watering guidelines, wet soil in the summer allows the fungus to grow all year. As the population grows, their natural food sources are depleted and they begin feeding on oak tree roots. The fungus does not require an open wound in the tree to gain entry.

Indications of the fungus include:

- die back of branches or tips.
- honey colored fungus at or near the root crown.
- white fan-like fungus between the bark and wood.
- the presence of black, shoestring like growths in the soil.

Once the tree begins to show obvious signs of infection treatment is generally ineffective. The best treatment is to *avoid* the conditions that lead to oak root fungus infections.

Pit Scale, Oak Moth, and other pests: any significant changes in leaf color, branch die back, presence of black sooty materials on leaves or other changes should be noted. Seek the advice of a professional forester, arborist, farm advisor or other expert before spraying any pesticides on an oak tree.

Planting Underneath Oaks

The natural leaf litter is by far the best ground cover within the protected zone. If plants must be placed, the following guidelines should be followed:

There should be no planting within a minimum 6 to 10 feet of the trunk.

Avoid plants that require any supplemental water once established.

Choose plants suited for "dry shade." Those listed in the box below offer some good choices. To see some examples of how these plants have been used under oaks refer to the Additional Resources section on the following page.

PLANTS TO CONSIDER:

Plant Name	Description
Arctostaphylos densiflora 'Howard McMinn' Manzanita	3' high, 6' wide. Toughest of available forms. Whitish-pink flowers.
Arctostaphylos edmundsii Little Sur Manzanita	1-2' high, 4-5' wide. Tolerant of full shade.
Arctostaphylos hookeri Monterey Carpet Manzanita	1-2' high, spreading to 12' wide by rooting branches. White to pink flowers.
Ceanothus griseus horizontalis Carmel Creeper	Less than 2 1/2' tall, low and creeping. Clusters of small blue flowers.
Heuchera Coral Bells	2-4' mound. Flowers on an upright stem 2-3" high and spotted with red or pink.
Mahonia aquifolium compacta Oregon Grape	2-4' high, spreading by underground roots. Bright yellow flower clusters.
Ribes viburnifolium Evergreen or Catalina Currant	2-3' high, spreading to 12' wide. Flowers pink to red in small clusters.

NOTES:

Before deciding on plants, check a source such as the *Sunset Western Garden Book* to determine which plants will grow in your area.

When choosing shade tolerant plants, consider that the ground under the south side of the tree will get more sunlight. In this hemisphere the sun stays lower in the southern sky all year, causing the tree to block the light. This causes the northern side to stay in deeper shade.

ADDITIONAL RESOURCES and Places to Visit:

Public Agencies

Los Angeles County
Department of Forester and Fire Warden
Forestry Division
1320 N. Eastern Avenue
Los Angeles CA 90063 (213) 267-2481

Los Angeles County Department of Regional Planning
320 W. Temple Avenue
Los Angeles CA 90012 (213) 974-6401

Univ. of California Cooperative Extension
Natural Resources Division
2615 S. Grand Ave., Suite 400
Los Angeles CA 90007 (213) 744-4851
(Offers many publications of interest)

Private Organizations

California Native Plant Society
909 12th Street, Suite 116
Sacramento CA 95814 (916) 447-2677

The Theodore Payne Foundation for Wildflowers and Native Plants Inc.
10459 Tuxford Street
Sun Valley CA 91352 (818) 768-1802

Publications

Hardesty, Nancy M. *Oak Woodland Preservation and Land Planning: Portola Valley Ranch.* Hardesty Assoc., 855 Oak Grove Ave., Suite 205, Menlo Park CA 94025 (415) 326-4268. 1984.

Heritage Oaks Committee *Native Oaks, Our Valley Heritage.* Sacramento County Office of Education. 1977.

Johnson, Sharon G. *Living Among the Oaks: A Management Guide for Landowners,* Univ. of California Cooperative Extension, Natural Resources Program, 163 Mulford Hall, Berkeley CA 94720 (415) 642-2360. 1988

Perry, Bob. *Trees and Shrubs for Dry California Landscapes.* Land Design Publishing, San Dimas. 1987

Schmidt, Marjorie G. *Growing California N ative Plants,* Univ. of California Press, Berkeley CA. 1980.

Arboretums and Botanic Gardens:

Los Angeles County Arboreta and Botanic Gardens
301 N. Baldwin Ave., Arcadia CA 91006
(213) 681-8411 or (818) 446-8251

Los Angeles County South Coast Botanic Garden
26300 Crenshaw Blvd.
Palos Verdes Penninsula CA 90274
(213) 772-5813

Los Angeles County Descanso Gardens
1418 Descanso Drive, La Canada-Flintridge CA 91011 (818) 790-4935

Rancho Santa Ana Botanic Garden
1500 North College, Claremont CA 91711 (714) 625-8767

The Lummis Home
200 E. Avenue 43, Los Angeles CA 90045
(213) 222-0548

For more information, contact us at any of the following locations:

HEADQUARTER OFFICE
1320 North Eastern Avenue, Los Angeles CA 90063
(213) 267-2481

HENNINGER FLATS FORESTRY UNIT
2260 Pinecrest Drive, Altadena CA 91001
(818) 794-0675

LAKE HUGHES FORESTRY UNIT
42230 Lake Hughes Road, Lake Hughes CA 93532
(805) 724-1810

MALIBU FORESTRY UNIT
942 N. Las Virgenes Road, Calabasas CA 91302
(818) 347-1904

SAN DIMAS FORESTRY UNIT
1910 N. Sycamore Canyon Rd., San Dimas CA 91773
(714) 599-4615

SAUGUS FORESTRY UNIT
28760 N. Bouquet Canyon Rd., Saugus CA 91350
(805) 296-8558

Los Angeles County
Department of Forester and Fire Warden

1320 North Eastern Avenue
Los Angeles CA 90063
(213) 267-2481

County of Los Angeles
Board of Supervisors
Peter F. Schabarum, First District
Kenneth Hahn, Second District
Edmund D. Edelman, Third District
Deane Dana, Fourth District
Michael D. Antonovich, Fifth District

P. MICHAEL FREEMAN, Forester and Fire Warden

Los Angeles County
Department of Forester and
Fire Warden
Forestry Division

1320 North Eastern Avenue
Los Angeles CA 90063
(213) 267-2481

TO:

FIELD DATA

BY
POLY ASSOCIATES

INSPECTION NOTICE

The following information was observed on the date(s) indicated herein, and should only be considered true at the time of field inspection.

POLY ASSOCIATES

ENVIRONMENTAL - LANDSCAPE CONSULTANTS

TREES SCHEDULED FOR REMOVAL

CLIENT: CHATSWORTH RIDGE ESTATES
TWIN LAKES/DEER LAKE

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	SPREAD	NECROTIC	FIRE DAMAGE	REGROWN STUMP	LOSS OF VIGOR	TERMINAL DIE BACK	ONE-SIDED	CROWDED	HAZARDOUS	POOR FORM	DISEASED	TRUNK DAMAGE	TRUNK CAVITY	CHLOROTIC	MUCH DEAD WOOD	INSECTS	WEAK CROTCH	BRITTLE	THIN		
27	Q. agrifolia Coastal Live Oak	9" 12"	13'	14'		●		●	●			●	●		●	●		●		●				
31	Q. agrifolia 110 tag (too steep)	12"	36'	12'		●		●	●	●	●	●	●		●	●		●		●				
32	Q. agrifolia 110 tag, (too steep)	9"	36'	8'		●		●		●	●	●	●		●	●		●						
33	Q. agrifolia old #75 (2 old trees bad drainage)	9" 12"	15'	18'	●	●	●		●		●				●			●						
70	Q. agrifolia Stay in line	8" 11"	14'	17'	●	●	●		●	●	●		●	●	●	●		●		●				
63	Q. agrifolia in line	14"	18'	18'				●		●	●	●	●		●									
71	Q. agrifolia	10"	17'	10'		●	●	●		●	●		●		●	●		●						
37	Q. agrifolia	10" 17"	27'	32'		●	●	●	●		●	●			●	●		●				●		
39	Q. agrifolia	16" 21"	27'	36'		●	●				●	●		●	●	●								
177	Q. agrifolia old #93	29"	25'	36'		●					●	●			●	●		●						

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TREES SCHEDULED FOR REMOVAL

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	SPREAD	NECROTIC	FIRE DAMAGE	REGROWN STUMP	LOSS OF VIGOR	TERMINAL DIE BACK	ONE-SIDED	CROWDED	HAZARDOUS	POOR FORM	DISEASED	TRUNK DAMAGE	TRUNK CAVITY	CHLOROTIC	MUCH DEAD WOOD	INSECTS	WEAK CROTCH	BRITTLE	THIN		
211	Q agrifolia old # 57 Coastal Live Oak	20"	13'	7'	●	●		●	●		●		●	●	●	●		●						

POLY ASSOCIATES

ENVIRONMENTAL - LANDSCAPE CONSULTANTS

- OAK -

TREE CANDIDATES FOR PRESERVATION

CLIENT: CHATSWORTH RIDGE ESTATES, TWIN LAKES / DEER LAKE

2190-02 1 OF 58

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (W / N / E / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (W / N / E / R)	MAJOR ROOT LOCATIONS (W / N / E / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL (W / N / E / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
1	Quercus agrifolia Coastal Live Oak	19"	20'	15' 15' 15' 15'	6' 7' 1' 1' 2'							●	C	B		●	●									
REMARKS: At 32" it splits into 2 trunks 13" + 13" — tree growing at base of rocks																										
2	Q. agrifolia "	6" 7"	16'	9' 3' 9' 9'	5' 4' 4' 2'					●			B	B		●										
REMARKS:																										
3	Q. agrifolia "	1" 2" 3" 4" 4" 5"	12'	4' 9' 7' 7'	7' 4' 5' 1'					●			B	B		●										
REMARKS: 15' from high voltage lines — vine growing up tree																										
4	Q. agrifolia "	8" 12"	20'	9' 9' 9' 9'	2' 2' 2' 2'					●			B	B		●										
REMARKS: On high slope east of creek surrounded by poison oak																										
5	Q. agrifolia "	12"	20'	10' 12' 5' 8'	8' 8' 7' 7'					●		●	C	C		●	●									
REMARKS: Slope																										

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- OAK -
TREE CANDIDATES FOR PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S / E / W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S / E / W)	MAJOR ROOT LOCATIONS (N / S / E / W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S / E / W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
6	Q. agrifolia Coastal Live Oak	14"	23'	12' / 12' / 14' / 9'	10' / 8' / 8' / 7'					●		●	C	C		●	●									
REMARKS:																										
7	Q. agrifolia "	7" 9"	21'	6' / 12' / 10' / 7'	5' / 4' / 1' / 10'					●		●	+ C	B		●	●									
REMARKS:	South side slope soil 1' up																									
8	Q. agrifolia "	16"	19'	21' / 9' / 21'	7' / 20' / 18'				●	●			− D	− D		●	●									
REMARKS:	located in camp area (euc grove - tire swing) tree has been litterated, axed, shot - good candidate to remove - very sparse foliage																									
9	Q. agrifolia "	25"	33'	30' / 9' / 33'	20' / 12' / 12'	●				●			− B	B		●	●									
REMARKS:	Tree sit on it slope - trunk growing in southerly direction north bank large roots exposed but healthy																									
10	Q. agrifolia "	6" 22"	27'	20' / 21' / 24' / 3'	3' / 5' / 15' / 5'	●		●		●			− C	+ C		●	●									
REMARKS:																										

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- OAK -
TREE CANDIDATES FOR PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S-E-W / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S-E-W / R)	MAJOR ROOT LOCATIONS (N / S-E-W / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL (N / S-E-W / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
11	Q. agrifolia Coastal Live Oak	16"	27'	18' 21' • 20' 23'	8' 5' • 2' 17'	• +				•		•	+ C	+ C		•	•									
REMARKS: base of rock slope - rocks on west side. poison oak up tree																										
12	Q. agrifolia "	12"	19'	18' 10' 7' 15'	10' 6' • 2' 6'	• +						•	C	C		•	•									
REMARKS: no tag inaccessible. on rocky slope 10' up poison oak [illegible]																										
13	Q. agrifolia "	11" 14"	20'	6' 12' • 12' 12'	5' 5' • 3' 5'	• +							+ B	+ B		•										
REMARKS:																										
14	Q. agrifolia "	14"	20'	12' 16' • 14' 19'	8' 7' • 2' 2'							•	C	+ C		•										
REMARKS:																										
15	Q. agrifolia "	2" 2" 6"	14'	6' 6' • 6' 6'	3' 3' • 3' 3'				•				C	+ C												
REMARKS: poison stump																										

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- OAK -
TREE CANDIDATES FOR PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N E S W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N E S W	MAJOR ROOT LOCATIONS N E S W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N E S W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
16	Q. agrifolia Coastal Live Oak	13" 13"	20'	14' 12' 16' 12'	2' 2' 2' 2'								B	B		●	●									
REMARKS:																										
17	Q. agrifolia "	4" 4" 4"	12'	3' 7' 9' 7'	6' 3' 3' 3'								+ C	+ C		●										
REMARKS: Regrown stump																										
18	Q. agrifolia "	20"	23'	15' 12' 18' 17'	4' 1' 1' 1'								+ C	+ C		●	●									
REMARKS:																										
19	Q. agrifolia "	1" 1" 2" 4" 6"	12'	6' 6' 6' 6'	3' 3' 3' 3'			●	●		●		- C	- C		●										
REMARKS: Regrown stump																										
20	Q. agrifolia "	16" 22"	20'	13' 12' 22' 18'	3' 4' 3' 4'							●	D	- C		●	●									
REMARKS: extensive fire damage																										

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- OAK -
TREE CANDIDATES FOR PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N • S • E • W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N • S • E • W)	MAJOR ROOT LOCATIONS (N • S • E • W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N • S • E • W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
21	Q. agrifolia Coastal Live Oak	5"6" 7"	18'	10' 10 • 14' 10	1' 1' • 1' 1'								B	B												
REMARKS:																										
22	Q. agrifolia "	14" 16"	21'	17' 20' • 8' 24'	8' 5' • 8' 3'					•		•	C	C		•								•		
REMARKS:	Poison oak up it. barb wire girdling it																									
23	Q. agrifolia "	13"	14'	— 24' —	— 1' —			one •		•		•	C	C		•	•									
REMARKS:	Was 2 trunk - 1 split w/ decay. Good trunk grows to east stream bed																									
24	Q. agrifolia "	9"	18'	6' 11' • 9' 9'	4' 3' • 1' 1'					•			+ C	+ C		•										
REMARKS:	Ice grown Stump																									
25	Q. agrifolia "	13" 14" 15" 16"	24'	15' 15' • 26' 15'	6' 1' • 1' 10'			•	•			•	D	D		•	•									
REMARKS:	Lots of basal and scaffold damage due to fire. borderline on removal																									

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- OAK -
TREE CANDIDATES FOR PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / W / E / S)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / W / E / S)	MAJOR ROOT LOCATIONS (N / W / E / S)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / W / E / S)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
26	Q. agrifolia Coastal Live Oak	6" 13" 13"	25'	8' 26' • 12' 20'	7' 2' • 4' 1'			•	•	•		•	D	C		•	•									
REMARKS: extensive fire damage looks stable																										
27	Q. agrifolia "	11" 14"	15'	8' 12' • 8' 15	2' 7' • 1' 3'							•	C	C		•										
REMARKS:																										
28	Q. agrifolia "	11"	19'	7' 6' • 8' 9'	6' 7' • 3' 3'							•	C	C		•	•									
REMARKS:																										
30	Q. agrifolia "	20" 21"	24'	15' 18' • 15' 24'	40' 50' • 6' 40'			•	•	•		•	D	D		•	•									
REMARKS: Growing on steep edge above creek - land to east only																										
33	Q. agrifolia "	11"	14'	12' 8' • 12' 8'	10' 10' • 10' 18'					•		•	C	C		•										
REMARKS: Growing on steep incline																										

POLY ASSOCIATES

ENVIRONMENTAL - LANDSCAPE CONSULTANTS

- O A K -

TREE CANDIDATES FOR

PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / B●Z / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / B●Z / R)	MAJOR ROOT LOCATIONS (N / B●Z / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / B●Z / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
34	Q. agrifolia Coastal Live Oak	6" 9"	18'	8' 6' ● 6' 10'	20' 6' ● 3' 10'							●	C	C		●	●									
REMARKS: on steep incline - creek below																										
35	Q. agrifolia "	4" 5" 6"	10'	5' 5' ● 5' 5'	1' 1' ● 1' 1'							●	C	± C		●	●									
REMARKS: regrown stump																										
36	Q. agrifolia "	11"	24'	9' 14' ● 6' 10'	6' 6' ● 36' 25'				●	●		●	C	± C		●										
REMARKS: no tag - steep eroded incline - poison oak (unstable slope) (13") dead stump																										
37	Q. agrifolia "	8" 10"	19'	12' 8' ● — 6'	1' 2' ● — 2'				●				C	C		●	●									
REMARKS: two trunks growing against each other - trunk had damage, vigorously closed - growing steep bank																										
39	Q. agrifolia "	6" 12"	19'	6' 9' ● 13' 6'	2' 2' ● 2' 8'			●	●	●		●	C	± C		●	●									
REMARKS: Old tag # 74 The 6" new regrown ~~from base~~																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S / E / W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S / E / W)	MAJOR ROOT LOCATIONS (N / S / E / W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S / E / W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
41	Q. agrifolia Coastal Live Oak	4"4" 4"4" 5"5" 5"5"	14'	9' 9' 9' 9'	3' 6' 6' 6'					●		●	+ C	B		●										
REMARKS: 8-trunks regrown stump																										
42	Q. agrifolia "	5"6" 7"8"	14'	8' 12' 9' 10'	6' 7' 3' 6'					●		●	+ C	B		●										
REMARKS: regrown stump. old trunk broke off																										
43	Q. agrifolia "	5"6" 6" 7"	15'	6' 12' 18' 15'	6' 3' 2' 12'					●		●	+ C	B		●										
REMARKS: regrown stump																										
44	Q. agrifolia "	6" 16"	22'	15' 13' 19' 15'	6' 12' 8' 1'							●	− C	+ C		●	●									
REMARKS: 6" growing laterally south 2' above ground level																										
45	Q. agrifolia "	3" 4" 6" 6"	20'	4' 12' 6' —	8' 6' 8' —					●			− C	+ C		●	●									
REMARKS: regrown stump,																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N S E W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N S E W	MAJOR ROOT LOCATIONS N S E W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N S E W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
46	Q. agrifolia Coastal Live Oak	6" 7"	21'	5' 3' 7' 8'	10' 3' 10' 4'	+				●			C	C+		●										
REMARKS: regrown stump - on creek edge																										
47	Q. agrifolia "	2" 2" 4" 7" 8"	14'	6' 5' 6' 12'	6' 7' 10' 18'					●			C-	C+		●	●									
REMARKS: regrown stump - South foliage over stream																										
48	Q. agrifolia "	8" 10"	14'	9' 12' 7' 12'	4' 4' 6' 2'					●			C-	C-		●	●									
REMARKS:																										
49	Q. agrifolia "	7" 5" 5"	18'	8' 8' 8' 8'	3' 7' 5' 1'					●			C-	C+		●	●									
REMARKS: regrown stump - one 5" dia bad shape, remove																										
50	Q. agrifolia "	2" 2" 2" 4" 6" 7" 7"	14'	7' 7' 7' 7'	1' 1' 1' 1'					●			C	C+		●										
REMARKS: regrown stump																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N S E W R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N S E W R)	MAJOR ROOT LOCATIONS (N S E W R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N S E W R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
51	Q. agrifolia Coastal Live Oak	5" 7"	18'	6' 6' • 6' 6'	1' 8' • 2' 3'					•			C	C+		•										
REMARKS: two trunks emerge from ground next to each other 5" flat side from closeness																										
52	Q. agrifolia "	4" 5" 5" 5"	16'	5' 9' • 3' 12'	12' 5' • 9' 6'					•			C−	C+		•	•									
REMARKS: regrown stump																										
53	Q. agrifolia "	2" 2" 5" 6" 7"	17'	8' 5' • 1' 8'	3' 1' • 1' 1'					•			C	C		•										
REMARKS: regrown stump - some limbs grafted together - one sided, spread easterly																										
54	Q. agrifolia "	1" rail 2" 4" 5" 8" 8"	18	9 12 • 9 10	1 1 • 1 1							•	C+	B		•										
REMARKS: next to dirt rd regrown stump																										
55	Q. agrifolia "	4" 4" 5" 5" 6"	17'	10' 6' • 12' 12	1' 1' • 1' 1					•			C	C+		•										
REMARKS: Regrown stump																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (W • E / N • S / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (W • E / N • S / R)	MAJOR ROOT LOCATIONS (W • E / N • S / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (W • E / N • S / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
56	Q agrifolia Coastal Live Oak	1" 1" 1" 3" 3" 4"	7'	4' • 4' 4'	1' • 1' 1'								+ C	+ C		•										
REMARKS: regrown stump																										
57	Q. agrifolia "	8" 10"	17'	11' 8' • 6' 10'	1' 1' • 1' 2'							•	C	+ C		•										
REMARKS: regrown stump																										
58	Q. agrifolia "	1" 1" 2" 4" 5"	10'	10' — • 11' 3'	1' — • 1' 1'					•			− C	C		•	•									
REMARKS: regrown stump - growing under oaks in stream																										
59	Q. agrifolia "	2" 2" 5" 22"	20'	20' 18' • 20' 20'	2' 8' • 7' 5'			•		•			− C	+ C		•										
REMARKS: 2-2-5 basal growth - cavity is in 1 of 2 large leaders splitting off at 3' approx 16" + 13" side of bank & stream																										
60	Q. agrifolia "	11"	18'	20' 18' • 12' 7'	2' 8' • 14' 12'								C	C		•										
REMARKS: trunk has lean to North west																										

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NO.	TREE SPECIES	EVALUATION: TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (W • E / N • S)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (W • E / N • S)	MAJOR ROOT LOCATIONS (W • E / N • S)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (W • E / N • S)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
61	Q. agrifolia Coastal Live Oak	24"	24'	25' • 26' 22' 25'	7' • 7' 12' 7'								+ D	+ C		•										
REMARKS: Sparse foliage - side of bank & stream - 8" dia. lateral north side growing horizontal at 6' above stream. Poison oak on trunk																										
62	Q. agrifolia "	12" 12"	18'	13' • 12' 3' 12'	24' • 3' 12' 2'								+ D	C		•										
REMARKS: growing side of incline, spread over stream																										
64	Q. agrifolia "	18"	19'	20' • 17' 8' 20'	8' • 3' 7' 25'					•			− D	− D		•	•									
REMARKS: declining.																										
65	Q. agrifolia "	14"	18'	22' • 18' 18' 12'	20' • 6' 6' 3'					•			D	C		•	•									
REMARKS: incline																										
66	Q. agrifolia "	14"	27'	20' • 9' 7' 16'	4' • 3' 4' 3'					•			+ D	− C		•	•									
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N W E S	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N W E S	MAJOR ROOT LOCATIONS N W E S	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL N W E S	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
67	Q. agrifolia Coastal Live Oak	18"	20'	14' 18 8' 18	11' 10 8 10'								D	D		●	●									
REMARKS:																										
68	Q. agrifolia "	4" 5" 5" 6"	12'	7' 7 7 7'	3' 3 3 3'								B	B+		●										
REMARKS:	very overgrown brush around it - below road. Above steep drop 1 regrown stump																									
69	Q. agrifolia "	6" 8"	24'	25' 9 6'	35' 6 10'					●			C-	C		●	●									
REMARKS:	Very steep bank over stream entire tree growing north on angle																									
70	Q. agrifolia "	13" 14"	20'	27' 18 18 13	17' 14 11 7					●		●	C-	C+		●	●									
REMARKS:	Steep bank																									
72	Q. agrifolia Steep bank "	16"	17'	12' 7 12' 11	8' 4 6' 1					●			C-	C		●	●									
REMARKS:																										

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PLANT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / W-E / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / W-E / R)	MAJOR ROOT LOCATIONS (N / W-E / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / W-E / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
73	Q. agrifolia Coastal Live Oak	9" 19"	19'	12' 14' 13' 10'	41' 18' 2' 4'							●	C-	C+		●										
REMARKS: Steep bank																										
74	Q. agrifolia "	10" 18"	25'	18' 28' 9' 27'	3' 1' 10' 9'					●		●	C-	C+		●	●									
REMARKS:																										
75	Q. agrifolia "	7" 7" 14"	19'	18' 7' 18' 15'	1' 6' 1' 7'					●			C+	C+		●						●				
REMARKS: removed stump - in small crevice area drains when raining - was [illegible] - around S, W, E - beautiful tree - needs dug out - 2 easterly trunks grow at angle on slope, partially buried																										
76	Q. agrifolia "	13"	20'	15' 15' 19' 15'	1' 2' 2' 5'					●			C	C+		●										
REMARKS: 6" lateral at 5' up from trunk growing horizontal to east																										
77	Q. agrifolia "	8" 8" 7"	20'	15' 12' 17' 3'	4' 10' 1' 2'								B	B		●										

REMARKS:

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S•E / Z / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S•E / Z / R)	MAJOR ROOT LOCATIONS (N / S•E / Z / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL (N / S•E / Z / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
78	Q. agrifolia Coastal Live Oak	14"	22'	13 12 14 7	1' 1' 3' 3'	E				•			B	B		•			•							
REMARKS:																										
79	Q. agrifolia "	4" 5" 7" 10" 10"	18'	12 14 18 3	5' 7' 2' 3								+ C	B		•			•							
REMARKS:	In low area possible creek during rain (intermittent over flow) regrown stump																									
80	Q. agrifolia "	20"	24'	18 14 24 18	9' 2' 2' 2'								- B	B		•										
REMARKS:																										
81	Q. agrifolia "	17" 23"	24'	20 22 30 26	7' 6' 1' 5'					•		•	+ D	+ C		•	•									
REMARKS:	South side, horizontal lateral 17" dia, 2' up from ground																									
82	Q. agrifolia "	8" 8" 10"	19'	6' 12 16 8	5' 1' 7' 5'			•	•	•		•	D	C		•	•									
REMARKS:	regrown stump																									

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NO.	TREE SPECIES	EVALUATION: TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S / E / W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S / E / W)	MAJOR ROOT LOCATIONS (N / S / E / W)	DISEASED	TRUNK: CAVITY	TRUNK: DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING: HEALTH	RATING: AESTHETICS	TREATMENT: NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S / E / W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
83	Q. agrifolia Coastal Live Oak	20"	15'	16' / 8' / 16' / 14'	4' / 1' / 2' / 2'					●			B	B		●										
REMARKS: on slope																										
84	Q. agrifolia "	10"	13'	3' / 5' / 6' / 8'	24' / 5' / 4' / 6'			●	●	●			D	C		●	●									
REMARKS: regrown stump																										
85	Q. agrifolia "	15"	20'	18' / 3' / 24' / 8'	6' / 5' / 5' / 6'				●	●		●	D	D		●	●		●							
REMARKS: east lateral 5' up badly damaged																										
86	Q. agrifolia "	16"	27'	9' / 9' / 9' / 12'	12' / 7' / 9' / 7'			●	●	●		●	D	D		●	●									
REMARKS: South side cavity fire damage																										
88	Q. agrifolia "	7" / 7" / 13"	19'	18' / 8' / 3' / 6'	8' / 7' / 8' / 7'			●	●	●		●	D	C		●	●									
REMARKS: trunk arches 7' up north side regrown stump																										

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90	Q. agrifolia Coastal Live Oak	11"	25'	13' / 13' / 13' / 13'	5' / 5' / 5' / 5'					●			C−	C+		●	●		●							
REMARKS: *lots of poison oak on slope w/ heavy brush leading to tree																										
91	Q. agrifolia "	10"	22'	10' / 8' / 15' / 6'	12' / 4' / 3' / 5'					●			C−	C−		●	●		●							
REMARKS: *Same as #90																										
92	Q. agrifolia "	1" 1" 1" 4" 8"	16'	7' / 7' / 7' / 6'	1' / 1' / 1' / 2'					●			C−	B+		●			●							
REMARKS: regrown stump 8" good - wood elimate 4" trunk																										
93	Q. agrifolia "	8"	14'	6' / 5' / 8' / 6'	2' / 2' / 2' / 2'					●			C+	B		●			●							
REMARKS:																										
94	Q. agrifolia "	3" 4" 14"	13'	7' / 13' / 19' / —	8' / 2' / 2' / —		●		●		●		D	D		●	●		●							
REMARKS: regrown stump																										

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NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / W / E / S)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / W / E / S)	MAJOR ROOT LOCATIONS (N / W / E / S)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / W / E / S)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
95	Q. agrifolia Coastal Live Oak	14"	27'	16' 10' 14' 12'	12' 12' 12' 12'							●	C	B		●										
REMARKS: steep incline rocky																										
96	Q. agrifolia "	10"	15'	3' 10' 5' 1'	10' 10' 6' 10'					●		●	D	D		●	●									
REMARKS:																										
97	Q. agrifolia "	5" 8"	16'	3' 6' 8' 11'	4' 4' 4' 3'			●	●				D	C		●	●		●							
REMARKS: regrown stump																										
98	Q. agrifolia "	15"	22'	8' 8' 7' 7'	3' 3' 3' 3'			●	●	●			D	C		●	●		●							
REMARKS: no tag surround by 8-9' high poison oak																										
99	Q. agrifolia "	23" 27"	26'	14' 17' 19' 18'	5' 11' 6' 1'			●	●			●	D	C		●	●		●							
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S / E / W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S / E / W)	MAJOR ROOT LOCATIONS (N / S / E / W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S / E / W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
100	Q. agrifolia Coastal Live Oak	16"	14'	9' 8' 13' 18'	5' 4' 2' 1'			●	●			●	D-	D+		●	●		●							
REMARKS: South side has 16" dia (at trunk attachment) lateral horizontal 3' from soil																										
101	Q. agrifolia "	19" 27"	37'	28' 27' 24' 12'	6' 7' 6' 5'			●	●	●		●	D-	C		●	●		●							
REMARKS: regrown stump south side has large open area where other large dia. trunk must have been																										
102	Q. agrifolia "	3" 4" 12"	13'	6' 10' 18' 14'	7' 5' 6' 4'			●	●	●		●	D	C		●			●							
REMARKS: regrown stump																										
103	Q. agrifolia "	8" 23"	17'	16' 13' 18' 20	5' 6' 6' 6'			●	●			●	D	D		●			●							
REMARKS: next to creek, silt & concrete wall built for erosion control east side																										
104	Q. agrifolia "	17" 19" 18"	26'	18' 14' 22' 18'	6' 7' 6' 7' 5'			●	●			●	D	C		●			●							
REMARKS:																										

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TREE CANDIDATES FOR PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / E-W / S / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / E-W / S / R)	MAJOR ROOT LOCATIONS (N / E-W / S / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / E-W / S / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
105	Q. agrifolia Coastal live oak	2" 2" 3" 6" 7" 19"	26'	13' 13' 13' 13' 13'	1' 1' 1' 1' 1'			•		•			D+	B		•	•		•							
REMARKS: 19" dia. trunk extensive trunk decay others look good, no decay regrown stump																										
106	Q. agrifolia "	19"	27'	18' 19' 15' 15' 15'	10' 16' 7' 6' 6'				•	•		•	D+	C+		•										
REMARKS:																										
107	Q. agrifolia "	1" 4" 5" 5" 6"	16'	8' 4' 9' 4' 8'	1' 1' 1' 1' 1'					•			C	B		•			•							
REMARKS: regrown stump																										
109	Q. agrifolia "	11" 15" 16" 18" 17"	45'	35' 33' 19' 23'	9' 1' 1' 8'			•	•			•	D+	C+		•			•							
REMARKS: next to creek																										
109	Q. agrifolia "	17'	10" 12"	9' 13' 18' 14'	7' 1' 6' 2'				•	•			C	C		•	•		•							
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N-S-E-W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N-S-E-W	MAJOR ROOT LOCATIONS N-S-E-W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N-S-E-W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
210	Q. agrifolia Coastal Live Oak	21"	20'	10' 11' 12' 19'	2' 6' 2' 9'			●	●	●		●	D	C		●			●							
REMARKS: above creek steep bank																										
211	Q. agrifolia "	2" 4" 4" 6" 8"	15'	7' 11' 8' 13'	5' 5' 5' 3'					●			+ C	B		●			●							
REMARKS: regrown stump																										
212	Q. agrifolia "	2" 4" 4" 5" 6" 6"	15'	9' 12' 12' 13'	5' 5' 5' 5'					●			+ C	B		●			●							
REMARKS: One 5" dia broken top at 7' regrown stump																										
213	Q. agrifolia "	2" 2' 4" 5" 6"	15'	6' 7' 7' 2'	6' 5' 6' 7'					●			+ C	B		●			●							
REMARKS: regrown stump																										
214	Q. agrifolia "	2" 7" 7"	10'	6' 7' 8' 8'	3' 4' 4' 4'					●			+ C	B		●			●							
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N W E S	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N W E S	MAJOR ROOT LOCATIONS N W E S	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL N W E S	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
115	Q. agrifolia Coastal Live Oak	2" 2" 4" 6" 11"	11'	6 7 8 7	3' 5' 5' 7'			●	●	●			D	C		●	○		○							
REMARKS: 11" dia trunk major dmg - others look good																										
116	Q. agrifolia "	4" 5" 6" 6" 6" 7"	16'	9' 7 8 12'	7' 3' 5' 6'					●			B	B		○			●							
REMARKS: regrown stump																										
117	Q. agrifolia "	1" 1" 1" 2" 4" 4" 4" 4"	11'	1' 3' 6' 4'	5' 5' 5' 5'					●			B	B		○			●							
REMARKS: regrown stump																										
118	Q. agrifolia "	2" 2" 5" 5" 5" 6"	11'	12' 6' 8 8'	1' 1' 1' 1'					●			B	B		○			●							
REMARKS: * regrown stump - very dense growth around																										
119	Q. agrifolia "	4" 4" 4" 5" 6" 7" 7"	13	8' 8 8' 8'	1' 1' 1' 1'					●			A	B		●			○							
REMARKS: * Same as 118																										

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NO.	TREE SPECIES	EVALUATION: TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N S E W R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N S E W R)	MAJOR ROOT LOCATIONS (N S E W R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL (N S E W R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
120	Q. agrifolia Coastal Live Oak	1"1"1" 1"1"1" 4"4"4" 4"4" 5"5"6"	13'	8 8 8 8	3 3 3 3								B	B		•			•							
REMARKS: regrown stump																										
121	Q. agrifolia "	1"1"1" 1"2"2" 2"4"	8'	4' 4' 4' 4'	3' 3' 3' 3'								B	B		•			•							
REMARKS: regrown stump																										
122	Q. agrifolia "	4"5" 6"	15'	9' 9' 9' 9'	5' 5' 5' 5'								B	B		•										
REMARKS:																										
123	Q. agrifolia "	4"6" 6"6"	15'	12 10' 9' 12	5' 5' 5' 5'								C	B		•										
REMARKS: regrown stump																										
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (E • W / N • S / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (E • W / N • S / R)	MAJOR ROOT LOCATIONS (E • W / N • S / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (E • W / N • S / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
124	Q. agrifolia Coastal Live Oak	?"	15'	17' • 16' / 17' / 9'	6' • 4' / 20' / 15'								D	C		•	•									
REMARKS: NO TAG - BEE HIVE & STEEP BANK ABOVE CREEK roots growing out of bank - exposed																										
125	Q. agrifolia "	11"	20'	18' • 22' / 18' / 18'	1' • 9' / 12' / 1'					•			C	C+		•			•							
REMARKS:																										
126	Q. agrifolia "	23"	22'	14' • 14' / 18' / 9'	6' • 12' / 4' / 7'								C	B		•										
REMARKS:																										
127	Q. agrifolia "	17"	26'	18' • 18' / 18' / 9'	10' • 1' / 1' / 9'					•		•	D	C-		•			•							
REMARKS: old # 100																										
128	Q. agrifolia old # 99 "	24"	36'	30' • 30' / 20' / 20'	3' • 1' / 9 / 9'					•			C-	C+		•			•							
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N W E S	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N W E S	MAJOR ROOT LOCATIONS N W E S	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N W E S	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
129	Q. agrifolia Coastal Live Oak	37"	30'	21' 24' 35 27'	5' 2' 1' 3'					●			D+	B-		●	●									
REMARKS: old # 98 - 3 trunks 12"-14"-27" at about 8" soil level																										
130	Q. agrifolia old # 97 "	9" 11" 12"	18'	18' 19' 21' 14'	6' 8' 5' 8'				●	●			C-	C+		●	●									
REMARKS:																										
131	Q. agrifolia "	27" 28"	39'	30' 28' 45' 24'	4' 9' 1' 8'							●	C	B+		●	●									
REMARKS: old #3																										
132	Q. agrifolia "	28"	32'	24' 15' 24' 19'	6' 9' 6' 8'							●	D+	C+		●	●									
REMARKS:																										
133	Q. agrifolia "	7" 7"	16'	12' 8' 10' 12'	2' 6' 1' 2'				●				C	B		●			●							
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N • S • E • W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N • S • E • W)	MAJOR ROOT LOCATIONS (N • S • E • W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N • S • E • W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
134	Q. agrifolia Coastal Live Oak	2" 3" 3" 4" 4"	10'	7' • 7' 7' 7'	3' • 3' 3' 3'								B	B					•							
REMARKS: regrown stump																										
135	Q. agrifolia "	4" 22"	21'	12' • 18' 15' 15'	2' • 1' 1' 1'							•	C	B		•			•							
REMARKS: old # 5																										
136	Q. agrifolia "	13"	19'	13' • 3' 12' 13'	7' • 4' 4' 1'					•			C	C		•	•		•							
REMARKS:																										
137	Q. agrifolia "	7" 8"	18'	12' • 13' — 16'	6' • 7' — 12'					•			C	+ C		•										
REMARKS: one sided																										
138	Q. agrifolia "	3" 3" 3" 6" 6" 6" 8" 8"	25'	18' • 18' 18' 18'	10' • 2' 4' 4'					•			C	C		•			•							
REMARKS: regrown stump																										

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PLANT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S / E / W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S / E / W)	MAJOR ROOT LOCATIONS (N / S / E / W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S / E / W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
139	Q. agrifolia Coastal Live Oak	6" 7"	19'	10' 12' 10'	3' 1' 7'								C	C+		●										
REMARKS: regrown stump																										
140	Q. agrifolia "	25"	35'	18 25 19' 18	12' 6' 9' 12'							●	D+	C+		●	●									
REMARKS: old # 8																										
141	Q. agrifolia "	10" 10"	26'	12 9 15 13	2 2 2 2					●			C	B		○			○							
REMARKS: old # 7 regrown stump																										
142	Q. agrifolia "	2" 4" 10"	26'	12' 10 16 15	3' 2' 3' 2'					●			C	B		○			○							
REMARKS:																										
143	Q. agrifolia old # 11 "	18"	13'	4' 17 6' 14'	1' 3' 3' 1'				●	●			D	D		○			○							

REMARKS: Tree laying on ground still growing has a 9" off 18" trunk (18" above 9" lateral) height measured at 9" [illegible]

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S / E / W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S / E / W)	MAJOR ROOT LOCATIONS (N / S / E / W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S / E / W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
144	Q. agrifolia Coastal Live Oak	4" 30"	36'	30' 17 • 24 20	12' 7 • 5 2'					●		●	C-	C+		●	●									
REMARKS: old # 10																										
145	Q. agrifolia "	22"	33'	25' 26 • 5 24'	11' 2' • 11' 4'					●			C-	C		●	●									
REMARKS: old # 9																										
146	Q. agrifolia "	9" 11" 12"	32'	12' 25 • 18 20	1' 1' • 16' 7'					●			C	C		●			●							
REMARKS: old # 12																										
147	Q. agrifolia # 13 "	4" 4" 13"	32'	12' 18 • 18 9'	5' 1 • 9' 11'					●			C	C		●										
REMARKS:																										
148	Q. agrifolia "	9" 12"	25'	19' 10 • 21 25'	8' 2' • 10' 2'					●			C	C		●										
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	EVALUATION: TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (W • E / S • N / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (W • E / S • N / R)	MAJOR ROOT LOCATIONS (W • E / S • N / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (W • E / S • N / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
149	Q agrifolia Coastal Live Oak	1" 2" 5" 5" 6"	20'	7' 15' • 12' 18'	5' 3' • 10' 7'					•		•	C	C		•	•									
REMARKS: old # 15 regrown stump																										
150	Q agrifolia "	9" 9" 9" 10"	30'	12' 14' • 16' 18'	7' 10' • 7' 7'					•			+ C	+ C		•										
REMARKS:																										
151	Q agrifolia "	5" 6" 6" 6"	24'	12' 9' • 12' 12'	7' 8' • 2' 2'					•			+ C	+ C		•										
REMARKS: old # 16																										
152	Q agrifolia "	28"	34'	25 32' • 30' 27'	9' 4' • 6' 4'					•		•	C	C		•										
REMARKS: old # 18 5' up trunk east side 11" dia. horizontal limb																										
153	Q agrifolia "	9" 10" 10"	27'	19' 16' • 20' 22'	5' 10' • 3' 11'					•			C	+ C		•										
REMARKS: old # 19																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (W • E / N • S)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (W • E / N • S)	MAJOR ROOT LOCATIONS (W • E / N • S)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (W • E / N • S)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
154	Q. agrifolia Coastal Live Oak	6" 7"	25'	9' 13' • 12' 10'	12' 12' • 12' 12'					●			C	C		●										
REMARKS:																										
155	Q. agrifolia "	7" 7" 19"	30'	18' 16' • 21' 22'	6' 12' • 10' 1'					●		●	− C	+ C		●										
REMARKS:	old # 21																									
156	Q. agrifolia "	4" 6" 7" 7" 7" 7" 8" 12"	25'	24' 12' • 22' 18'	1' 10' • 6' 1'					●			+ C	+ C		○			●							
REMARKS:	old # 22 regrown stump																									
157	Q. agrifolia "	15"	36'	9' 19' • 20' 20'	24' 7' • 5' 12'					●		●	C	+ C		●										
REMARKS:	old # 23																									
158	Q. agrifolia "	7" 8" 8" 11"	25'	7' 17' • 24' 12'	12' 12' • 1' 2'					●			C	C		○			○							
REMARKS:	old # 24 regrown stump																									

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N • S • E • W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N • S • E • W)	MAJOR ROOT LOCATIONS (N • S • E • W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N • S • E • W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
159	Q agrifolia Coastal live oak	15"	18'	25 • 28	24' • 1'				•	•		•	D	D		•			•							
REMARKS: old # 29 tree grows to northeast one sided - on slope																										
160	Q. agrifolia "	20"	25'	20' • 26	20' • 8'					•		•	D	D		•	•									
REMARKS: old # 20 one sided to north east. much large dead wood																										
161	Q agrifolia "	25"	32'	20' • 27 22'	14' • 6' 10'					•		•	D	D		•	•									
REMARKS: old # 26																										
162	Q agrifolia "	31"	35'	30 27 • 30 30	30 6 • 28 2					•		•	C	B		•										
REMARKS:																										
163	Q. agrifolia "	28"	38'	30' 28 • 6' 6'	20' 20' • 20' 9					•		•	D	C		•										
REMARKS: old # 31																										

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CLIENT:

NO.	TREE SPECIES	EVALUATION: TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / W / E / S)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / W / E / S)	MAJOR ROOT LOCATIONS (N / W / E / S)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / W / E / S)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
164	Q. agrifolia Coastal Live Oak	16"	32'	24' / 16 / 34' / 20	12 / 16' / 2 / 5							●	D	C		o	o									
REMARKS: old # 25																										
165	Q. agrifolia "	2" 2" 3" 3" 8"	25'	12' / 10' / 12' / 10'	3' / 2' / 3' / 3'								C	C		•			•							
REMARKS: regrown stump																										
166	Q. agrifolia "	2" 2" 5" 5" 6" 8"	21'	15 / 15 / 15 / 15	1 / 1 / 1 / 1								C	C		•			•							
REMARKS: regrown stump																										
167	Q. agrifolia "	1" 1" 4" 4" 5"	10'	7 / 7 / 7 / 7	1 / 1 / 1 / 1					●			C	C		•			•							
REMARKS: regrown stump																										
168	Q. agrifolia "	21" 25"	28'	25 / 22 / 30 / 28'	7' / 15 / 1' / 1'				●	●		●	D	C		•			•							
REMARKS: old # 32 horizontal east limb at 6'																										

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PLANT:

NO.	TREE SPECIES	EVALUATION: TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S / E / W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S / E / W)	MAJOR ROOT LOCATIONS (N / S / E / W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S / E / W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
169	Q. agrifolia Coastal Live Oak	26"	42'	34' 16 30 20	12' 12 18 12'							●	D+	C+		●	●									
REMARKS: old # 34 north west side next to small dry stream / large root exposed (weathered/hardened)																										
170	Q. agrifolia "	3" 3" 4" 7"	18'	13 13 13 13	6 6 6 6						●		C	C		●			●							
REMARKS: on slope heavy brush																										
171	Q. agrifolia "	2" 3" 20"	34'	12' 12 18 12	2' 6 4' 3'						●	●	D	C		●			●							
REMARKS: old # 37																										
172	Q. agrifolia "	1" 1" 5" 6" 6"	20'	10 10 10 10	1 1 1 1						●		C	C+		●			●							
REMARKS: regrown stump																										
173	Q. agrifolia "	28"	38'	30' 30 30 30	14' 3 1' 2							●	D+	C		●	●		●							
REMARKS: old # 35																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N-S-E-W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N-S-E-W	MAJOR ROOT LOCATIONS N-S-E-W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N-S-E-W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
174	Q agrifolia Coastal Live Oak	2" 3" 4" 4" 4" 5" 7"	10'	10 10 • 10 10	1 1 • 1 1					•			C+	C+		•			•							
REMARKS: region stump																										
175	Q agrifolia "	13" 13"	25'	26 20 • 22 22	20 2 • 6 2					•		•	D	C-		•	•									
REMARKS: (1 lg. trunk dead broke off)																										
176	Q agrifolia "	12"	18'	- - • - 25	- - • - 1'					•			C-	C		•			•							
REMARKS: old # 39 tree growing to South - trunk leans along upslope																										
177	Q agrifolia "	8" 21"	25'	18' 18' • 18' 12'	12' 6' • 10' 11'					•		•	D-	D		•	•									
REMARKS: old # 40 8" dia bad shape no significance to tree																										
178	Q. agrifolia "	23"	28'	22' 18' • 18' 20'	12' 16' • 4' 3'					•		•	D+	C		•	•		•							
REMARKS: old # 41																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (W / N-S / E / R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (W / N-S / E / R)	MAJOR ROOT LOCATIONS (W / N-S / E / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (W / N-S / E / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
179	Q agrifolia Coastal Live Oak	7" 9"	20'	12' 14' 9' 8'	4' 1' 1' 2'					●			D+	C		●	●		●							
REMARKS: 7" dia has trunk damage																										
180	Q agrifolia "	6" 8"	22'	14' 10 12 10'	3 3 3 3								C-	C		●			●							
REMARKS:																										
181	Q. agrifolia "	1" 3" 3" 3" 4"	22'	6' 6' 6 6	4' 4' 4' 4'								B	B					●							
REMARKS: surrounded by poison oak regrown stump																										
182	Q agrifolia no tag "	9"	12'	9' 9' 9 9'	7' 7' 7 7					●			C+	C+		●										
REMARKS: - too steep + terrain loose brush + poison oak covered																										
183	Q. agrifolia "	3" 3" 3" 4" 4" 5"	11'	14 12 14 10	1' 1' 1 1					●		●	C	C		●			●							
REMARKS: regrown stump																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N W E S	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N W E S	MAJOR ROOT LOCATIONS N W E S	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N W E S	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
184	Q. agrifolia Coastal Live Oak	8" 10" 10"	27'	14' 19' 12' 18'	14' 17' 18' 12'			●		●		●	D	D		•	•									
REMARKS: old # 42 covered in poison oak - steep bank above creek																										
185	Q. agrifolia old # 43 "	19"	36'	24' 18' 14' 18'	7' 18' 8' 18'					●			D	D		•	•									
REMARKS: many old stubs-dead																										
186	Q. agrifolia "	10"	20'	12' 18' 6'	12' 7' 6'				●	●			D	D		•	•									
REMARKS: lots poison oak very difficult terrain / South side rocks, large																										
187	Q. agrifolia "	10" 11"	27'	18' 12' 12' 15'	12' 15' 9' 6'					●		●	+ D	+ C		•										
REMARKS: old # 4? top vandalized																										
188	Q. agrifolia "	28"	39'	6' 27' 20' 12'	36' 30' 3' 6'					●		●	− C	+ C		•										
REMARKS: old # 48																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N S E W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N S E W	MAJOR ROOT LOCATIONS N S E W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N S E W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
189	Q. agrifolia Coastal Live Oak	34"	29'	20' 16' 12' 20'	9' 7' 10' 6'					●		●	C	C+		●	●									
REMARKS: old # 49																										
190	Q. agrifolia "	12"	16'	9' 8' 17' 14'	1' 1' 1' 1'			●	●				D	C		●			●							
REMARKS:																										
191	Q. agrifolia "	2" 4" 5" 5" 5" 5"	15'	6' 6' 6' 6'	1' 1' 1' 1'							●	C	C		●			●							
REMARKS: redcrown stump																										
192	Q. agrifolia "	10"	30'	12' 6' 6' 3'	25' 12' 12' 3'					●			D	C		●	●									
REMARKS: old tag 47 covered poison oak																										
193	Q. agrifolia "	16"	30'	12' 12' 12' 12'	7' 7' 2' 7'					●			C	C+		●										
REMARKS: old # 44																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N W E S	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N W E S	MAJOR ROOT LOCATIONS N W E S	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N W E S	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
194	Q. agrifolia Coastal Live Oak	20"	33'	12' 18' 27' 15'	15' 18' 7' 2'							●	C	C		●										
REMARKS: old # 51																										
195	Q. agrifolia "	12"	18'	14' 10'	9' 8'			●	●	●			D	D		●	●									
REMARKS: Just below 194 to north, next to creek																										
				●	●																					
REMARKS:																										
				●	●																					
REMARKS:																										
				●	●																					
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N / E / S / W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N / E / S / W	MAJOR ROOT LOCATIONS N / E / S / W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N / E / S / W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
196	Q. agrifolia Coastal Live Oak	9" 9"	18'	6' 9 9 9	4' 6 6 6				●				I C	+ C		●										
REMARKS: regrown stump																										
197	Q. agrifolia "	21" 25"	22'	24' 20 27 25	2' 5 1' 1'				●			●	D	+ C		●	●		●							
REMARKS: old # 95																										
198	Q. agrifolia "	8" 11" 14"	25'	17' 20 9 17	1' 1 6'							●	C	+ C		●			●							
REMARKS: old # 96 regrown stump																										
200	Q. agrifolia "	2" 4" 5" 6" 6" 7" 7"	18'	12' 12 12 12	2' 2 2 2				●		●		C	C		●			●							
REMARKS: regrown stump																										
201	Q. agrifolia "	10" 10" 11"	18'	10 10 10 10	3 4 4 3				●	●			− C	+ C		●										
REMARKS: old # 92 regrown stump																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N/S/E/W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N/S/E/W	MAJOR ROOT LOCATIONS N/S/E/W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N/S/E/W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
202	Q. agrifolia Coastal Live Oak	5" 5" 7"	13'	12/12/12/12	3/3/3/3					●			C	C		●			●							
REMARKS: regrown stump / stream bed / silt around uphill side																										
203	Q. agrifolia "	1" 2" 4" 4" 4" 4" 5" 6"	13'	12'/3'	1'/1'					●			C	C		●			●							
REMARKS: regrown stump																										
204	Q. agrifolia "	2" 3" 5" 5" 5" 8" 10"	18'	9'/10'/12'	1'/12'/12'					●		●	C	C		●			●							
REMARKS: regrown stump silt build up, bottom of watershed																										
205	Q. agrifolia "	5" 6" 7" 8"	18'	7/7/7	3/3/3					●			C	C		●			●							
REMARKS: regrown stump																										
206	Q. agrifolia "	19"	27'	25/20/18/20	10/7/6/7					●		●	C	C		●										
REMARKS: old # 54																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N S E W R	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N S E W R	MAJOR ROOT LOCATIONS N S E W R	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N S E W R	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
207	Q. agrifolia Coastal Live Oak	20"	30'	25' 18' 16' 10'	18' 8' 8' 15'				●	●		●	D	C		●	●									
REMARKS: old # 53																										
REMARKS:																										
208	Q. agrifolia "	18"	33'	14' 8' 18' 7'	20' 7' 7'				●	●			D	C		•	•									
REMARKS: [illegible] 207																										
209	Q. agrifolia "	8"	25'	9' 5' 15'	10' 7' 12'				●	●		●	D	C		•	•									
REMARKS: [illegible] + (212)																										
210	Q. agrifolia "	25"	26'	25' 13' 20'	13' 7' 8'					●		●	D	C		•	•									
REMARKS: # 56 west side [illegible] on slope/old [illegible]																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N • S • E • W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N • S • E • W)	MAJOR ROOT LOCATIONS (N • S • E • W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N • S • E • W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
212	Q. agrifolia Coastal Live Oak	12"	19'	12' • 14' 12' 12'	14' • 2' 2' 2'					●		●	D	D		●	●		●							
REMARKS: 11" lateral at base dead (west of #211)																										
213	Q. agrifolia "	18"	24'	12' • 30' 3' 26'	18' • 20' 20' 4'							●	D	D		●	●									
REMARKS: old #59 side of steep bank - roots to east																										
214	Q agrifolia "	22"	30'	32' • 10' 33'	14' • 10' 14'					●		●	D	C		●	●									
REMARKS: north of 213																										
215	Q agrifolia old #61 "	24"	38'	24' • 30' 27' 24'	18' • 30' 2' 18'					●		●	D	C		●	●									
REMARKS: (north of 215)																										
216	Q agrifolia old #62 "	13"	27'	24' • 26' 25'	20' • 30' 7'					●		●	D	C		●	●									
REMARKS: (All steep embankment above creek)																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N S E W R	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N S E W R	MAJOR ROOT LOCATIONS N S E W R	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N S E W R	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
217	Q. agrifolia Coastal Live Oak	13" 14"	21'	6' 3' • 2' 25	12' 10' • 12' 10'					●		●	D	D		●	●									
REMARKS: old # 81																										
218	Q. agrifolia "	12"	19'	16' 6' • 10' 6'	2' 1' • 2' 1							●	D	D		●	●		●							
REMARKS: very steep unstable bank east of creek # 217																										
219	Q. agrifolia "	14" 16"	25'	12' 24' • 24' 22'	19' 30' • 3' 6'					●		●	D	C		●	●									
REMARKS: old # 82																										
220	Q. agrifolia old # 80 (no new tag) "	10"	30'	10' 20' • 15' 18'	30' 30' • 10' 25'					●		●	C	C		●										
REMARKS: north of 219 (old 82) much poison oak, steep cliff no tag (area down below it)																										
221	Q. agrifolia (no new tag) old # 63 "	12"	27'	25' 15' • 20' 22	12' 12 • 20' 7							●	C	C		●										
REMARKS:																										

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NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N S E W R	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N S E W R	MAJOR ROOT LOCATIONS N S E W R	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N S E W R	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
222	Q. agrifolia Coastal Live Oak	8" 16"	22'	17' 19' 19' 19'	8' 9' 9' 1'					●		●	D	C		○	○									
REMARKS: old # 85 dead trunk lying east of #(222) 85																										
223	Q. agrifolia "	9" 13" 14"	28'	19' 27' 24' 18'	20' 30' 3' 1'					●		●	D	C		○	●									
REMARKS: north of 222 (probably old # 84)																										
224	Q. agrifolia "	12"	22'	17' 19' 24' 9'	12' 25' 20' 3'					●		●	D	C		●	●									
REMARKS: old # 83																										
225	Q. agrifolia old # " 64	13"	25'	10' 19' 19' 25	10' 24' 15' 4'							●	D	D		○	●									
REMARKS:																										
226	Q. agrifolia "	8" 22"	32'	20' 19' 27' 18'	3' 25' 3' 3'			●				●	D	D		○	●		○							
REMARKS: old # 78 (no new tag) too steep covered ~~[illegible]~~																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S / E / W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N / S / E / W)	MAJOR ROOT LOCATIONS (N / S / E / W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S / E / W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
227	Q. agrifolia Coastal Live Oak	3" 4" 5" 25"	36'	22' 7' 22' 20'	7' 18' 8' 9'			●	●	●		●	D	D		●	●									
REMARKS: old # 66 (numerous 1" + 2" dia growth)																										
228	Q. agrifolia "	11"	26'	9' 9' 9' 9'	9' 2' 7' 3'					●		●	C	C		●	●		●							
REMARKS: old # 65																										
229	Q. agrifolia "	19"	29'	19' 24' 20' 25'	2' 10' 7' 7'							●	D	D		●	●									
REMARKS: old # 77																										
230	Q. agrifolia "	2" 2" 2" 4" 5" 6"	12'	8 8 8 8	1 1 1 1				●				B	B		●			●							
REMARKS: very dense brush regrown stump																										
231	Q. agrifolia "	4" 6" 7"	14'	9 9 9 9	2 2 2 2				●				B	B		●			●							
REMARKS: regrown stump																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N • S • E • W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N • S • E • W)	MAJOR ROOT LOCATIONS (N • S • E • W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N • S • E • W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
232	Q agrifolia Coastal Live Oak	16"	19'	8' 7' • 12 14	3 10 • 10 4			●	●	●		●	D	D+		●	●									
REMARKS: South of # 71 old tag																										
233	Q agrifolia "	10"	16'	7' 3' • 12' 8'	9' 7' • 12' 18'			●		●	●		D	D		●	●									
REMARKS: old # 71																										
234	Q agrifolia "	22"	22'	12' 14' • 18' 17'	3' 3' • 6' 3'					●		●	D	C		●			●							
REMARKS: old # 70																										
236	Q. agrifolia old # 69 "	2" 24 18"	21'	12' 14' • 12 18'	4' 25' • 6' 6'			●	●	●		●	D	D		●	●									
REMARKS: South of #236 (dead 10" trunk with 2" sucker growth)																										
235	Q. agrifolia old # 73 "	23"	28'	16' 18' • 27' 24'	6' 7' • 7' 30'							●	D	D		●	●									
REMARKS: Covered in poison oak																										

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- OAK -

TREE CANDIDATES FOR PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N S E W R	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N S E W R	MAJOR ROOT LOCATIONS N S E W R	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N S E W R	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
231	Q. agrifolia Coastal Live Oak	12"	13'	2' 9' 17' 17'	3' 7' 1' 2' 1'					●		●	D	C		●	●		●							
REMARKS: Across from #235 westerly																										
238	Q. agrifolia "	10" 12"	17'	7' 7' 12' 12'	7' 3' 3' 3'				●	●		●	D	C		●	●		●							
REMARKS: next to #237 northerly																										
239	Q. agrifolia "	11"	27'	4' 8' 12' 10'	6' 3' 6' 3'			●	●	●		●	D	D		●	●		●							
REMARKS: next to 238 north																										
240	Q. agrifolia "	11" 16" 21"	28'	20' 24' 21' 24'	8' 2' 16' 9'				●		●		C	C		●	●									
REMARKS: next to 239 north																										
241	Q. agrifolia "	28"	24'	18' 27' 37' 20'	30' 7' 30' 12'				●		●		D	D		●	●									
REMARKS: north of 240																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N E S W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N E S W	MAJOR ROOT LOCATIONS N E S W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N E S W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
242	Q. agrifolia Coastal Live Oak	10" 14"	28'	17' 3' • 25 30	30' 2' • 30 15'					●		●	D	D		•	•									
REMARKS: South of 241																										
243	Q. agrifolia "	1" 2" 3" 4" 6"	13'	7' 3' • 12' 9'	8' 6' • 9' 1'					●			C	C		•										
REMARKS: South of 242 regrown stump																										
244	Q. agrifolia "	8"	12'	- • 19	- • 19					●		●	C	D		•										
REMARKS: north east of 241																										
245	Q. agrifolia "	8" 14"	20'	8' 15' • 10' 15	22' 7' • 15' 7'					●		●	D	D		•	•									
REMARKS: north of 241 (Overhead wires crossing draw)																										
246	Q. agrifolia no tag "	19"	36'	15 17' • 17 15	6 12' • 6 6								C	C		•	•									
REMARKS: Picture #6 too steep																										

Cross to north east of 245

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PRESERVATION

CLIENT:

NO.	TREE SPECIES	EVALUATION: TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N / S-E-W / R)	DISTANCE FROM SOIL TO FOLIAGE (N / S-E-W / R)	MAJOR ROOT LOCATIONS (N / S-E-W / R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT: NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N / S-E-W / R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
247	Q. agrifolia Coastal live Oak	2" 5" 6" 12"	18'	12' 8' 12' 20'	6' 8' 6' 1'			●	●	●			D+	C		●	●									
REMARKS: under wires crossing draw east to west																										
248	Q. agrifolia "	1' 2" 9"	17	3' 10' 3'	6' 25' 6'				●	●			D	D		●	●									
REMARKS: below #247																										
249	Q. agrifolia "	24"	20'	15' 18' 15' 22'	25' 6' 30' 20'					●		●	D	D		●	●									
REMARKS: north west of 248																										
250	Q. agrifolia "	9" 10"	13'	6' 14' 12'	9' 7' 3'			●	●	●		●	D	D		●	●									
REMARKS: north of 249																										
251	Q. agrifolia "	10"	12'	9' 10' 6' 12'	3' 6' 1'								D	D		●	●		●							
REMARKS: north west of #250																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N • S • E • W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N • S • E • W)	MAJOR ROOT LOCATIONS (N • S • E • W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N • S • E • W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
252	Q. agrifolia Coastal Live Oak	16"	15	19' • 12' (6' / 19')	1' • 6' (7' / 3')				●	●		●	D	D		●	○		○							
REMARKS: north of 250																										
253	Q. agrifolia "	3" 14"	12'	9' • 12' (3' / 14')	3' • 15' (7' / 3')				●	○		●	D	D		○	○									
REMARKS: north of 252																										
254	Q. agrifolia "	18"	25'	20' • 12' (6' / 25')	4' • 6' (5' / 5')				●	○		●	D	D		○	●		○							
REMARKS: north west of 253																										
255	Q. agrifolia "	4" 10"	13'	15' • 12' (9' / 12')	3' • 3' (6' / 4')			●	○	●		●	D	D		○	○		○							
REMARKS: north (next to) of 254																										
256	Q. agrifolia "	19"	20'	20' • 12' (14' / 22')	1' • 12' (20' / 7')						●	●	D	D		○	○									
REMARKS: northwest of 255 (Borers)																										

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TREE CANDIDATES FOR PRESERVATION

Plant:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N S E W R	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N S E W R	MAJOR ROOT LOCATIONS N S E W R	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL N S E W R	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
257	Q agrifolia Coastal Live Oak	16"	11'	7' 7' 7 7	1' 1' 1 1				●				D	C		●	●		●							
REMARKS: north of 256																										
258	Q. agrifolia "	5" 6" 8" 7" 7"	11'	7 7 7 7	1 1 1 1					●			C	B		●			●							
REMARKS: north east of 256 leaf down stump																										
259	Q agrifolia "	2" 2" 2" 7" 11"	12'	6' 7' 7' 13'	4' 1' 1' 3'				●			●	C̄	B̄		●			●							
REMARKS: leaf down stump																										
260	Q. agrifolia "	10"	13'	7' 7' 7 7	1' 1' 1 1								C	B		●			●							
REMARKS:																										
261	Q. agrifolia "	9"	17'	6 6 6 6	8 3 3 3							●	C̄	B		●			●							
REMARKS:																										

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TREE CANDIDATES FOR PRESERVATION

CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N • S • E • W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N • S • E • W	MAJOR ROOT LOCATIONS N • S • E • W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N • S • E • W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
262	Q agrifolia Coastal Live Oak	2" 2" 11"	19'	6 • 6 6	1 • 1 1					●			+ C	B		●			●							
REMARKS: dense brush just above creek																										
263	Q agrifolia "	1" 2" 3" 4" 22"	30'	20' 24' • 22' 12'	8' 18' • 20' 4'				●			●	D	C		●	●									
REMARKS:																										
264	Q. agrifolia "	12"	21'	8' 9' • 9' 8	6' 6' • 6' 6			●				●	− D	+ D		●	●									
REMARKS:																										
263 A	Q agrifolia "	14"	40'	12' 10' • 10' 14'	8 8 • 8 8							●	+ D	+ C		●	●									
REMARKS: Picture # 21 Covered in poison oak - steep bank located northwest of 263 not tag																										
265	Q agrifolia "	27"	30'	18' 20' • 21' 21'	2' 9' • 8' 8'							●	+ D	+ C		●										
REMARKS:																										

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- ^ A K
TREE CANDIDATES FOR PRESERVATION

CL . I:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N ● S / Z ● R)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N ● S / Z ● R)	MAJOR ROOT LOCATIONS (N ● S / Z ● R)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N ● S / Z ● R)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
265 A	Q. agrifolia Coastal Live Oak	10"	32'	10 ● 10 / 10 / 10	4 ● 4 / 4 / 4					●		●	D	C		●			○							
REMARKS: unstable bank - dense brush much poison oak — no tag																										
266	Q agrifolia "	17"	26'	10' ● 12' / 18' / 20'	16' ● 10' / 12' / 10'							●	+ D	C		●										
REMARKS:																										
266 A	Q agrifolia "	12"	25'	12' ● 12' / 9' / 26'	8' ● 3' / 6' / 2'							●	D	C		●			○							
REMARKS: Possibly large broken trunk to NW side - no tag - Steep unstable incline - poison oak (not in east of 266)																										
267	Q agrifolia "	16"	38'	30 ● 10 / 30' / 6'	18 ● 18 / 18 / 18					●		●	+ D	+ C		○										
REMARKS:																										
267 A	Q agrifolia "	9"	30'	12 ● 10 / 16' / 17'	9' ● 9' / 9' / 9'					●		●	D	C		○										
REMARKS: no tag - (east of # 267)																										

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PLANT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N W E S	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N W E S	MAJOR ROOT LOCATIONS N W E S	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL N W E S	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
268	Q. agrifolia Coastal Live Oak	9"	21'	9 9 9 9	3 3 6 3					●			+ C	+ C		●			○							
269	Q. agrifolia 6	8" 9" 9" 10"	32'	20 20 20 20	12' 1' 12' 6'							●	D	C		●	○									
269A	Q. agrifolia 11	12"	22'	14 14 14 14	14 2 6 6							●	+ D	+ C		○	○									
270	Q. agrifolia 4	5" 9"	16'	4' 12' 6' 12	4' 6' 2' 2'					●			+ C	B		○			○							
271	Q. agrifolia 6	8" 13"	32'	16' 14' 12' 8"	2' 10' 8' 14				●	●		●	D	C		○										

REMARKS:

REMARKS: no tag too steep - poison oak north of 269 (at 7' split into 2 leaders) above creek

REMARKS: lightning stump

REMARKS: lightning stump

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD (N • S • E • W)	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE (N • S • E • W)	MAJOR ROOT LOCATIONS (N • S • E • W)	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL (N • S • E • W)	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
272	Q. agrifolia Coastal Live Oak	9"	26'	14 • 6 (6', 6')	7 • 12 (12', 12')					●		●	D	C		●										
REMARKS: Base of rock incline																										
273	Q. agrifolia "	21"	23'	27 • 20 (24', 20')	6 • 3 (30', 3')							●	D	+C		●	●									
REMARKS: next to Rock Caves - growing in rock																										
274	Q. agrifolia "	20"	36'	12 • 17 (17', 27')	5 • 9 (12', 12')								-C	+C		●										
REMARKS:																										
274 A	Q. agrifolia " no tag	10"	18'	6 • 6 (6', 6')	3 • 3 (3', 3')								C	C		●			●							
REMARKS:																										
275	Q. agrifolia "	12"	30'	18 • 14 (20, 18)	12 • 12 (10, 5)							●	D	-C		●	●									
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N-S-E-W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N-S-E-W	MAJOR ROOT LOCATIONS N-S-E-W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND - HEAD UP	REMOVE LATERAL N-S-E-W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
276	Q agrifolia Coastal Live Oak	12"	19'	12 / 7 • 7 / —	20 / 17 • 7 / —			●	●			●	D	D		●	●									
REMARKS: 8" dia dead trunk split off lying east of trunk																										
277	Q agrifolia "	16"	30'	24 / 18 • 14 / 9	6 / 2 • 3 / 3							●	D	C		●	●		●							
REMARKS: growing out of rock to south																										
278	Q. agrifolia "	34"	40'	27 / 30 • 27 / 27	10 / 6 • 12 / 7					●		●	D	C		●	●									
REMARKS:																										
279	Q agrifolia "	17"	28'	6' / 18 • 14 / 30	12 / 6 • 24 / 30							●	D	D		●	●									
REMARKS: growing out of rocky incline																										
279 A	Q. agrifolia no tag "	10"	20'	14 / 14 • 14 / 14	6 / 6 • 12 / 6								— / C	C		●										
REMARKS:																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N • S E W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N • S E W	MAJOR ROOT LOCATIONS N • S E W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND • HEAD UP	REMOVE LATERAL N • S E W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
280	Q agrifolia Coastal Live Oak	8" 12" 16"	17'	7 6 • 13 13	2 6 • 1 2			●	●			●	D+	C		●	●		●							
REMARKS: regrown stump																										
281	Q. agrifolia "	8" 8" 11"	16'	8 8 • 8 8	2 1 • 1 1			●	●			●	D	C		●			●							
REMARKS: regrown stump																										
282	Q agrifolia no tag "	10"	20'	12 12 • 12 12	1 • 1 1								C̄	C̄		●			●							
REMARKS: Southeast of 281 steep, straight down 100+ feet																										
283	Q. agrifolia no tag "	12"	20'	16 18 • 16 16	1 • 1 1								D	C̄		●			●							
REMARKS:																										
284	Q. agrifolia "	2" 3" 4" 15"	18'	12 6 • 12 12	20 7 • 1 1			●	●			●	D̄	D		●	●		●							
REMARKS: Very steep drop																										

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CLIENT:

NO.	TREE SPECIES	TRUNK SIZE	HEIGHT	BRANCHING INFO. SPREAD N S E W	BRANCHING INFO. DISTANCE FROM SOIL TO FOLIAGE N S E W	MAJOR ROOT LOCATIONS N S E W	DISEASED	TRUNK CAVITY	TRUNK DAMAGE	CROWDED	INSECTS	FIRE DAMAGE	RATING HEALTH	RATING AESTHETICS	TREATMENT NONE	REMOVE DEAD WOOD	REMOVE DEAD STUBS	CABLE, BRACE OR PIN	LOW TO GROUND HEAD UP	REMOVE LATERAL N S E W	REMOVE LOWER SUCKER GROWTH	CLEAN BASE	TRACE TRUNK DAMAGE	REMOVE NAILS, WIRE, ETC.	TREAT INSECTS	CLEAN OUT TRUNK CAVITY
285	Q. agrifolia Coastal Live Oak	?	27'	18' 12 7' 12	20 20 1' 20								C	C		o										

REMARKS: (no tag) too steep couldn't see trunk

REMARKS:

REMARKS:

REMARKS:

REMARKS:

DRIPLINE MEASUREMENTS

INSPECTION NOTICE

The following information was observed on the date(s) indicated herein, and should only be considered true at the time of field inspection.

DRIPLINE MEASUREMENTS

TREE NO	NORTH	EAST	SOUTH	WEST	TREE NO	NORTH	EAST	SOUTH	WEST
1A	10'	12'	15'	15'					
1B	15'	5'	15'	15'					
202A	20'	18'	19'	20'					
202B	15'	14'	12'	13'					
202C	22'	22'	20'	15'					
202D	16'	15'	17'	16'					
202E	0	4'	10'	8'					
202F	12'	11'	10'	12'					
202G	14'	15'	13'	14'					
261A	7'	8'	7'	6					
261B	10'	12'	11'	10'					

JOB NO. 2190-02

DATE: 2-3-00
11-8-00
12-11-00

PAGE: 1-1

Driplines 4-50 blank.xls

SUMMARY of FIELD OBSERVATIONS

INSPECTION NOTICE

The following information was observed on the date(s) indicated herein, and should only be considered true at the time of field inspection.

SUMMARY OF FIELD OBSERVATIONS

FORM		TREE NUMBER	1A		1B																		
	SPECIES	QUERCUS AGRIFOLIA	X		X																		
		Q. LOBATA																					
		OTHER																					
		NO. OF TRUNKS	2		1																		
		DIAMETER OF TRUNKS AT 3 1/2' ABOVE EXISTING GRADE	13" 9"		24"																		
		TREE HEIGHT (APPROX)	15'		15'																		
		LEANING (DIRECTION)																					
PHYSICAL CONDITION		TRUNK CAVITY	X		X																		
		TRUNK DAMAGE			X																		
		EXPOSED ROOTS																					
		EXFOLIATING BARK	X		X																		
		WATER POCKET																					
		EXUDATION																					
		FRUITING BODIES			X																		
		INSECT/MITE DAMAGE			X																		
		GALLS/OAK PIT SCALE																					
		FIRE DAMAGE																					
		MAINSTEM DIEBACK			X																		
		BRANCH CAVITIES			X																		
		WEAK CROTCHES			X																		
		TWIG/BRANCH DIEBACK	X		X																		
		EPICORMIC GROWTH																					
		THIN FOLIAGE																					
		VIGOR - GOOD/OK/POOR	G		O																		
		TERRAIN - SLOPE/FLAT	S		S																		
		POTENTIAL HAZARD																					
RATING																							
		HEALTH	B		C																		
		AESTHETICS/COMFORMITY	B		D																		
TREATMENT		REMOVE DEADWOOD	X		X																		
		REMOVE WIRE, ETC.																					
		INSECT/DISEASE TREAT																					
		CABLE/BRACE																					
		NONE																					
		REMOVE TREE																					
				REMARKS:		REMARKS:		REMARKS:		REMARKS:		REMARKS:		REMARKS:		REMARKS:		REMARKS:		REMARKS:		REMARKS:	

HALF OF TREE FALLEN

JOB No. 2190-02 DATE: 2-3-00 PAGE No. 1 of 3

Field Observ-Heritage Trees.xls

SUMMARY OF FIELD OBSERVATIONS

FORM		TREE NUMBER	202A		202B		202C		202D		202E		202F		202G														
	SPECIES	QUERCUS AGRIFOLIA	X		X		X		X		X		X		X														
		Q. LOBATA																											
		OTHER																											
		NO. OF TRUNKS	4		4		2		1		4		6		1														
		DIAMETER OF TRUNKS AT 4 1/2' ABOVE EXISTING GRADE	2x16" 3" 2"		14" 4" 2x3"		28" 36"		21"		8" 6" 3" 2"		2x8" 4x4"		14"														
		TREE HEIGHT (APPROX)	20'		15'		35'		20'		12'		15'		18'														
		LEANING (DIRECTION)									SW																		
PHYSICAL CONDITION		TRUNK CAVITY			X		X																						
		TRUNK DAMAGE																											
		EXPOSED ROOTS							X																				
		EXFOLIATING BARK	X		X		X		X																				
		WATER POCKET	X																										
		EXUDATION																											
		FRUITING BODIES																											
		INSECT/MITE DAMAGE	X		X		X		X		X				X														
		GALLS/OAK PIT SCALE																											
		FIRE DAMAGE	X				X		X																				
		MAINSTEM DIEBACK																											
		BRANCH CAVITIES	X		X		X		X																				
		WEAK CROTCHES																											
		TWIG/BRANCH DIEBACK	X		X		X		X						X														
		EPICORMIC GROWTH									X		X																
		THIN FOLIAGE																											
		VIGOR - GOOD/OK/POOR	OK		OK		OK		OK		G		G		G														
		TERRAIN - SLOPE/FLAT	S		S		S		S		S		S		S														
		POTENTIAL HAZARD																											
RATING		HERITAGE TREE					X																						
		HEALTH	D		C		C		C		C		B		B														
		AESTHETICS/COMFORMITY	C		D		B		C		C		B		B														
TREATMENT		REMOVE DEADWOOD	X		X		X		X						X														
		REMOVE WIRE, ETC.																											
		INSECT/DISEASE TREAT																											
		CABLE/BRACE																											
		NONE									X		X																
		REMOVE TREE																											
		REMARKS:	PREVIOUSLY TAGGED 91		REMARKS:		PREVIOUSLY TAGGED 89		REMARKS:		PREVIOUSLY TAGGED 87		REMARKS:		NO TAG		REMARKS:		NO TAG		REMARKS:		REMARKS:		REMARKS:		REMARKS:		REMARKS:

JOB No. 2190-02 DATE: 11-8-00 PAGE No. 2 of 3

Field Observ-Heritage Trees.xls

SUMMARY OF FIELD OBSERVATIONS

FORM	TREE NUMBER	261A		261B															
	SPECIES: QUERCUS AGRIFOLIA																		
	SPECIES: Q. LOBATA																		
	SPECIES: OTHER																		
	NO. OF TRUNKS	1		1															
	DIAMETER OF TRUNKS AT 4 1/2' ABOVE EXISTING GRADE	8"		12"															
	TREE HEIGHT (APPROX)	15'		18'															
	LEANING (DIRECTION)																		
PHYSICAL CONDITION	TRUNK CAVITY																		
	TRUNK DAMAGE																		
	EXPOSED ROOTS																		
	EXFOLIATING BARK																		
	WATER POCKET																		
	EXUDATION																		
	FRUITING BODIES																		
	INSECT/MITE DAMAGE	X		X															
	GALLS/OAK PIT SCALE																		
	FIRE DAMAGE																		
	MAINSTEM DIEBACK																		
	BRANCH CAVITIES																		
	WEAK CROTCHES																		
	TWIG/BRANCH DIEBACK	X		X															
	EPICORMIC GROWTH																		
	THIN FOLIAGE																		
	VIGOR - GOOD/OK/POOR	G		G															
	TERRAIN - SLOPE/FLAT	S		S															
	POTENTIAL HAZARD																		
RATING	HERITAGE TREE																		
	HEALTH	C		C															
	AESTHETICS/COMFORMITY	C		C															
TREATMENT	REMOVE DEADWOOD	X		X															
	REMOVE WIRE, ETC.																		
	INSECT/DISEASE TREAT																		
	CABLE/BRACE																		
	NONE																		
	REMOVE TREE																		
	REMARKS:																		

JOB No. 2190-02

Field Observ-Heritage Trees.xls

DATE: 12-11-2000

DEFINITIONS

SUMMARY of FIELD OBSERVATIONS DEFINITIONS

INTRODUCTION

There are numerous diseases and insects, which frequently attack the Oak trees in Los Angeles County. A long discourse in plant pathology or entomology is not necessarily a prerequisite to develop a basic understanding of the casual effects of disease and insects upon living plant tissue. A basic knowledge of disease and insects should include an understanding of the following definitions:

FORM

1. **Tree Number** - each tree in the field (sizes within the existing ordinance) has been assigned a number, which corresponds to a tree location on the "Tree Location Map".

2. **Species** - is the type of tree that is being evaluated.

3. **Number of Trunks** - as measured in accordance to the ordinance existing at the time of evaluation.

4. **Diameter of Trunks** - as measured at 4½' above mean natural grade.

5. **Tree Height** - is the approximate height of each numbered, evaluated tree.

6. **Leaning** - is the direction the tree is inclined from the natural vertical position.

PHYSICAL CONDITION

1. **Trunk Cavity/Damage** - A **Cavity** is a hollow area in the trunk, usually due to wood decay. **Damage** is a damaged area on the trunk, usually due to an external force onto the tree.

2. **Exposed Roots** - roots exposed near tree; e.g. in creek bed.

3. **Exfoliating Bark** - the flaking off of bark from trunk, branches and/or twigs.

4. **Water Pocket** - pockets formed at branch crotches that can hold water and possibly weaken the tree's structure (possible hazard).

5. **Exudation** - the issuance or expelling of liquid, usually from wounds.

6. **Fruiting Bodies** - are the external signs (i.e. mushrooms, conks) of internal wood decay.

7. **Insect/Mite Damage** - is some form of damage to the parts of the tree caused by insects or mites (i.e. scale, caterpillars, weevils, borers, mites, etc.).

8. **Galls/Oak Pit Scale** - **Galls** are abnormal growth (tumors) on the tree, which may be caused by insects, mites, bacteria, etc. **Oak Pit Scale** has a severe weakening effect on the twigs, frequently resulting in their death. When the scale settles on the twig, a swelling of the twig tissue occurs so the insect in effect is in a pit; hence, the name.

9. **Fire Damage** - each tree is rated on the amount of burn it has received. Below are the ratings.

Category	Percent of Tree Burned
Slight (S)	0% - 25%
Moderate (M)	26% - 75%
Heavy (H)	76% - 100%
Complete (C)	Burned to the ground

A. A check mark only, indicates a sign of past fire damage;
B. The trees with slight damage have an excellent chance of recovering to their original form. Trees with moderate damage have a good chance of recovery with alterations in form. Heavy percentage of burn on trees will significantly alter their form and lower their probability of survival to half;
C. The complete category is those trees, which burned to the ground.

10. **Mainstem Dieback** - death of healthy mainstems from the growing tip back.

11. **Branch Cavities** - hollow areas in the limbs, usually due to the decay of wood.

12. **Weak Crotches** - poorly formed branch attachments.

13. **Twig/Branch Dieback** - death of unhealthy twigs from the growing tip back.

14. **Exocormic Growth** - excessive growth along main limbs, rather than on twigs.

15. **Thin Foliage** - defoliation and twig dieback throughout the canopy.

16. **Vigor** - is the capacity of a tree for growth and survival. Below are the ratings:

Good (G) -New tip growth; good leaf color; relatively smooth bark free from cracks/decay;
OK (OK) - Some new tip growth; medium leaf color; some dead wood; thinning crown;
Poor (P) - No new tip growth; poor leaf color; much dead wood; heavily thinned crown.
A vigorous tree will more easily ward off disease and/or insect attacks, and should recover from impacts more quickly than a weak tree.

17. **Terrain** - refers to "lay" of the land where the tree is found.

18. **Potential Hazard** - any tree may be a hazard to humans, depending on its location and/or health.

RATINGS

1. A **Heritage Tree** according to the Los Angeles County "Oak Tree Ordinance" is either of the following:

A. Any Oak tree that has at least one trunk that is at least 36" in diameter or larger as measured at 4½' above mean natural grade;
B. Any Oak tree having a significant historical or have cultural importance to the community, not withstanding that the tree diameter is less than 36" in diameter (as identified officially by the local Los Angeles County Resource Conservation District).

2. The **Health** of the trees was visually determined from a macroscopic inspection of signs and symptoms of disease. The following system was used to describe their conditions:

A. **Outstanding** - A healthy and vigorous tree characteristic of its species and free of any visible signs of disease or pest infestation;
B. **Above Average** - A healthy and vigorous tree. However, there are minor visible signs of disease and pest infestation;
C. **Average** - Although healthy in overall appearance, there is a normal amount of disease and/or pest infestation;
D. **Below Average/Poor*** - This tree is characterized by exhibiting a greater degree of disease and/or pest infestation or structural instability than normal and appears to be in a state of decline. This tree also exhibits extensive signs of dieback.
E. **Dead*** - This tree exhibits no signs of life whatsoever at the time of field evaluation.

*A tree rating of "D" and lower is in a low stage of vigor and naturally a meaningful level of recovery is doubtful. Removal should be considered if it is within the proposed project development.

3. The **Aesthetic/Conformity** quality of the trees was visually determined from an overall inspection of appearance. The following system was used to describe their conditions:

   A. **Outstanding** - The tree is visually symmetrical, having the ideal form and appearance for the species;
   B. **Average** - The tree, though non-symmetrical, has an appealing form for the species with very little dieback of foliage or twigs/branches;
   C. **Below Average** - The tree is non-symmetrical for the species with an unappealing form and/or has much dieback of foliage and twigs/branches;
   D. **Poor** - The tree has few, if any, positive characteristics and may detract from the beauty of the landscape.

TREATMENT

1. **Remove Dead Wood** - if noticeable dead wood is within the canopy, it should be removed.

2. **Remove Wire, etc.** - if anything has been attached to the tree, it should be removed.

3. **Insect/Disease Treatment** - see TREE PRESERVATION PROGRAM within this report for explanation.

4. **Cable/Brace** - can extend the time the tree remains healthy, attractive and hazard free.
5. **None** - no treatment is recommended.

6. **Remove Tree** - if the tree cannot be saved through any type of treatment, it should be removed.

REMARKS (Some other terms that may be used)

1. **Basal Growth** - is leaf growth generating from around base of trunk.

2. **Exposed Buttress Roots** - is when soil absent, either all or partial, at the tree's base.

3. **Heart Rot** - is decomposition of heartwood (the central portion of a twig/branch/trunk).

4. **Powdery Mildew** - are leaves that are covered by a white powdery growth generally when new growth becomes wet for long periods of time; leaves may be distorted, stunted and drop prematurely.

5. **Cankers** - are rough swellings with depressed centers resulting in death of tissue, which later cracks open and exposes the wood underneath in twigs, branches, and/or trunks.

6. **Chlorotic Leaves** - leaf veins remain normally green, but the tissue between veins becomes yellow, which is usually caused by nutrient deficiencies.

7. **Mottling** - are leaves that have a variegated pattern of green and yellow.

8. **Defoliation** - is a premature leaf drop.

9. **Bark Beetle Frass** - are wood fragments mixed in the insect's excrement.

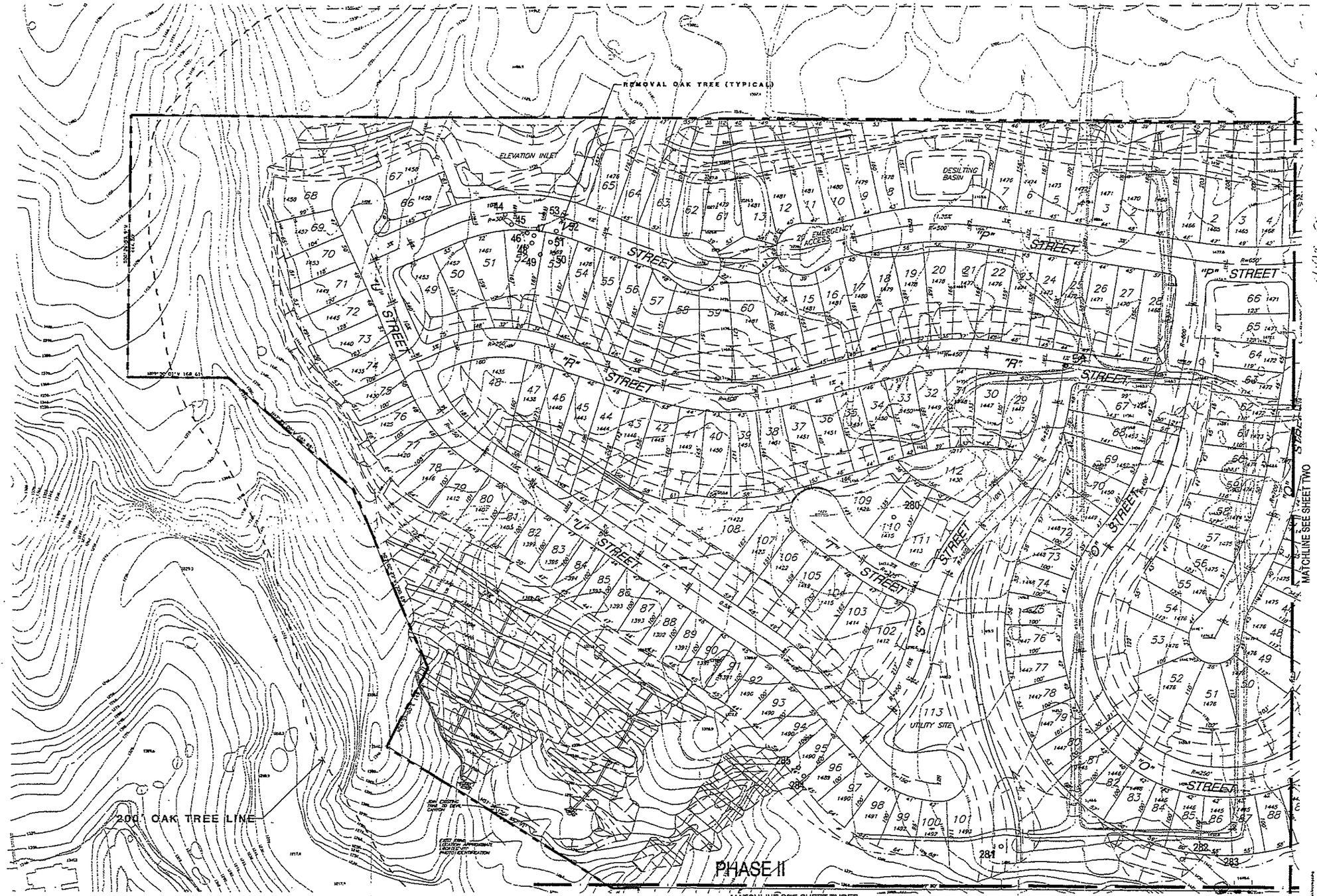
10. **Witches Broom** - is an abnormal growth cluster of twigs, which may be caused by insects, mites, fungus, etc.

11. **Mistletoe** - is a leafy evergreen perennial parasite with dark green leathery leaves that occur as bunches on the branches.

12. **Crowded** - is a tree within the canopy of an adjacent tree or canopy.

13. **Shading Out** - is the defoliation and twig dieback inside the canopy due to the lack of sunlight.

C:\LNDG-HORT\MST/DEFN\LACO.MST (2-2-00)



DECEMBER 2000

CHATSWORTH RIDGE ESTATES
CHATSWORTH CALIFORNIA

OAK TREE LOCATION MAP

Oak tree removals this sheet (16):
44-54, 280-282, 284, 285

PRESIDIO CHATSWORTH PARTNERS, L.L.C.
595 MARKET ST. SUITE 2400
SAN FRANCISCO, CA 91302

SCALE: 1" = 50'

SHEET 1 OF 5

L. Newman
Design Group, Inc.
Landscape Architecture
Planning
Horticulture
Biological Restoration
31900 Via Colinas, Suite 104
Westlake Village, CA 91362-3924
Phone (818) 991-5856 Fax (818) 991-3478

200 OAK TREE LINE

STORM DRAIN EASEMENT

ELEVATED INLET

FLOOD CONTROL EASEMENT

DESILTING INLET

"P" STREET

"B" STREET

"L" STREET

"O" STREET

"N" STREET

"C" STREET

"M" STREET

"K" STREET

"A" STREET

FUTURE STREET

OPEN SPACE

DRAIN ESMNT

OFFSITE GRADING EASEMENT

TEMPORARY DEBRIS BASIN

MATCHLINE SEE SHEET ONE

MATCHLINE SEE SHEET FOUR

PHASE II

PHASE I

REMOVAL OAK TREE (TYPICAL)

SAVED OAK TREE(TYPICAL)

Oak tree removals this sheet (25):
16-21, 23, 25, 26, 55-57, 247, 249-260

SCALE: 1" = 50'

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CHATSWORTH RIDGE ESTATES
CHATSWORTH CALIFORNIA

OAK TREE LOCATION MAP

PRESIDIO CHATSWORTH PARTNERS, L.L.C.
595 MARKET ST. SUITE 2400
SAN FRANCISCO, CA 91302

SHEET 2 OF 5

PHASE II

PHASE I

APPROXIMATE BOUNDARY OF ADDITIONAL 13 ACRES

±50 OAKS

SAVED OAK TREE (TYPICAL)

REMOVAL OAK TREE (TYPICAL)

AREA OF PROPOSED GRADING (10 ACRES RECENTLY ACQUIRED)

MITIGATION AREA

MITIGATION AREA

NOT A PART

"D" STREET

"A" STREET

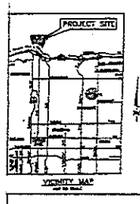
AUCAS DR.

EXISTING PRIVATE ROAD TO REMAIN (MAYAN DR.)

200' OAK TREE LINE

MATCHLINE SEE SHEET FOUR

Oak tree removals this sheet (2):
170, 261



DECEMBER 2009
(NOG JOB #290-02)

SCALE: 1" = 50'

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CHATSWORTH RIDGE ESTATES
CHATSWORTH CALIFORNIA

OAK TREE LOCATION MAP

PRESIDIO CHATSWORTH PARTNERS, L.L.C.
595 MARKET ST. SUITE 2400
SAN FRANCISCO, CA 91302

SHEET 3 OF 5

PHASE II
PHASE I

NOT A PART

MATCHLINE SEE SHEET TWO

MATCHLINE SEE SHEET THREE

200' OAK TREE LINE

COUNTY OF LOS ANGELES

CITY OF LOS ANGELES

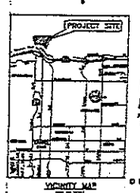
PROPOSED BRIDGE

HITCHCOCK AREA

SAVED OAK TREE (TYPICAL)

REMOVAL OAK TREE (TYPICAL)

Oak tree removals this sheet (18):
41-43, 68, 72, 196, 197, 199-202, 202A-202G



DECEMBER 2000
LNDG JOB # 2180-02

SCALE: 1" = 50'

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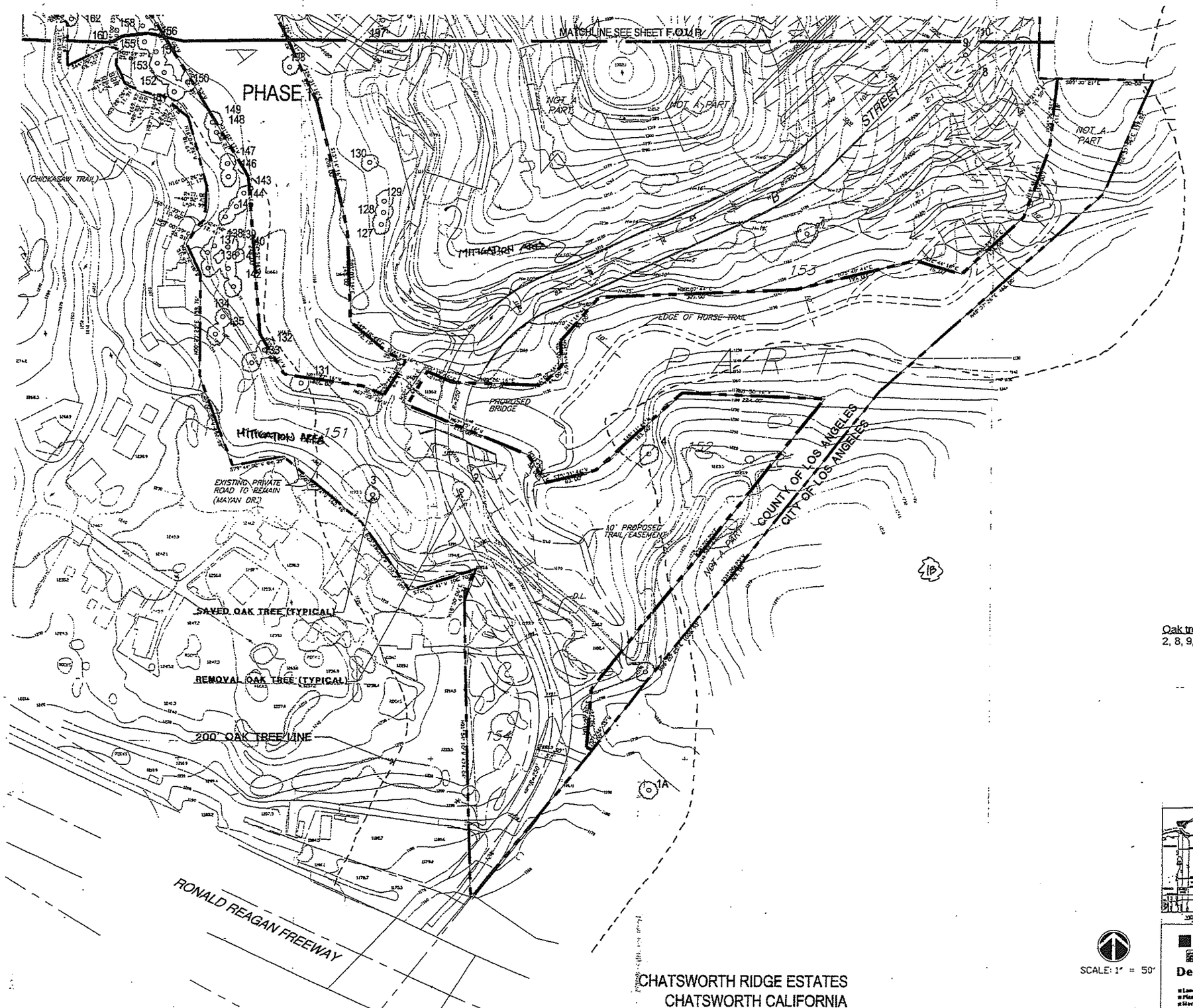
CHATSWORTH RIDGE ESTATES
CHATSWORTH CALIFORNIA

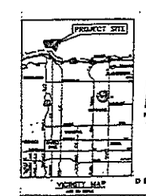
OAK TREE LOCATION MAP

PRESIDIO CHATSWORTH PARTNERS, L.L.C.
595 MARKET ST. SUITE 2400
SAN FRANCISCO, CA 91302

SHEET 4 OF 5



Oak tree removals this sheet (4):
2, 8, 9,10



DECEMBER 2000
LNDG JOB #2160-02

SCALE: 1" = 50'

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- Biological Restoration

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CHATSWORTH RIDGE ESTATES
CHATSWORTH CALIFORNIA

OAK TREE LOCATION MAP

PRESIDIO CHATSWORTH PARTNERS, L.L.C.
595 MARKET ST. SUITE 2400
SAN FRANCISCO, CA 91302

SHEET 5 OF 5

APPENDIX I

PHASE I/PHASE II ARCHAEOLOGICAL SURVEY

PHASE I ARCHAEOLOGICAL SURVEY OF THE CHATSWORTH RIDGE ESTATES STUDY AREA, LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

Mr. Richard Garlinghouse
The Presidio Group, LLC
595 Market Street, Suite 2400
San Francisco, CA 94105

Prepared by:
W & S Consultants
2242 Stinson Street
Simi Valley, California 93015
805-581-3577

May 25, 2000

Management Summary

An intensive Phase I archaeological survey was conducted for the 238.8 acres Chatsworth Ridge Estates study area, Los Angeles County, California. This involved background studies of the prehistory, ethnography and history of the area; an archival records search of relevant maps, site forms and documents; and an on-foot survey of the subject property. Eight archaeological sites had been previously recorded on the property, designated CA-LAN-209, -649, -1740H, -1741H, -1742H, -1743, -1744 and -1745. These were relocated and evaluated and, with the exception of CA-LAN-1741H and -1742H, were found to be intact and potentially significant. So-called historical sites CA-LAN-1741H and -1742H, recorded in 1990, appear to be post-World War II in age and consist of the foundations of demolished structures with associated trash and debris, all of which is contemporary. It is uncertain whether these localities meet the minimum age criterion for consideration as cultural resources but, in any event, they do not have any known archaeological value, lack architectural integrity and therefore are not considered significant.

In addition to these eight sites, two newly discovered prehistoric sites were recorded within the study area, given the temporary designations of W&S-1 and -2. Development within the Chatsworth Ridge Estates study area, therefore, has the potential to result in adverse impacts to cultural resources. It is recommended that Phase II test excavations and determinations of site significance be conducted on the eight intact and potentially significant sites within the study area (that is, on sites CA-LAN-209, -649, -1740H, -1743, -1744 and -1745, and W&S -1 and -2), and that final recommendations for the management of these sites be based on the results of these test studies.

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1.0
INTRODUCTION

At the request of Mr. Richard Garlinghouse, The Presidio Group, LLC, a Phase I archaeological survey was conducted for the Chatsworth Ridge Estates study area. This approximately 238.9 gross acres parcel lies within the northwestern limits of the San Fernando Valley, Los Angeles County, California (Figure 1). This cultural resources study was conducted by W & S Consultants, with David S. Whitley, Ph.D., serving as principal investigator.

The purpose of the study was to evaluate the potential for the proposed development to result in adverse impacts to cultural resources. It involved background studies of published and unpublished articles, books, manuscripts, maps, drawings and photographs, as well as archaeological site records and files, to establish the prehistory and history of the study area, to determine whether sites had been previously recorded or were known to exist within it. Aspects of the background studies were conducted by the UCLA Archaeological Information Center (AIC), concerning archaeological site files, in addition to the research conducted by W & S Consultants.

This manuscript constitutes a report on this Phase I survey. Following a description and location of the proposed project, the second chapter reviews local prehistory, ethnography and history, with particular emphasis on the land-use history of the study area area. The next chapter summarizes the archival record search conducted by the UCLA AIC. This is followed by the details of an on-site intensive survey of the property in question. We conclude with recommendations for the treatment of cultural resources within the study area.

1.1 Description and Location of the Study Area

The proposed project consists of the construction of suburban housing on an approximately 238.8 gross acres parcel located in the northwestern portion of the San Fernando Valley (figure 1). The study area is located

north of the Simi Valley Freeway (Highway 118), with the southwestern corner of the property at the intersection of this highway and Topanga Canyon Boulevard. This places it within the southern foothills of the Santa Susana Mountains.

The study area can be described as a moderately-sized mesa, the Deer Lake Highlands, that overlooks the western San Fernando Valley, to the south. Browns Canyon, on the east, and Devil Canyon, to the west and south, are the approximate limits of the study area in these directions. Roughly the northern half of the study area consists of the flat mesa-like area, with elevation ranging from about 1300 to 1400 feet a.s.l. However, the steep slopes of the two canyons are included in the eastern, southern and western edges of the study area, where steep slopes exceed the angle of repose. Although some sandstone outcrops are present in the northern half of of the study area, the majority of them, understandably are located along this steep peripheral zone.

Historic and recent land-use changes have altered the environment somewhat from what existed in the study area during prehistoric times. At least four major plant associations probably characterized the region containing the study area during the aboriginal period, however. These are chaparral, coastal sage scrub, southern oak woodlands, and riparian associations (cf. Muntz 1974).

The chaparral association covers steeper slopes with poorly developed soils and xeric conditions. It includes the following species: California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), black sage (*S. mellifera*), purple or white-leaved sage (*S. leucophylla*), California encilia (*Encilia californica*), California buckwheat (*Eriogonum fasciculatum*), scrub oak (*Quercus biberidifolia*), toyon (*Heteromeles arbutifolia*), mountain mahogany (*Cercocarpus betuloides*), lemonade sumac (*Rhus integrifolia*) and sugar sumac (*R. ovata*).

The coastal sage scrub community is the climax community for portions of inland coastal-southern California. It is generally composed of coast buckwheat (*Eriogonum cinereum*), although this species is absent in some of the inland valleys, and California buckwheat (*E. fasciculatum*), along with black sage (*Salvia mellifera*), sawtooth goldenbrush (*Hazardia*

squarrosa), prickly phlox (*Leptodactylon californicum*), yucca (*Yucca* spp.) and California sagebrush (*Artemisia californica*) as major constituents.

The chaparral and coastal sage scrub communities are still present on the slopes of the study area, and were undoubtedly of subsistence importance to the aboriginal population of the region, the third association, the southern oak woodland, may have been of primary significance in the inland zones adjacent to the coastal strip. This results because of the great importance placed on the acorn as a food staple by Native Californians (Kroeber 1925), and the rarity of this resource on the coastal side of the Santa Monica Mountains. The association is characterized by the coast live oak (*Quercus agrifolia*) and the valley oak (*Q. lobata*), but also would have included various species of native grasses. Although currently restricted in distribution, this association was once more widespread in the region. The open flats of the San Fernando Valley in fact, were once partly covered by oak woodland, and it is possible that the mesa-like setting of the Deer Lake Highlands also may have contained this plant association.

The fourth and final plant association consists of riparian habitats, which are localized and poorly diversified woodlands found in areas of perennial moisture. They include such species as arroyo willow (*Salix lasiolespi*), mule fat (*Baccharis glutinosa*), curly dock (*Rumex crispus*), swamp knotweed (*Polygonum coccineum*), nettle (*Urtica holosericea*), cocklebur (*Xanthium strumarium*) and rabbit foot grass (*Polypogon monspeiensis*). Though this plant association is limited in distribution, it still had significant economic importance in aboriginal times, especially in terms of the acquisition of raw materials for items like baskets, cordage and netting. Riparian habitat would have been present in both of the canyons which border the study area.

The majority of the Chatsworth Ridge Estates study area continues to support native vegetation, with most of the existing disturbance within the study area localized in the Deer Lake Highlands area, proper. Here there are a few cleared and disked areas, an occupied house, and remnants of post-world War II structures, along with a limited network of dirt roads. Again, however, the majority of the study area is relatively undisturbed,

reflecting in part the fact that portions of it are topographically very rugged.

2.0
BACKGROUND STUDIES

2.0 Introduction

In preparation for the Phase I archaeological survey of the study area, a series of background investigations were conducted on the prehistory, ethnography and history of the study area and relevant surrounding regions. We consider below existing knowledge relevant to these topics for the Chatsworth Ridge Estates project area.

2.1 Prehistoric Background

The Chatsworth Ridge Estates project area, lying in western Los Angeles County, is situated in a zone known prehistorically to have comprised a portion of the prehistoric Canaliño culture area (Rogers 1929; Wallace 1955), and historically to have been located just within the territory of the Gabrielino ethnolinguistic group (Kroeber 1925; Johnston 1962; Bean and Smith 1978). Our current understanding of the Canaliño prehistory is summarized below.

Canaliño prehistory was first defined in a chronological system established by D.B. Rogers (1929), working on the Channel Islands and the Santa Barbara coastline. At a later date, Rogers' scheme was modified in terminology and improved with additional and more detailed data and radiocarbon dates by W.J. Wallace (1955), who applied it to southern California more generally. Subsequently, the Rogers/Wallace chronology had been successfully applied to inland Los Angeles County (e.g., McIntyre 1990), and is now recognized as having applicability to a wide area of mesic (i.e., that area west of the xeric desert zone) Los Angeles, Ventura, Riverside, San Bernardino and Orange Counties. Due to the widespread application of this chronological scheme, we employ Wallace's framework for the purposes of this study.

Late Pleistocene Period (Pre-10,000 years B.P.)

Wallace's chronology for southern California includes four time periods,

the earliest of which (Early Man/Big Game Hunting period) was considered speculative, and was correlated with the end of the Pleistocene, or Ice Age. This would represent an occupation prior to about 10,000 years B.P. (Before Present). Although it is likely that inhabitation of the southern California coastal region occurred during this early time period, evidence for such is currently extremely limited. To date, Late Pleistocene archaeological remains in southern California comprise two kinds of evidence. First, in the inland Mojave Desert region, petroglyphs (rock engravings) and surface stone tools have been dated back to approximately 20,000 and 30,000 years B.P., respectively (Whitley and Dorn 1993; Whitley et al 1996). These may well reflect the initial human occupation of North America. The contexts of these dated finds provide only limited kinds of archaeological information and, while there is much more to be discovered about this earliest prehistoric culture, existing data nonetheless suggest that these earliest inland Californians may have dwelled along the shores of Pleistocene lakes; that they exploited chert quarries to make relatively crude stone chopping tools; and that they also made rock art, perhaps as part of shamanistic religious practices.

Second, a limited number of large fluted projectile points have been found in isolated locales in the Mojave Desert and along the California coast. These projectile points functioned as parts of spears and are known to date between 11,200 and 10,000 years B.P., falling within what is called the Paleoindian Period on the Great Plains. On the Plains, such points are associated with the hunting of extinct Pleistocene fauna, such as the Columbian Mammoth. Although it is likely that these spear points were similarly used in southern California, the isolated nature of the discovered artifacts precludes any certain inference about their use or function in the California region.

Uncertainty concerning these early prehistoric cultures results from the characteristic geomorphological instability of the California coastline and the general youthfulness of the southern California interior, combined with the major change in erosional/degradational regimes that occurred at the end of the Pleistocene (Whitley and Dorn 1993). Each of these factors does not favor the preservation of remains from this period. It is therefore likely that Late Pleistocene human occupation of Los Angeles is

under-represented in the local prehistoric record, simply due to problems in site preservation.

Early Millingstone Period (10,000 - 3500 years B.P.)

With the transition towards a modern environment, starting approximately nine to ten thousand years ago, an adaptation referred to as the Early Millingstone Period or Horizon began. This is particularly evident along the coast, where many such sites are found, although a few examples are known from the inland region. Most sites of this stage date between 8500 and 3500 years in age.

Recent studies by Erlandson (1988; see also Erlandson and Colton 1991) provide evidence of a significant, even if small, population of coastal hunter-gatherers in the region before 7000 years ago, or essentially at the beginning of this Early Millingstone period. He has shown that these were neither Big Game hunters, nor specialized, hard-seed gatherers, but instead generalized foragers that relied on a variety of different kinds of terrestrial, coastal and marine resources, and that they were adapted to estuarine embayments that have long-since disappeared from the local environment. Further, his evidence indicates that their primary protein sources were shellfish and other marine resources. Extending a pattern first identified by Meighan (1959) on the Channel Islands, in other words, this suggests that the adaptation to the seashore is a very ancient and long-lived tradition in local prehistory.

In the inland region, perhaps the earliest evidence of the Early Millingstone Period is provided by so-called Los Angeles Woman, a female skeleton found in the La Brea Tar Pits which has been radiocarbon dated to 9000 years B.P. Lacking clearly associated artifacts or other remains, it is difficult to interpret the Los Angeles Woman beyond observing simply that her discovery signals the fact that the inland region was in use shortly after the end of the Late Pleistocene.

Later Early Millingstone sites (post-dating approximately 6000 years B.P.) are dominated by assemblages containing large numbers of groundstone artifacts, along with crude choppers, scraper planes, and other core/cobble tools. These are thought to represent an adaptation to gathered plant foods, especially a reliance on hard-shelled seeds.

Accordingly, it has been common practice to identify any site with a dominance of these plant processing implements as Early Millingstone in age. More recently, it has also been suggested that scraper planes, in particular, may have served in the processing of agave (Kowta 1969; Salls 1985); that the association of groundstone and core/cobble tools represents a generalized plant processing toolkit, rather than one emphasizing hard-seeds, per se (Whitley 1979), and that this toolkit was used in appropriate environmental settings throughout the prehistoric past. That is, that the so-called millingstone toolkit is environmentally rather than chronologically specific and reflects localized exploitative patterns, rather than a chronologically-specific adaptational strategy (Kowta 1969; Leonard 1971; McIntyre 1990). Thus, many inland sites identified as dating to the Early Millingstone Period solely on the basis of their groundstone toolkits may, in fact, not be of such age at all. However, on the coastal strip there continues to be evidence that such sites date to the earlier end of the time-frame. These sites are generally located on terraces and mesas, above the coastal verge, near permanent streams.

Although Early Millingstone period sites are relatively common along the coast, there is little evidence for the occupation of the inland region during this early time period. That is, although the millingstone adaptation to seeds and plants, and toolkits dominated by plant processing tools, are present in the inland zone, they appear to date to a later time period, with true Early Millingstone period occupation apparently restricted to the coastal strip, proper (Whitley and Beaudry 1991; cf. Leonard 1971; McIntyre 1990). Again, it is currently unclear whether this pattern reflects real differences in inland versus coastal settlement distributions, or is simply a function of site preservation problems in the inland region. Whatever the cause, it is worth noting that there are currently very few reliable or plausible chronometric dates from inland sites that are Early Millingstone in age. All current temporal assignments of inland sites to the Early Millingstone period are based on putative diagnostic artifacts but, when these are examined critically, the verity of the early age assignments become dubious. And, too often, such early age assignments are based on functional/adaptive traits rather than stylistic criteria, thus confusing adaptive patterns for temporal ones.

A good example of the confusion of millingstone functional and adaptational patterns for Early Millingstone chronological diagnostics in inland Los Angeles County is provided by the so-called "Topanga Culture", as exemplified by excavations at CA-LAN-1, the "Tank Site" (cf. Heizer and Lemert 1947; Treganza and Malamud 1950; Treganza and Bierman 1958), located in the Santa Monica Mountains immediately south of the San Fernando Valley. This is widely regarded as "Early Millingstone" chronologically, and its base ("Phase I") has been assigned 10,000 years of age, essentially due to the large numbers of millingstones, crude choppers and "cog stones" (see Treganza and Bierman 1958:75, Table 1). But, as Johnson (1966) has rightly pointed out, Phase III of the Topanga Culture is only 3000 years old, as demonstrated by his excavations at CA-LAN-2. That is, it is Intermediate and not Early Millingstone in age. It then must follow that the preceding Phase II can only be considered 3500 to 3000 years old, due to the presence of (Intermediate period) mortars and pestles in the Phase II assemblage. That is, Phase II of the Topanga Culture also can only be Intermediate period in age. Since Phase I lies conformably and immediately below Phase II stratigraphically, it likewise must follow that it immediately predates the Intermediate period Phase II remains. At best, then, Phase I of the Topanga Culture is terminal Early Millingstone or transitional Early Millingstone/Intermediate, but not necessarily of any great antiquity.

This fact is emphasized when it is recognized that one of the key classes of temporal diagnostics said to support the very early age assignment for Phase I at the Topanga Site, the cog stones, were all recovered from the Phase II deposit, even though Treganza and Bierman (1958) incorrectly assign them to the Phase I assemblage (Eberhart 1961:366-7). Thus, there is currently no evidence to suggest any great antiquity for Phase I of the Topanga culture; instead it may simply be 4000, rather than 10,000 years in age, and may represent an early manifestation of the Intermediate Period movement of a millingstone adaptation into the interior, rather than a manifestation of a coastal Early Millingstone culture in the inland zone.

Intermediate Period (3500 - 800 years B.P.)

As implied above, a transitional stage followed the Early Millingstone, which is referred to as the Intermediate Period (Wallace 1955). It is

believed to have begun about 3500 years ago, and to have lasted until about A.D. 1200 (according to the latest revisions; cf. Arnold 1987). It is marked on the coast by a growing exploitation of marine resources, the appearance of the hopper mortar and stone bowl/mortar, and a diversification and an increase in the number of chipped stone tools. Projectile points, in particular, are more common at sites than previously, while artifacts such as fish hooks and bone gorges also appear.

As noted above, cog stones also first appear during the Intermediate Period, although they are widely misinterpreted as Early Millingstone in age. These are relatively small, flat cobbles, about the size of a large biscuit, that were shaped to resemble a kind of mechanical cog or gear. Although the function of these is unknown, it is likely they served as ceremonial objects, and their geographical distribution has an important implication for regional prehistory. As first identified by Eberhart (1961), cog stones are only found from Los Angeles County south and eastward; that is, they are absent in the areas of the Santa Barbara Channel region (Ventura and Santa Barbara Counties) that, historically, were occupied by Chumash-speaking groups. Although speculative, this suggests that the initial distinction between the Hokan Chumash and Takic-speaking groups (which included the Gabrielino) may have developed as early as 3500 years ago (cf. Kowta 1968:50; McIntyre 1990:5), rather than only 1500 years B.P., as Kroeber (1925) first hypothesized. That is, the distribution of these "ceremonial" artifacts essentially follows the boundaries of ethnolinguistic groups during the historical period, suggesting that such boundaries may have been more-or-less stable for about 3500 years. Notably, this hypothesis is supported by excavations at Intermediate Period site CA-LAN-2233, in the Santa Clara River Valley to the north. At this site, osteometric and DNA analyses indicate that the resident population was non-Chumash genetically (Waugh 1999).

As also implied above, there is growing evidence that it was at the beginning of this Intermediate Period that inland sites, such as those found in the Conejo area on the north side of the Santa Monica Mountains, the upper Santa Clarita Valley, the Antelope Valley, and western Riverside and San Bernardino Counties, were first established and occupied. Whether this pattern holds for the interior Los Angeles Basin has yet to be determined, but it seems likely. This suggests the

exploitation of more varied environments and perhaps an increase in population at this time and, again, it may correlate with Kroeber's "Shoshonean Wedge" moving into mesic southern California at circa 3500 years B.P. (Whitley et al n.d.; cf. Whitley and Beaudry 1991). In general, however, the Intermediate Period can be argued to have set the stage for the accelerated changes that took place immediately following it.

Canaliño/Late Prehistoric (800 to 200 years B.P.)

With the transition to the Canaliño or Late Prehistoric period at A.D. 1200, we can correlate local prehistory with the ethnographic societies as described (even if in abbreviated form) by early chroniclers and missionaries. However, this is not to suggest that local societies and cultures were in any way static, for the transition to the Canaliño period was marked by the evolution and eventual dominance of a sophisticated maritime economy. Further, among the Chumash to the west, a rise in social complexity has been shown to have been associated with the development of craft specialization, involving the use of standardized micro-drills to mass produce shell beads on Santa Cruz Island (Arnold 1987), which occurred during this period. This, apparently, contributed if not caused the appearance of a simple chiefdom in the southern Chumash region (cf. Whitley and Clewlow 1979; Whitley and Beaudry 1991).

Although we do not have evidence that the Gabrielino developed into a chiefdom like the neighboring Chumash, the Canaliño period nonetheless witnessed a fluorescence of local aboriginal culture paralleling the Chumash case. This included a substantial growth in population, the establishment of permanent settlements on the coast (and probably at favored locales in the inland area), a high degree of sociopolitical complexity, and the development of a very sophisticated maritime economy. It was during the Canaliño period, thus, that the occupants of the Santa Barbara Channel and Los Angeles County region achieved levels of cultural and social sophistication perhaps unrivaled by hunter-gatherer-fisher groups anywhere else in the world (Wallace 1955; Johnston 1962; Landberg 1965; Brown 1967).

2.2 Ethnographic Background

As noted above, the study area falls within the ethnographic territory of the Takic-speaking Gabrielino; specifically, of the Fernandeño dialect of Gabrielino. "Fernandeño" and "Gabrielino" are terms of Spanish derivation, resulting from the standard missionary practice of naming indigenous peoples after the mission to which they were attached, in this case the Missions San Fernando Rey and San Gabriel Arcangel, respectively. True indigenous names for the Gabrielino included *Kij* or *Kizh* (Johnston 1962; Reid 1968), the etymology of which is unknown; *Kumivit*, "easterner"; and *Tobikhar*, etymology, again, unknown (Bean and Smith 1978:548), although it is not clear that any of these terms were actually employed by the Gabrielino as self-referents (see below). In contrast, the Fernandeño were known to the Gabrielino as *Pasekwarum*, from *Paseknga* (referring to a village near the San Fernando Mission). Thus, although "Gabrielino" and "Fernandeño" are in some senses inappropriate, they continue in standard usage.

Regardless of appelative, what historically have been referred to as the Gabrielino extended from Orange County north through the Los Angeles Basin to the crest of the San Gabriel Mountains, including the headwaters and watershed of the San Gabriel River, and from the coast eastward to include Mt. San Antonio (Mt. Baldy) and western Riverside and San Bernardino Counties. To the west, Gabrielino territory extended to Topanga Canyon, and included the San Fernando Valley (Kroeber 1925:Plate 57; Johnston 1962; Bean and Smith 1978a:538). Fernandeño was spoken primarily if not exclusively within the confines of this large inland valley.

According to Bean and Smith (1978a:538), the Gabrielino were culturally extinct by the beginning of this century -- that is, prior to the recording of any detailed ethnography on them -- various sources, and analogies with better known surrounding groups, can be employed to reconstruct aspects of their ethnographic lifeways. For example, the Gabrielino and the linguistically-related Serrano shared many, if not most, cultural traits (Kroeber 1925:578-580; Bean 1972:69, 1978:575-576). We base the following reconstruction, accordingly, on Gabrielino, Serrano and Cahuilla sources (e.g., for the Gabrielino, see Dakin 1939, Reid 1968, Kroeber

1925, Johnston 1962, and Bean and Smith 1978a; for the Serrano, see Benedict 1924, Kroeber 1925, Strong 1929, and Bean and Smith 1978b; for the Cahuilla, see Barrows 1900, Kroeber 1908, 1925, Hooper 1920, Strong 1929, Bean 1972, 1978; and Bean and Saubel 1972, etc.).

The terms "Gabrielino" and "Fernandeño" strictly apply to groups of people united only by the use of a dialectical variant of the Gabrielino language (itself a Cupan language of the Takic branch of the Uto-Aztecan linguistic family). That is, they imply no necessary sociopolitical unity (as in a single 'tribe') and, in fact, a series of different political units may have existed among the Gabrielino at the time of Spanish contact, explaining why there were no generic terms for these groups as unified corporate units. Further, there may have been as many as six dialectical variants of the larger Gabrielino language (Kroeber 1925:620), the best known of which was Fernandeño (cf. Englehardt 1927).

Based on these ethnographic sources combined with early Spanish accounts, we may confidently infer that the inhabitants of the San Fernando Valley region were hunters-gatherers, with subsistence emphasizing acorns, yucca, juniper berries, sage seeds, mesquite, pinyon and islay and other plant resources. Following a sexual division of labor common throughout native California, women were principally responsible for the acquisition and preparation of plant foods. Game was also hunted, with small animals, such as rabbits/hares and rodents, probably representing more significant contributions of meat protein than larger game, such as deer. Women and children contributed to the hunting (often with nets and drives) of the smaller game. The large game, however, was the exclusive domain of the adult male hunters. Also following practices common throughout the state, specific resources exploited at any given time were a function of what was then seasonally available. Since this was somewhat a function of time of year and elevation, a pattern of transhumance was followed, indicating that only a few of the local villages (exclusive of those on the coast) would have been inhabited year around. Instead, inhabitation followed a pattern of population aggregation into large villages, usually during the Fall/Winter, when stored resources like acorns and pinyon nuts were eaten, and dispersal into single family units, typically during the Spring/Summer, when resources were more widely distributed.

It is likely that Gabrielino inhabitants wintered in large villages near permanent water sources on the Los Angeles Basin floor, whereas the Fernandeño would have occupied similar villages at springs on the San Fernando Valley floor or foothill edges. Upland zones, such as are found in the San Gabriel and Santa Susana Mountains to the north and the Santa Monicas to the south, would have been exploited seasonally, during the Spring, Summer and Fall, when valuable plant species ripened (e.g., on the northern slopes, pinyon nuts in the fall). Small, single family camp-sites would have been established near to the plant resources at this time. The highest elevations of the mountains, comprising pine forests, would probably only have been usable for hunting, with only minimal camp-sites established.

Social and political organization can be assumed to have been similar to the well-described systems of the Cahuilla (see Strong 1929; Bean 1972, 1978). These involved patrilineal moieties and clans of three to ten lineages that served as political-ritual-corporate units (Bean 1978:580). Each lineage maintained a village site and resource exploitation area. The office of the ceremonial leader was usually restricted to the founding lineage of the clan, which also owned the ceremonial house and ceremonial bundle. Each lineage had its own lineage leader who served in a variety of sacred and secular capacities, and who met with other such leaders to adjudicate inter-lineage disputes. This office was hereditary and patrilineal. He was assisted in many tasks and responsibilities by a paxa, or assistant, also an inherited office. Ceremonial song-leaders also aided in ritual activities (ibid).

It is also likely that religion followed the patterns found among surrounding groups. In this case, shamanism would have functioned as the central element. This posits a direct and personal relationship between each individual and the supernatural world, with this relationship enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychotropic plants, such as jimsonweed and, especially, native tobacco). Shamans, per se, were considered individuals with an unusual degree of supernatural power, and served as healers or curers, diviners, and controllers of natural phenomena (such as rain or thunder). Shamans are also known to have produced the rock art of this region,

which depicted the hallucinations and spirits they observed in their vision quests. In addition, however, rock art was also painted by male and female initiates at the conclusion of a puberty ritual. Importantly, this initiatory art was also intended to display the spirit helper the initiate received during these ceremonies. Thus, two kinds of ethnographic rock art can be expected in the region: sites owned and made by shamans, and sites used for village initiations (Whitley 1992, 2000).

Given the early disruption of aboriginal lifeways in historical times, it is not surprising that little in the way of information about historical villages and aboriginal place names has been recorded for Gabrielino and Fernandeño territory. However, the exploration and settlement of the San Fernando Valley region did result in the recording of a small number of place-names. As noted above, *Paseknga* was a village near the San Fernando Mission, while *Achoicomingna* was the location of the mission itself. *Tuhungna* was a village located on the north bank of Big Tujunga wash, while *Muhungna* served the same purpose near the mouth of the Little Tujunga. *Tongva* was another village name in the Tujunga area, and was sometimes used to refer to the residents of this area, while *Kawengna* contributed its name to the Cahuenga Pass.

2.3 Historical Background

Local history may be best considered with reference to three periods: Spanish, Mexican, and American. These are discussed below in turn.

The Spanish Period (A.D. 1542 - 1821)

Initial contact between the indigenous Gabrielino and the Spanish occurred in October, 1542, with the arrival of Juan Rodriguez Cabrillo along the Los Angeles County coast. This was followed in 1602 by the Vizcaino expedition, which landed on Catalina Island and visited local inhabitants there (Bancroft 1963). As exploratory expeditions, the early Spanish sailors' impact on the Gabrielino is difficult to gauge: while they clearly resulted in no permanent European settlements and made no consequential forays into the interior, it is nonetheless possible that they may have introduced diseases with widespread deleterious effects on the local population.

Substantial contact between inland Gabrielino and the Spanish did not occur for over two-hundred years after Rodriguez Cabrillo's initial foray. This event was the arrival of the overland party of Don Gaspar de Portolá in the Los Angeles Basin in 1769, preparatory to the establishment of a Spanish colony in the region (Brandes 1970; Bolton 1971; Boneau Companys 1983). Subsequent to a stop at what would become the pueblo of Los Angeles, Portolá and his men passed through the San Fernando Valley before preceding northwards to the Santa Clara River Valley and then turning west to the sea. Called the "Encino Valley" when the expedition visited it on August 5 and 6, 1769, the San Fernando Valley was christened *Santa Catalina de Bononia de los Encinos* by Father Crespi, chaplain of the expedition.

Following Portolá's expedition, Spanish settlement of Upper California was initiated with the establishment of a series of missions, presidios (forts), and pueblos (towns). Mission San Gabriel Arcangel, in 1771, was the fourth mission founded in Upper California, and represented the first Spanish settlement in the greater Los Angeles area. With the appointment of a military governor, Felipe de Neve, in 1775, Spanish efforts to establish civilian settlements independent of the missions were also initiated. De Neve selected a possible site for such a pueblo on the Porciuncula (later Los Angeles) River in 1777 and began the process of enlisting settlers to inhabit it. These were derived from colonies in Sinaloa and Sonora and included settlers of Native American, African and Spanish descent, as well as various admixtures thereof. In all, 11 families comprising 44 individuals settled the newly founded pueblo, arriving between June and October, 1781. *Nuestra Señora de la Reina de los Angeles de Porciuncula*, as the new town was called, was officially chartered on September 4, 1781, shortly before all of the settlers had arrived (Bancroft 1963; Robinson 1981). This was the origin of what would become the City of Los Angeles.

The growth of the pueblo was relatively rapid, with population more than tripling to 139 by 1790 - that is, in less than ten years - with 29 adobe residences constructed, a town hall, barracks, bodega (municipal storehouse), and a surrounding adobe wall. This growth was aided by the establishment of ranchos, or large ranch concessions, the first three of

which were granted in Los Angeles County in 1784.

Settlement and use of the San Fernando Valley, somewhat isolated from the growing pueblo by the Hollywood Hills (the eastern extension of the Santa Monica Mountains), however, lagged behind the growth of the pueblo itself and the Los Angeles Basin to the south. The initial Euro-American entrants into the valley were apparently illegal users of the lands, the rights to which were retained under Spanish law by their Native American occupants unless and until they were formally awarded by the government to non-Indian recipients. Records on these early Euro-American squatters are close to non-existent, as might be expected. One who has entered the record and who figures directly in the history of the valley, however, is Francisco Reyes. Reyes arrived in California from Mexico in 1787, built an adobe in the pueblo of Los Angeles, and was alcalde (mayor) there between 1793 and 1795. He also built a house on an illegal ranch he was operating in the San Fernando Valley at this same time. He and one Comelio Avila kept their livestock at this ranch, which shortly thereafter became the foundation for the Mission San Fernando (Engelhardt 1927:140-141; 1930:509-513). The early Euro-American history of the San Fernando Valley is necessarily tied to the development and decline of this mission, even though it does not fall within the current study area, per se.

The decision to build a mission in the San Fernando Valley was reached in 1797, when ecclesiastical authorities recognized a need for a mission intermediate between San Gabriel and San Buenaventura (Ventura). An expedition was sent out at that time to locate a favorable spot for such an establishment. After scouting locales in the Simi, Santa Clara and Conejo Valleys, Reyes' Ranch with its nearby Fernandeño village of *Achois Comihabit* (rightly, probably "*Comihangna*") was visited and chosen as the preferred spot. Father Vicente de Santa Maria, chaplain to this expedition, noted that: "To this village belong, and they acknowledge it, the gentiles of other rancherias, such as *Taapa, Tacuyama, Tucuenga, Juyunga, Mapipinga*, and others, who have not affiliated with Mission San Gabriel" (quoted in Engelhardt 1927:5). Even at this early date, then, it appears that Native American settlement had been disrupted, and inhabitants of distant villages were congregating in newly formed aggregations. This set the stage for population distribution during the

mission period in the valley, per se: the further aggregation of Fernandeño, Tataviam and some Chumash peoples into a single settlement, based on a corporate system of agricultural production.

The dedication and then construction of the mission followed closely thereafter. On September 8, 1797, Father Fermin Lasuen dedicated the mission and baptized ten children (Engelhardt 1930:513). It was named San Fernando Rey in honor of King Ferdinand V, at the request of the Spanish king, Charles IV (Thompson and West 1880:104). Father Francisco Dumetz (1743 - 1811) served as first pastor at San Fernando.

Dumetz had been born in Majorca, Spain, and first arrived in California in 1771, bringing with him the first sheep introduced into Upper California. He presided over nearby Mission San Buenaventura from 1782 to 1797 before being put in charge of San Fernando. At San Fernando he was responsible for erecting the initial buildings, building the second church and quadrangle and the so-called Christian village, and for starting the third and final church, begun in 1804. He was reassigned to Mission San Gabriel in 1805, where he died in 1811 (Geiger 1969:66-69).

Dumetz established a stable institution which expanded in size and influence over the next few years. This included the development of the Asistencia (or sub-mission) of San Francisco Xavier, in the Santa Clara Valley, in 1804. This served both ecclesiastical and economic needs, as it provided a religious center for Native Americans living in the Newhall area, as well as access to additional grazing and farming lands for the growing mission population. Growth and stability of the mission was not, however, continuous during the Spanish period. In 1810 Mexico declared independence from Spain. This was not gained for another eleven years but, during this decade, economic conditions deteriorated radically. Soldiers and priests, for example, were essentially not paid, and the missions were forced to contribute to the upkeep of the local Mexican government (Englehardt 1927:35). Because of this disruption the mission system to begin to fray, although circumstances deteriorated much more rapidly once independence was achieved.

The Mexican Period (A.D. 1821 - 1848)

With Augustin de Iturbide's *Plan de Iguala*, proclaimed on September

16, 1821, Mexico finally achieved independence from Spain. Shortly prior to independence, however, a new pastor was assigned to Mission San Fernando, Father Francisco Gonzalez de Ibarra. Gonzalez de Ibarra had the unfortunate luck to run the mission during its greatest and most devastating period of decay: 1821 to 1835.

Gonzalez de Ibarra (1782 - 1841) was born in Navarre, Spain, arriving in America in 1819. He was first assigned to Monterey in 1820 and was transferred to San Fernando in 1821. Prior to his arrival, Mission San Fernando had been responsible for 2442 baptisms from the period of 1797 to 1820, averaging over 105 per year. During Gonzalez de Ibarra's 14 year tenure baptisms totaled only 412, dropping to an average of less than 30 per year. Similarly, the mission's herds of cattle dropped from a high of about 12,000 to approximately 7,000; while sheep were reduced from 7,600 to around 4,000 (Geiger 1969:110-111). These conditions resulted from the increasing financial demands made by the civil government on the missions and the resulting stress this placed on the indigenous population. Shortly after Mission San Fernando was secularized by the government in 1834, Gonzalez de Ibarra was so dispirited by these conditions that he fled California for Sonora, abandoning his ecclesiastical post without permission from his superiors. Although this act was sufficiently grievous to warrant de-frocking, his superiors recognized the very unusual circumstances which precipitated it and, following the reversal of secularization, allowed him to return to California where he eventually died, in good graces, at Mission San Luis Rey (ibid).

Gonzalez de Ibarra was, however, a good administrator regardless of the difficult circumstances under which he was given his charge. The result was that even in its decline Mission San Fernando was one of the healthier of the California missions, and so was coveted by civil authorities as the mission system waned. The first formal step in this process (aside from the increasing demands to provide financial support to the civil government and military) was an 1827 decree requiring the missions to define their lands and assets. The San Fernando Mission declaration listed its domain as stretching 10 leagues from Cahuenga to Triunfo and northwards for five leagues to Camulos on the west and San Francisco Xavier on the east. It also declared that it was raising wheat, corn and

beans and had about 6,000 cattle and 8,000 sheep at that date (Englehardt 1927:47).

The next formal action in the disbanding of the missions occurred in January, 1833, when Governor Jose Figueroa signed an act "secularizing", which is to say confiscating, the missions. Lt. Antonio del Valle was commissioned in 1834 to secularize San Fernando and, in 1835, was assigned to serve as mayordomo or administrator over its operations (ibid:50). He inventoried the mission holdings, recording that they included $5,700 in various assets, 32,000 grapevines and 1600 fruit trees, with a native population of 541. Del Valle also recorded that considerable difficulty was occurring with this native population, who according to him were responsible for constant thefts of horse and cattle (ibid:50-51). The Native American population had apparently recognized by this time that their best recourse was to retreat to more remote spots, taking with them some of the livestock and produce which they had spent their lives raising and growing. Still, some of them stayed on as the mission was reduced to the status of a parish. In 1839, when the Asistencia de San Francisco Xavier was removed from the mission and awarded as a rancho to del Valle, San Fernando still retained 416 Indian inhabitants, all of whom presumably worked as agricultural laborers for the new secular administrators (ibid:59).

Further dissolution of the mission system occurred in 1845 when Governor Pio Pico proclaimed that mission lands would either be sold by the civil government, or leased to individuals for commercial use. Pico's brother Andres and Juan Manso were awarded a nine year lease for San Fernando, at a term of $1,100/year, in 1846 (ibid:64-65). However, the ensuing war with the United States put a financial strain on the government, requiring Pico to sell the leased San Fernando mission lands to Eulogio de Celis for $14,000, with the nine year term of Andres Pico and Manso still intact (Robinson 1961:12). Total land included in this sale was 13 square leagues, exceeding any previous land transfer in California because this sale was not constrained by the size restrictions placed on the award of rancho grants.

The American Period (A.D. 1846 -)

The American Period brought great changes to the San Fernando

Valley but, unlike other regions within suburban southern California, this did not involve a continuous and relatively quick evolution from a large mission tract to the modern suburbanized and urbanized valley which exists today. For the southern half of the valley, in particular, the history of change in land-use comprised an initial phase of large-scale agricultural use (1846 - 1888) followed by a period of subdivision into small farms and ranches (1888 - 1940), followed ultimately by the suburban development evident today (1940 - present). The northern and especially northwestern areas, including the study area *per se*, were developed much later. These phases may be considered in turn.

With the transition to U.S. control of California an initial governmental concern was the examination and, where appropriate, validation of preexisting rights to land ownership. A Lands Commission was appointed in 1851 to hear lawsuits concerning contested lands. Among the first of those heard involved the mission lands, resulting from an action instituted by Bishop Jose Alemany in 1853. The civil possession of Mission San Fernando was determined illegal by the commission, and the mission buildings and lands immediately surrounding them (about 170 acres) were patented back to the Catholic Church in 1862. By this point, however, the mission was essentially in ruin.

The remaining Ex-Mission San Fernando lands stayed in civil hands, specifically under de Celis' ownership, albeit he (or, more rightly, his heirs) did not receive clear title in the form of a US patent until 1873. Moreover, he sold an undivided half interest to Andres Pico in 1854 for $15,000. Pico continued to use the land for cattle ranching, as he had under the terms of his former lease with the Mexican government. Pico subsequently sold his holdings to his brother Pio in 1862. Pio Pico, like many other Californians, suffered greatly from the droughts of the 1860s, causing him to mortgage his property to a New York bank. In 1869 he sold these mortgaged lands to the San Fernando Farm Homestead Association for $115,000 (Dumke 1944:98-99; Jorgensen 1982:85). This group got the Ex-Mission lands partitioned from de Celis' heirs, taking as their share about 60,000 acres which constituted the southern half of the valley (Robinson 1961:21). This represented an investment of less than $2/acre for the area that would one-day become North Hollywood, Van Nuys, Reseda and Canoga Park.

The financier behind the San Fernando Farm Homestead Association was Isaac Lankershim, a Bavarian who had become rich as a grain farmer in northern California. Lankershim hired Isaac Newton Van Nuys to manage his newly acquired holdings, which they quickly put into livestock and then wheat production. Their first two years of farming were unsuccessful, largely because they had no ready means to ship their grain to port. The Southern Pacific Railroad, however, began the north-south rail route from Los Angeles to San Francisco in 1873 by laying 25 miles of track north out of Los Angeles. This first stretch of tracks (running through the area of modern Burbank) terminated at a townsite in the northern half of valley which was named San Fernando, after the mission. SPRR also extended a line from Los Angeles south to the port at Wilmington (Nadeau 1965:81-82). The establishment of the northern rail line directly led to the beginnings of development in the San Fernando Valley, albeit initially this was restricted to the northern half, some distance away from the East-West Transportation area study area.

The San Fernando line, still, provided the means for making Lankershim's large scale wheat farming economically successful. Initially, however, he and Van Nuys had to go to the effort and expense of constructing a wagon road across the Sepulveda Pass as a leverage to get the SPRR to give them a reasonable freight rate from their valley sidings to the wharves at Wilmington. Once these arrangements were worked out, truly massive farming began, with 10,000 acres seeded in wheat in 1875 (Nadeau 1965:89).

Lankershim's San Fernando Farm Homestead Association was succeeded by the Los Angeles Farming and Milling Company in 1880 in what looks largely like a paper transfer, name change, and minor reshuffling of investors; common usage still termed the property the "Lankershim Ranch" into the early 1900s (e.g., *Los Angeles Daily Times*, September 24, 1909, page 1). Large-scale farming, intended for the world market, continued into the late 1880s, when the world wheat supply exceeded demand and the price per bushel began to decline steadily (Jorgensen 1982:82). This led to the second phase of the American land-use history of the valley: a shift from large scale agriculture towards sub-division and the development of small-holdings.

This process began in 1888 when Lankershim divided off and bought outright for himself 12,000 acres of the Los Angeles Farming and Milling Company holdings in the east end of the valley (extending west to about Whitsett Avenue). With this he created the Lankershim Ranch, Land and Water Company (Dumke 1944:99). With his son J.B. he subdivided this into small ranches and farms, selling them for $5 to $55 per acre. The population center for this development was a townsite located along the road running from Cahuenga Pass to San Fernando (near the corner of what is now Lankershim and Tujunga Blvds.), which they named Toluca. Subsequently the name of this town was changed to Lankershim and finally North Hollywood, when the local merchants decided there was something to gain by hitching their name-recognition to the developing allure of Hollywood. Toluca failed to grow into a large settlement during this early period, although a hotel, school, some stores and several houses were built at this locale shortly after it went on sale (ibid). Still, Lankershim realized $200,000 in land sales in 1888, and the value of his land apparently went up rapidly. A front-page advertisement in The Times of April 7, 1889, for example, states the following:

> LANKERSHIM RANCH LAND AND WATER COMPANY - 12,000 Acres: Finest San Fernando Valley Lands, 10 Miles Northwest of Los Angeles on Main Line of the Southern Pacific Railroad, Now Offered in Tracts of 5, 10, 20 and 40 acres, $35 to $165 per acre! Terms, One-quarter cash. Balance 1, 2 and 3 years. Deferred payments bear interest at 7 per cent per annum.

Similar subdivisions were established in other parts of the valley, notably, the northern half, but one factor greatly impeded the development of small farms: an absence of water.

Due to complicated water rights, ultimately tied to the founding of the pueblo of Los Angeles under Spanish law, an 1881 California Supreme Court Decision held that all of the water in the San Fernando Valley belonged to the City of Los Angeles. Valley residents were therefore denied access to the surface water in the Los Angeles River, and they were denied the right to drill wells. Confounding matters even more, because these farms were situated outside of then-existing City of Los Angeles

limits, the city could not legally sell water rights to them. Although Los Angeles was relatively slow to enforce its rights, between 1900 and 1905 it instigated proceedings against 200 valley farmers and ranchers (Jorgensen 1982:140-141). This circumstance had a very simple effect: it further delayed the development of the San Fernando Valley relative to surrounding regions of southern California, such as the nearby San Gabriel Valley, until water became available. This effectively occurred in 1913, when the Owens Valley Aqueduct was completed, making water for the general Los Angeles region plentiful. In order to gain access to this water the inhabitants of the San Fernando Valley annexed themselves to the City of Los Angeles shortly thereafter. Note, however, that the Chatsworth Ridge Estates study area lies a short distance west of the limits of incorporated Los Angeles, signaling the fact that it was peripheral to these early historical developments.

As is usually the case, a small group of leading citizens recognized, in advance, the economic potential of the valley once water became widely available, and so laid plans for its development. A syndicate of 30 men, including notable figures such as Harry Chandler and Harrison Gray Otis, founded the Los Angeles Suburban Homes Company by purchasing the 47,500 acres Lankershim Ranch from the Los Angeles Farming and Milling Company in 1909. (This was effectively all the land the company retained after divesting 12,000 acres to Lankershim for his Lankershim Ranch, Land and Water Company development). Their price was $2.5 million. They were led by H.J. Whitley, known as the "father of Hollywood", who served as general manager for the syndicate (*Los Angeles Daily Times*, September 24, 1909, page 1; Robinson 1961:37).

Whitley was responsible for the development of Hollywood in 1903, but even earlier had come to Los Angeles with a history of successful land development. Born in Canada, he started his American career as a professional townsite developer for the Rock Island and Northern Pacific Railroad, and later created a series of successful banks in Oklahoma prior to his arrival in California (Jorgensen 1982:144). His involvement with (and the activities of) the other members of the Los Angeles Suburban Homes Company extended beyond the San Fernando Valley, however: shortly after starting the development of the valley they purchased the 270,000 acres Tejon Ranch from Truxtun Beale (son of General Edward F.

Beale) for $3 million, and were involved in a series of similar purchases at Dana Point, and in New Mexico and Baja California (Crowe 1957:118). Whitley's recognition of the development potential of the San Fernando Valley, however, apparently foreshadowed even that of his fellow syndicate members. While developing Hollywood he had the foresight to recognize the importance of Cahuenga Pass as the primary access into the valley. As a result, Whitley purchased title to the Cahuenga Pass years before the syndicate was established, thereby controlling commercial development in the "gateway to the valley".

The boundaries of the syndicate's valley purchase started at the western side of the Rancho Ex-Mission lands (i.e., Encino) and ran eastward to Lankershim's development (at Whitsett Ave.); north to Roscoe Blvd; and south to the crest of the Santa Monica Mountains. According to a period account, the property was 15 miles long and 6.5 wide (*Los Angeles Daily Times*, September 24, 1909, page 1). The map for this subdivision was filed on March 14, 1911, and it was designated "Tract 1000", the largest subdivision in Los Angeles County history. The principles in the syndicate reserved certain portions of the tract for their personal development and/or use, with their personal parcels ranging up to 1000 acres in size. Whitley and Chandler both took only 500 acres each, located near the corner of modern Van Nuys Blvd. and Sherman Way. Whitley built his own mansion on this land, a three-story Italianate home, which faced modern Van Nuys Blvd. and was located just south of the town center of Van Nuys. In later years it served as the Praisewater Funeral Home (Jorgensen 1982:150).

Three townsites were laid-out by Whitley: Van Nuys; Marian (now Reseda); and Owensmouth (Chatsworth), due south of the study area. Critical to the development of these, beyond water, was transportation or, more precisely, accessibility. This appeared in a series of forms. First, the SPRR constructed an east - west rail line across the valley in the late 1890s. Known as the Chatsworth Park Branch, it was part of the effort to create a coastal route through Simi Valley, Ventura and ultimately Santa Barbara before heading north (cf. Cameron 1963). One outcome of this line is that it made the townsite of Owensmouth, in the northwest corner of the valley, easily reached, but it also opened-up all of Whitley's development area. The Chatsworth Park Branch followed a route west from Lankershim

essentially along what is now Chandler Blvd., heading northwest in the vicinity of Coldwater Canyon to skirt the modern location of L.A. Valley College, and then due west following a route that runs parallel to and a short distance north of modern Oxnard Blvd. This is one of the alternative routes for the current proposed project, and still constitutes a rail right-of-way.

The second improvement in transportation was the construction of an all-weather east - west roadway, making the valley accessible to cars, horses and wagons and, ultimately, the electric trolley. Whitley was responsible for the construction of such a thoroughfare, then known as Sherman Way, which comprised the first real road in the valley beyond the existing north - south route (Lankershim Blvd.) which ran from Cahuenga Pass to San Fernando. Sherman Way was constructed in 1911 (Jorgensen 1982:122).

A period account, published in *Sunset Magazine* in 1914, describes Whitley's Sherman Way in glowing (if not florid) terms, pointing to the fact that it represented a state-of-the-art transportation area and required an almost unheard of investment for that time. As this early author notes:

> [Whitley] made it two hundred feet wide, with the trolley in the center and a drive way on either side. He laid an oil macadam pavement for general traffic and an asphalt concrete pavement for exclusive automobile traffic, built concrete curbs for sixteen miles of the twenty-two...He laid out a strip of parking along the trolley tracks, other fifty-foot strips of parking on either side. Then he proceeded to embellish the highway. First he planted rosebushes five feet apart, four rows of them on the main boulevard, two rows on the connecting links, fifty miles of roses in all. Not the ordinary hedge variety but blooded stock...Behind the roses he planted rows of exotic shrubs, oleanders red and white...Behind the bushes he set out rows of magnolias from the south, of flowering acacias from Australia, alternating with stately fan-palms from the Canaries. Next he jumped to India, to the shoulders of the Himalayas, planting a double row of the deodars made famous by Rudyard Kipling. Behind the silvery gray foliage of the deodars he found room for more ornamental shrubs, and at the outer edges of the broad parkings he provided somber

> Monterey pines as a fitting background. Then he rested.
>
> If there is, anywhere, a highway that exceeds Whitley's twenty-two mile boulevard in width, length and in variety and character of its arboreal ornamentation, it has succeeded effectively in hiding its light under a bushel basket.
>
> (Woehlke 1982 [1914]:125)

Further enhancing the effect of this broad highway, Whitley lighted its entire length with "ornamental electroliers", putatively costing $100,000 alone to install. Having established such a standard of elegance for the boulevard, no "pioneer shacks" were allowed to be built anywhere in its vicinity (ibid). And with the initiation of the Pacific Electric Company's "red car" service, running 16 trains a day from Van Nuys to Hill St. down the middle of Sherman Way, the San Fernando Valley was finally opened for residential development.

The route of this twenty-two mile grand boulevard ran from Lankershim west along what is now known as Chandler Blvd. to Van Nuys Blvd. There it headed north to modern Sherman Way, where it again proceeded west, thereby connecting the townsites of Van Nuys, Reseda and Chatsworth with Lankershim. The original design of this roadway is still evident in the divided roadbed found in Chandler and Van Nuys Blvds. and Sherman Way, as well as the retained name of Sherman Way itself. The eastern segment of one alternative route for the current project follows the route of Whitley's boulevard from Lankershim west along Chandler approximately to Coldwater Canyon.

The combination of available water and accessibility finally even if belatedly opened up the San Fernando Valley for occupation. According to the 1910 census the valley had only about 3300 occupants; 65% of these were living in the older and more established town of San Fernando; about 26% resided in Lankershim; and the remaining 9% were residents of Chatsworth. But by 1940 population had exceeded 200,000 (Jorgensen 1982:90, 153), resulting in an average growth rate of almost 7,000 new inhabitants per year during this 30 year period. Much of this growth was precisely in those portions of the valley developed by Whitley.

Van Nuys was the focus of this initial spurt of growth, as it was the first

project initiated by the syndicate. Town lots in Van Nuys were put on the market in 1911, while the open areas between this townsite and Reseda and Chatsworth were sold as small ranches and farms. These, in fact, were the primary emphasis of the development, which was marketed as a rare opportunity to obtain farming land within close proximity to Los Angeles. A period account (*Los Angeles Daily Times*, September 24, 1909, page 1) reporting the initial sale of the Lankershim Ranch to the syndicate, for example, made the following announcement:

> CHANCE FOR SMALL RANCHERS
>
> In the last two or three years lands of similar nature in this section of the State have been bringing prices so high as to oblige persons seeking acreage to go up into the fertile San Joaquin or Imperials Valleys...Within a very short time, according to the plans of the new developers, opportunity will be afforded for thousands to obtain at a fair price such lands as they desire, close to Los Angeles - so close that a trolley car could take the run in from thirty-five to forty minutes, the time dependent on the portion of the big tract set upon...The soil is uniformly rich and deep and of an alluvial character. It is declared to be of the best in Southern California for alfalfa, small fruits, and diversified farming. It is the largest single body of fertile, level land in this part of the State, and said to be the largest single body of land lying so near a big city, in the United States.

Chicken ranches were particularly common during this period, with the valley referred to as the "Petaluma of the South", in reference to this northern California town's large poultry industry (Jorgensen 1982:151).

The valley retained its primarily rural flavor through the Depression, serving as a region of small farms and fruit orchards (Robinson 1961:41). The Depression and subsequently World War II then further delayed the development of the valley. It was not until after the war that the San Fernando Valley was fully transformed into the large area of suburbs that it is today.

Although the early creation of Van Nuys, Reseda and Chatsworth resulted in a series of nodes of early development that were dispersed across the

valley, in some respects the overall development of the valley still followed a south to north and east to west trajectory, with the northern and western sides being the last to fully suburbanize. The southern foothills of the Santa Susana Mountains, which include the Chatsworth Ridge Estates study area, is a good example of this fact with this current project area still undeveloped. Because of its location away from the open flats of the valley were all early development occurred, it thus fell outside of the area of historical development and significant use.

3.0
ARCHIVAL RECORDS SEARCH

An archival records search of archaeological site maps, records and files was conducted at the UCLA Institute of Archaeology, Archaeological Information Center (AIC) by the AIC staff. This was intended to determine whether the Chatsworth Ridge Estates study area had been previously surveyed by archaeologists, and/or whether archaeological sites had been recorded on it. The complete results of this archival records search are included here as Appendix A.

Site files at the AIC indicate that twelve previous investigations had been conducted within or adjacent to the study area although the study area in its entirety had never been systematically surveyed. The two most pertinent of these previous studies were conducted in 1990 and covered a total of 99 acres in the southeastern and south-central portions of the property.

As a result of these and other studies, four prehistoric and three historical (Euro-American) archaeological sites had been recorded within the study area; an additional prehistoric site is located off-property but is believed to potentially extend into the study area (see Figure 2). These previously recorded sites, and the work that has been conducted on them (Bissell and Becker 1990), are as follows:

1) CA-LAN-209 was first recorded in 1978 by R. L. Pence and was subsequently rerecorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. At that time, the site was estimated to be approximately 400 by 300 meters in size, and was described as a large habitation locale (camp) with midden soils, three rock shelters and cupule petroglyphs on one large sandstone outcrop.

This site was originally recorded to the south of the study area. During the 1990 rerecording, however, the northern edge of CA-LAN-209 was argued to extend onto the southern end of the study area; specifically involving the three rockshelters and cupule-covered outcrop, which were recorded as part of the site area. It

was also noted that a large portion of the site had apparently been destroyed by the construction of Highway 118. Hence, only a portion of the site still exists, and a part of this may fall within the study area.

2) CA-LAN-649 was rerecorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site measures approximately 240 by 80 meters and is a large stone tool quarry/workshop that contains numerous quartzite cores, flakes, hammerstones and scrapers. As recorded, the southwestern margin of CA-LAN-649 extends onto the study area.

3) CA-LAN-1740H was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site is an Euro-American solid fill bridge made of local sandstone blocks, mortar and concrete. It crosses Devil Canyon and is located within the southern portion of the Chatsworth Ridge Estates study area. Its age is unknown.

4) CA-LAN-1741H was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates as a scatter of Euro-American debris around the remains of three brick and mortar foundation pads. CA-LAN-1741H is located within the central portion of the subject property. Its age is uncertain although, due to the presence of iron rebar in the foundations, a post-World War II age seems most likely.

5) CA-LAN-1742H was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates and it consists of a stone retaining wall made of mortar and local cobbles, a concrete walkway, a fragment of fence line and introduced plants which include succulents and Eucalyptus. CA-LAN-1742H is located within the central portion of the study area.

In 1990 it was noted that the USGS topographical sheet showed a structure at this location, which had been demolished at the time of recording. This dates this structure to sometime before 1952 but after 1941, the date of the previous topographical sheet. The structure is also shown on the 1969 photo revision of the 1952

map, indicating that the destruction of it occurred between 1969 and 1990. It seems most likely that the structure was a post-World War II house or cabin of some kind. In 1990, this location was also noted as containing a substantial amount of contemporary construction trash and rubbish.

6) CA-LAN-1743 was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site measures approximately 10 by 10 meters and is believed to be a small, sparse lithic scatter consisting of four cultural items. CA-LAN-1743 is located within the southern portion of the study area.

7) CA-LAN-1744 was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site measures approximately 30 by 5 meters and appears to be another small, sparse lithic scatter, in this case consisting of only three cultural items. CA-LAN-1744 is located within the central portion of the subject property.

8) CA-LAN-1745 was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site measures approximately 15 by 10 meters and is apparently a third small, sparse lithic scatter, with a surface assemblage estimated at approximately 15 cultural specimens. CA-LAN-1745 is located within the central portion of the Chatsworth Ridge Estates.

Historical maps, consisting of the 1903 and 1941 USGS Santa Susana 15' topographical quadrangles, were also examined in an effort to identify historical structures or features that might have existed on the property. None were found to exist within the study area, per se, although there was development within the general vicinity by 1941, including the establishment of Twin Lakes Park, south of the study area..

4.0
ARCHAEOLOGICAL FIELD SURVEY

4.1 Field Methods

An intensive Phase I surface survey of the Chatsworth Ridge Estates study area was conducted by D.S. Whitley, Ph.D., and J.M. Simon between May 1 and 15, 2000. This was intended to assess the current status of the study area, to locate and record previously undiscovered archaeological sites, is any, and to assess the status of previously recorded archaeological sites.

Field procedures involved spacing the crew at approximately 15 to 20 meter intervals and then walking the property in transects, generally following the contours of the local topography. The groundsurface was examined during these transects to identify archaeological specimens in the form of worked artifacts, or archaeological indicators, which might consist of specimens of shellfish, bone or waste lithic material resulting from the tool-making process.

During the survey special attention was paid to geomorphological conditions that affect the preservation of archaeological remains. Road or bank-cuts that expose subsurface stratigraphy, for example, along with stable geomorphic and depositional environments, were carefully examined for evidence of cultural remains. Given the geomorphology of the study area, these included the foots of slopes, as likely spots for subsurface deposition, and knoll tops and flat open ridges as areas also likely to contain cultural resources. Furthermore, rodent backdirt piles were carefully examined inasmuch as they can reveal the presence of buried archaeological deposits. In contrast, slopes of greater than about 25% grade, where erosional and gravitational forces would preclude the preservation of archaeological remains, were less intensively examined, both because of the negligible possibility that sites might be present on them, and for the safety of the crew members. In general terms, these areas were the steep canyon sides of Devil and Browns Canyons. In both cases, however, rock outcrops which might contain rockshelters or caves were examined for cultural remains.

4.2 Field Results

The Chatsworth Ridge Estates study area was found, in general, to consist of relatively undisturbed areas of native vegetation. Disturbance was primarily restricted to the mesa-like area towards the northern end of the parcel -- so-called Deer Lake Highlands -- where a series of dirt and paved roads and structures are or were once present. Currently, only one standing structure, an occupied house, is present on the property.

Field survey resulted in, first, the relocation and preliminary assessment of the previously recorded sites on the property. Our observations on and evaluations of these sites follow:

CA-LAN-209 - The portions of this site that are presumed to fall within the Chatsworth Ridge Estates study area were relocated and evaluated. However, we note that the precise location of the property line at this particular spot is not clear and a only few yards variance one way or the other may place a portion of the site inside or outside of the study area.

Those portions of the site currently thought to fall within the study area consist of three rockshelters and a boulder containing approximately 15 cupules and incised lines, all found within a small boulder field. Lithic debitage was noted within the rockshelters and intervening between them. A subsurface deposit is possibly present in and around these shelters. These site components appear to be intact and may be archaeologically significant. Again, however, precise mapping by a surveyor will be required before we can be certain that this site is within the Chatsworth Ridge Estates study area.

CA-LAN-649 - The southwestern portion of this site was confirmed to extend into the study area, as indicated by surface lithic artifacts consisting mostly of quartzite flakes and cores. The site is a quarry/workshop based on the exploitation of locally available metavolcanic and especially quartzite cobbles. It appears to be intact.

CA-LAN-1740H - This is a small solid fill-core, concrete and sandstone block bridge. No indications of the bridge's age could be found at the site, but it gives the appearance of potentially being old (i.e., pre-

twentieth century). In particular, cut sandstone blocks have been set with what appears to be lime mortar. Although it has suffered some damage from flood waters, it is primarily intact.

CA-LAN-1741H - This Euro-American site was relocated in the central part of the study area. As when originally recorded in 1990, it consists of red brick and concrete foundation pads that are rebar-reinforced, along with a scatter of rubbish and trash. Although the 1990 site record for this site states that "There is very little visible material on which to judge the age of the deposit," in fact this is a slight misstatement. The "artifactual remains" that are present at this location are easily datable, and they are all essentially contemporary in age. Although the age of the original constructions at this location may then very narrowly meet the minimum age criterion of 50 years (as would literally thousands of houses in the San Fernando Valley), this site clearly lacks integrity from an architectural perspective, having been reduced to foundations in the last few decades. Moreover, we could find no evidence of a historical archaeological deposit at this deposit, nor evidence sufficient to presume that such might be present.

CA-LAN-1741H does not, in our opinion, meet the criteria to qualify it as an archaeological site. And even if it arguably did meet such criteria, we can find no grounds for assuming that it somehow would meet the test of significance or uniqueness.

CA-LAN-1742H - This second Euro-American site, likewise in the central part of the study area, was also relocated and examined. It consists of a stone retaining wall, concrete walkway, part of a fence and remnant ornamental vegetation. "Cultural remains" present on this site, in addition to these features, are limited to contemporary trash and debris.

As with the previous site, it is at best dubious whether CA-LAN-1742H meets the minimum age criteria for eligibility as an archaeological resource, especially given that all associated "artifacts" represent contemporary rubbish. We could find no evidence to suggest that this location qualifies as a historical site, nor that it could meet the tests of significance or uniqueness.

CA-LAN-1743 - This site is a small, sparse lithic scatter located

within the southern portion of the study area. It was relocated and found to be intact.

CA-LAN-1744 - A second small, sparse lithic scatter was also recorded in 1990, in this case within the central portion of the study area. It was found to be intact when relocated during the current survey.

CA-LAN-1745 - The third small, sparse lithic scatter recorded in 1990 was also relocated. It consists of a quarry workshop and it is intact.

In addition to these previously recorded sites, two new archaeological site locations were identified and recorded. Sites records for these two new localities are included in Appendix B. They may be described as follows:

Archaeological site WS-1 - This site was recorded on 2 May, 2000, by Joseph M. Simon of W & S Consultants. The site measures approximately 150 by 75 meters and is a large stone tool quarry/workshop that contains a low density scatter of quartzite and volcanic cores, flakes, hammerstones and scrapers. WS-1 is located within the northern portion of the subject property. It appears to be intact.

Archaeological site WS-2 - The second site discovered on the Chatsworth Ridge Estates study area was also recorded on 2 May, 2000. The site measures 60 by 30 meters and consists of a small stone tool quarry/workshop that contains a low density scatter of quartzite and volcanic flakes. WS-2 is located within the northern portion of the subject property. It is intact.

5.0
CONCLUSIONS AND RECOMMENDATIONS

An intensive Phase I archaeological survey was conducted for the Chatsworth Ridge Estates study area, Los Angeles County, California. This involved background studies reviewing the prehistory, ethnography and historical land-use of the study area; an archival records search to determine whether any prehistoric or historical archaeological sites had been recorded or were known to exist on this property; and an intensive on-foot survey of the study area.

Background studies demonstrated that portions of the Chatsworth Ridge Estates project area had been previously surveyed and that eight sites had been recorded on it. Three of these sites were thought to be historical in nature. These are CA-LAN-1740H, -1741H and -1742H. The remaining five previously recorded sites, designated CA-LAN-209, -649, -1743, -1744, and -1745, are all prehistoric. On-foot survey of the study area resulted in the relocation and preliminary assessments of each of these sites. During this survey, two additional prehistoric archaeological sites were identified and recorded; these currently have the temporary designations of WS-1 and -2.

The seven prehistoric archaeological sites in the Chatsworth Ridge Estates study area are all intact and have the potential to be significant. Two of the three previously recorded historical sites, CA-LAN-1741H and -1742H, consist of the foundations of demolished structure that are associated with contemporary trash and debris. They appear to be post-World War II in age. While they possibly may just barely meet the minimum age requirement of 50 years for historical resources, as specified by CEQA, they are entirely lacking in integrity and thus have no significance from an architectural perspective. Moreover, they do not have any recognizable archaeological value. Based on these considerations, they are not considered significant cultural resources. The last historical site, CA-LAN-1740H, on the other hand, is a sandstone and mortar bridge which may be significant from historical, architectural or engineering perspectives.

5.1 Recommendations

Based on the presence of archaeological sites designated CA-LAN-209, -649, -1740H, -1743, -1744, and -1745, and W&S-1 and -2, development of the Chatsworth Ridge Estates property has the potential to result in adverse impacts to cultural resources. Following the guidelines of the California Environmental Quality Act (CEQA), we therefore recommend that Phase II test excavations and determinations of site significance be conducted on the seven prehistoric sites on the property, while a documentation and evaluation be completed on CA-LAN-1740H, the historical bridge. Such a program should be conducted in order to provide baseline data relative to the integrity and importance of each of these sites, from which final determinations of significance can be made, and final recommendations for the management of these resources can be offered.

6.0
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7.0
FIGURES

1 - Chatsworth Ridge Estates study area

2 - Archaeological sites within the study area

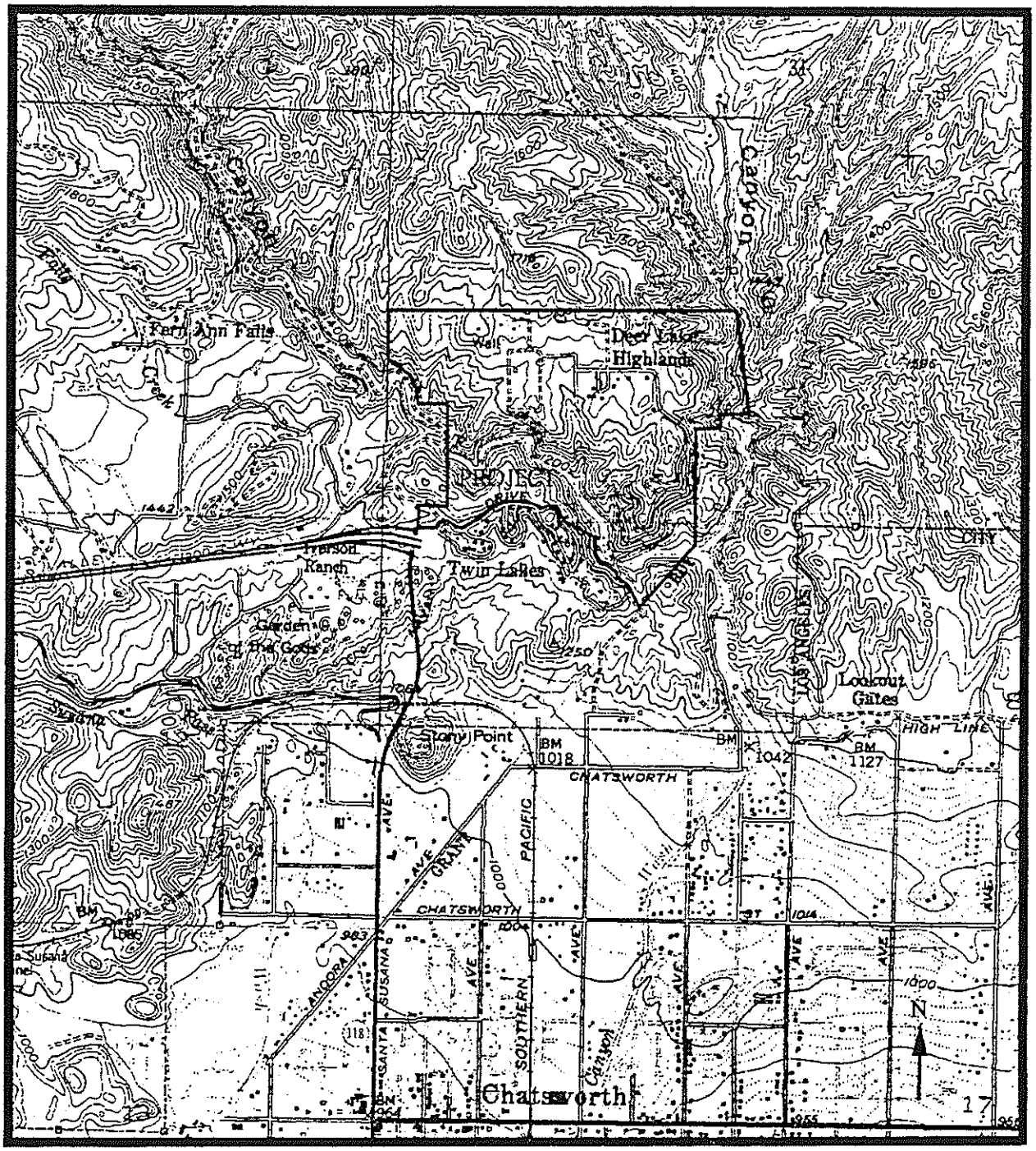


Figure 1: Project Location

Scale: 1 in. = 2000 ft.

Source: Oat Mountain, CA. 7.5' USGS QUAD.

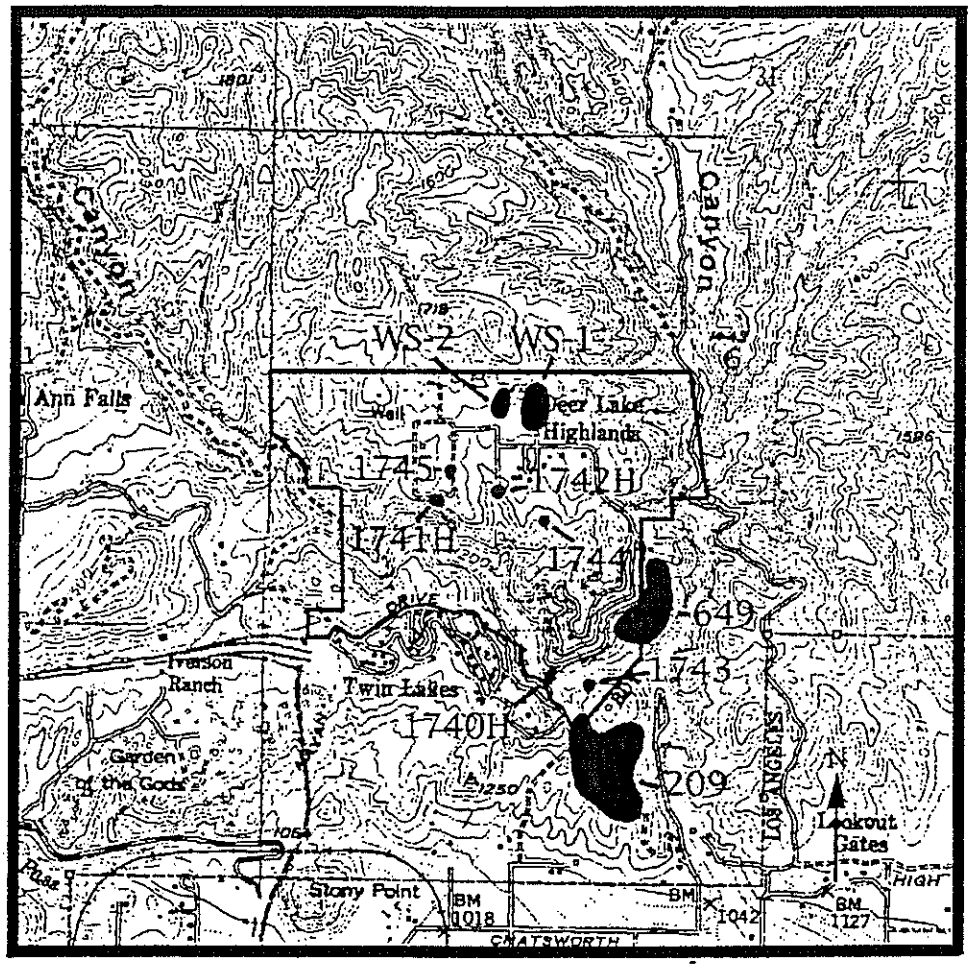


Figure 2: Site Locations

Scale: 1 in. = 2000 ft.

Source: Oat Mountain, CA. 7.5' USGS QUAD.

8.0
APPENDIX A: ARCHIVAL RECORDS SEARCH

South Central Coastal Information Center
California Historical Resources Information System
UCLA Institute of Archaeology
A163 Fowler Building
Los Angeles, California 90095-1510
(310) 825-1980 / FAX (310) 206-4723 / sccic@ucla.edu
www.sscnet.ucla.edu/ioa/labs/sccic.html

Los Angeles
Orange
Ventura

Joe Simon
W and S Consultants
2242 Stinson Street
Simi Valley, California 93065

March 27, 2000

RE: Records Search request for the Chatsworth Ridge Estates in Chatsworth, Los Angeles County, California

Dear Mr. Simon,

As per your request received on March 27, we have conducted an expedited records search for the above referenced project. This search includes a review of all recorded historic and prehistoric archaeological sites within a one-half mile radius of the project area as well as a review of all known cultural resource survey and excavation reports. In addition, we have checked our file of historic maps, the National Register of Historic Places, the California State Historic Resources Inventory, the California Points of Historical Interest, and the listing of California Historical Landmarks in the region. The following is a discussion of our findings.

PREHISTORIC RESOURCES:

Twenty-five prehistoric sites have been identified within a one-half mile radius of the project area. Three of these prehistoric sites are located within the project area (see enclosed map and site list).

HISTORIC RESOURCES:

Three historic archaeological sites have been identified within a one-half mile radius of the project area. All three of these historic sites fall within the project area (see enclosed map and site list).

Inspection of our historic maps – Santa Susana (1903 and 1941) 15' series – indicated that in 1903, the Southern Pacific Railroad was in place. A light street grid pattern was shown. There was a sparse scattering of structures. Devil Creek figured prominently. By 1941, urban development intensified and agricultural activity increased. Numerous structures were in place. State Routes 27 and 118 were shown. Twin Lakes Park, Iverson and Brandeis Ranches were all in place.

The California State Historic Resources Inventory lists no properties that have been evaluated for historical significance within a one-half mile radius of the project area.

The National Register of Historic Places lists no properties within a one-half mile radius of the project area.

The listings of the California Historical Landmarks (1990) of the Office of Historic Preservation, California Department of Parks and Recreation, indicate that there are no California Historical Landmarks within a one-half mile radius of the project area.

The California Points of Historical Interest (1992) identifies no properties within a one-half mile radius of the project area.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS:

Forty-two surveys and/or excavations have been conducted within a one-half mile radius of the project area. Twelve of these investigations have been conducted within or adjacent to the project area (see enclosed map, report list, and bibliography).. Nine additional investigations are located within the Oat Mountain quadrangle and potentially within the project area. These investigations are not mapped due to insufficient locational information.

Please forward a copy of any reports resulting from this project to our office as soon as possible. Due to the sensitive nature of site location data, we ask that you do not include record search maps in your report. If you have any questions regarding the results presented herein, please feel free to contact our office at (310) 825-1980.

Invoices are mailed approximately two weeks after records searches are completed. This enables your firm to request further information under the same invoice number. Please reference the invoice number listed below when making inquires. Requests made after invoicing will result in the preparation of a separate invoice with a $15.00 handling fee.

Sincerely,

Janette Dinishak
Information Center Staff

Enclosures:

(X) Map
(X) Bibliography
(X) Report and Site Lists
(X) Confidentiality Form
( ) Invoice # 8462

INV# 8462 Oat Mountain Quadrangle

ITEMID: LA14 **DATE:** 1973 **PAGES:** 3

AUTHOR: Kelly, Roger

FIRM: NORTHRIDGE Archaeological RESEARCH CENTER

TITLE: Assessment of THE Archeological ResourceS and THE Impact of DEVELOPMENT OF HIGHWAY 118 FROM DESOTO AVE. TO THE SAN DIEGO FREEWAY IN THE SAN FERNANDO VALLEY

AREA: 7 li mi

SITES: none

QUADNAME: OAT MOUNTAIN
SAN FERNANDO

MEMO:

ITEMID: LA1584 **DATE:** 1986 **PAGES:** 60

AUTHOR: LOVE, BRUCE

FIRM:

TITLE: Archaeological Investigations AT Tentative TRACT 42353, INDIAN FALLS ESTATES, LOS ANGELES COUNTY, CA (SITES LAN-809, LAN-810, LAN-811, LAN-814, LAN-879)

AREA: 1 ac

SITES: CA-LAN-809, LAN-811, LAN-814, LAN-879

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA160 **DATE:** 1988 **PAGES:** 120

AUTHOR: Dames and Moore

FIRM: DAMES & MOORE

TITLE: Phase 1 Cultural ResourceS Survey FIBER OPTIC CABLE PROJECT BURBANK TO SANTA BARBARA, CALIFORNIA FOR US SPRINT COMMUNICATIONS COMPANY

AREA: 82 ac

SITES: CA-VEN-27, VEN-196, VEN-202, VEN-240, VEN-241, VEN-341, VEN-342, VEN-343, VEN-550, VEN-643, VEN-644, VEN-655, VEN-729, VEN-789, VEN-895H, VEN-916, VEN-917, VEN-918

QUADNAME: Burbank
Van Nuys

MEMO:

ITEMID: LA1744 **DATE:** 1988 **PAGES:** 13

AUTHOR: WHITE, ROBERT, AND L. WHITE

FIRM: AA

TITLE: Archaeological Survey and TEST EXCAVATIONS IN UNIT 18 of THE PORTER RANCH, LOS ANGELES COUNTY, CALIFORNIA

AREA: 75 ac

SITES: CA-LAN-664

QUADNAME: Oat Mtn.

MEMO:

ITEMID: LA1771 **DATE:** 1989 **PAGES:** 10

AUTHOR: Anonymous

FIRM: ETI

TITLE: DRAFT ENVIRONMENTAL Impact REPORT PORTER RANCH Land USE/TRANSPORTATION SPECIFIC PLAN

AREA:

SITES: CA-LAN-661, LAN-664

QUADNAME: Oat Mt.

MEMO:

ITEMID: LA2034 **DATE:** 1990 **PAGES:** 50

AUTHOR: Bissell, Ronald M., and Kenneth Becker

FIRM: RMW

TITLE: Cultural ResourceS RECONNAISSANCE of THE DEVIL CANYON PROJECT AREA, 44 ACRES IN CHATSWORTH, LOS ANGELES COUNTY, CALIFORNIA

AREA: 44 ac

SITES: CA-LAN-209, LAN-649, LAN-1740H, LAN-1741H, LAN-1742H CA-LAN-1743, LAN-1744, LAN-1745

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA2086 **DATE:** 1989 **PAGES:** 78

AUTHOR: Brown, Robert S.

FIRM: AA

TITLE: SUMMARY and Assessment of Archaeological ResourceS ON A 1300 ACRE PORTION OF PORTER RANCH PROPERTY IN THE SANTA SUSANA FOOTHILLS, LOS ANGELES COUNTY

AREA: 1300 ac

SITES: CA-LAN-660. LAN-665

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA2096 **DATE:** 1990 **PAGES:** 25

AUTHOR: Salls, Roy A.

FIRM: Northridge Center For Public Archaeology

TITLE: REPORT of Archaeological RECONNAISSANCE Survey of: A NINE ACRE PARCEL (A-1 ZONE) 21521 RINALDI STREET CHATSWORTH, CA 91311

AREA: 9 ac

SITES: none

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA2133 **DATE:** 1978 **PAGES:** 25

AUTHOR: Sanburg, Delmer, Jr., Dana Bleitz Sanburg, Frank Bleitz and Edith Bleitz

FIRM: Institute of Archaeology

TITLE: TWO ROCK ART SITES IN THE SAN FERNandO VALLEY: VEN-149 and LAN-357

AREA:

SITES: CA-LAN-357, VEN-149

QUADNAME: OAT MOUNTAIN
CALABASAS

MEMO: Same as VN901. This report is an article published in the Journal of New World Archaeology, V.II, No.4

ITEMID: LA2204 **DATE:** 1990 **PAGES:** 32

AUTHOR: Evans, Stuart A., and Ronald M. Bissell

FIRM: RMW PALEO Associates, INCORPORATED

TITLE: Cultural ResourceS RECONNAISSANCE of THE CONTINENTAL COMMUNITY PROJECT AREA, 55 ACRES IN CHATSWORTH, LOS ANGELES COUNTY, CALIFORNIA

AREA:

SITES: CA-LAN-209, LAN-649, LAN-1740

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA2230 **DATE:** 1990 **PAGES:** 10

AUTHOR: Romani, John

FIRM: Greenwood and Associates

TITLE: Cultural Resource Survey FOR THE PROPOSED RESIDENTIAL DEVELOPMENT OF TENTATIVE TRACT NO. 49567 LOCATED IN LOS ANGELES COUNTY, CALIFORNIA

AREA:

SITES: CA-LAN-881

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA26 **DATE:** 1974 **PAGES:** 7

AUTHOR: Major, Gary W.

FIRM: NORTHRIDGE Archaeological RESEARCH CENTER

TITLE: Assessment of THE Archeological ResourceS and THE Impact of DEVELOPMENT OF HIGHWAY 118 AREAS TO BE USED AS FILL SITES IN THE SAN FERNANDO VALLEY

AREA:

SITES: none

QUADNAME: Oat Mtn.

MEMO:

ITEMID: LA304 **DATE:** 1978 **PAGES:** 10

AUTHOR: Pence, R. L.

FIRM:

TITLE: Archaeological Assessment of A PROPOSED DEVELOPMENT IN CHATSWORTH, CITY OF LOS ANGELES, CALIFORNIA.

AREA: 14 ac

SITES: CA-LAN-209

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA306 **DATE:** 1978 **PAGES:** 20

AUTHOR: D'Altroy, Terence N.

FIRM: TERENCE N. D'ALTROY

TITLE: REPORT of THE POTENTIAL NEGATIVE Impact ON Archaeological RESOURCES OF THE PROPOSED DEVELOPMENT OF TENTATIVE TRACT NO. 34494, NORTH OF CHATSWORTH CALIFORNIA.

AREA:

SITES: CA-LAN-809, LAN-810, LAN-811, LAN-812, LAN-813, LAN-814, LAN-815, LAN-816, LAN-817, LAN-879, LAN-880, LAN-881, LAN-882, LAN-779, LAN-780

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA468 **DATE:** 1978 **PAGES:** 24

AUTHOR: Murray, John R.

FIRM:

TITLE: Archaeological Survey REPORT: A 17+/- ACRE PARCEL of PROPERTY LOCATED BETWEEN THE SIMI VALLEY FREEWAY AND TOPANGA CANYON BOULEVARD IN CHATSWORTH, CA.

AREA: 17 ac

SITES: ?

QUADNAME: Oat Mtn.

MEMO:

ITEMID: LA71 **DATE:** 1974 **PAGES:** 13

AUTHOR: Leonard, N. Nelson, III

FIRM: N. NELSON LEONARD, III

TITLE: AN Archaeological Evaluation of PROPOSED CHANGES IN THE USE OF LAN-357

AREA:

SITES: CA-LAN-357, LAN-209, LAN-89

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA76 **DATE:** 1975 **PAGES:** 12

AUTHOR: Rosen, Martin Dean

FIRM: UCLA AS

TITLE: Evaluation of THE Archaeological ResourceS and POTENTIAL IMPACT OF THE PROPOSED MODIFICATION OF AN AREA ADJACENT TO BROWNS CANYON, LOS ANGELES COUNTY INTO A SANITARY LANDFILL

AREA: 440 ac

SITES: none

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA762 **DATE:** 1979 **PAGES:** 8

AUTHOR: D'ALTROY, TERRANCE

FIRM: NARC

TITLE: Assessment of THE HISTORIC ResourceS PRESENT WITHIN Tentative TRACT NUMBER 34494, CHAT5SWORTH, CALIFORNIA

AREA: 850 ac

SITES: none

QUADNAME: OAT MOUNTAIN
OAT MOUNTAIN

MEMO:

ITEMID: LA81 DATE: 1975 PAGES: 28

AUTHOR: Rosen, Martin Dean

FIRM: UCLA AS

TITLE: Evaluation of THE Archaeological ResourceS FOR THE AREAWIDE FACILITIES PLAN FOR THE LAS VIRGENES MUNICIPAL DISTRICT, (MALIBU COAST, WESTERN SANTA MONICA MOUNTAINS, SOUTHERN SIMI HILLS), LOS ANGELES and VENTURA COUNTIES.

AREA:

SITES: CA-LAN-133, LAN-268, LAN-190, LAN-450, LAN-195, LAN-517, LAN-215, LAN-707, LAN-265, LAN-19, LAN-331, LAN-187, LAN-31, LAN-28, LAN-269, LAN-29, LAN-352, LAN-246, LAN-93, LAN-129, LAN-32, LAN-314, LAN-189, LAN-18, CA-VEN-8, VEN-12, VEN-123, VEN-176, VEN-177, VEN-180, VEN-181, VEN267, VEN-270, VEN-270

QUADNAME: TOPANGA, MALIBU BEACH, TRIUNFO PASS, NEWBURY PARK, POINT DUME, Santa Susana, Canoga Park, Oat Mountain, Calabasas, Thousand O

MEMO: Same as VN1457.

ITEMID: LA838 DATE: 1980 PAGES:

AUTHOR: Tartaglia, Louis James

FIRM: NARC

TITLE: AN Archaeological Assessment of THE WALKER CAIRN SITE (4-LAN 21), CHATSWORTH, CALIFORNIA

AREA:

SITES: CA-LAN-21

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA883 DATE: 1980 PAGES: 28

AUTHOR: Greenwood, Roberta S.

FIRM: Greenwood and Associates

TITLE: Cultural Resource RECONNAISSANCE of THE CADILLAC-FAIRVIEW PROPERTY IN CHATSWORTH, CALIFORNIA

AREA: 235 ac

SITES: CA-LAN-870, LAN-1097

QUADNAME: Oat Mtn.

MEMO:

INV# 8462 Oat Mountain Quadrangle

ITEMID: LA2366 **DATE:** 1976 **PAGES:** 46
AUTHOR: WESSEL, RICHARD L.
FIRM: NARC
TITLE: DRAFT MASTER ENVIRONMENTAL Impact REPORT
AREA:
SITES: CA-LAN-662, LAN-663, LAN-664, LAN-665

QUADNAME: OAT MOUNTAIN
MEMO:

ITEMID: LA2390 **DATE:** 1988 **PAGES:** 29
AUTHOR: ROMANI, JOHN, DAN LARSON, GWEN ROMANI, AND ARLENE BENSON
FIRM: COYOTE PRESS
TITLE: ASTRONOMY, MYTH, and RITUAL IN THE WEST SAN FERNandO VALLEY.
AREA:
SITES: CA-VEN-151, VEN-161, LAN-357

QUADNAME: CALABASAS
OAT MTN.
MEMO:

ITEMID: LA2892 **DATE:** 1993 **PAGES:** 17
AUTHOR: Stone, David and Robert Sheets
FIRM: SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
TITLE: Phase I Archaeological Survey REPORT PACIFIC PIPELINE PROJECT
SANTA BARBARA COASTAL REROUTES ETHNOHISTORIC VILLAGE PLACENAME LOCATIONS
AREA:
SITES:

QUADNAME: LONG BEACH
SOUTH GATE
MEMO:

ITEMID: LA2950 **DATE:** 1992 **PAGES:** 356

AUTHOR: Anonymous

FIRM: PEAK AND Associates

TITLE: CONSOLIDATED REPORT: Cultural Resource STUDIES FOR THE PROPOSED PACIFIC PIPELINE PROJECT

AREA: 172 ac

SITES: SEE REPORT

QUADNAME: SEE REPORT

MEMO:

ITEMID: LA3301 **DATE:** 1989 **PAGES:** 4

AUTHOR: Scientific Resource Survey

FIRM: Scientific Resource Surveys

TITLE: Archaeological Assessment Santa Susana Pass Road Realignment California West Development Chatsworth, California

AREA: 150 ac

SITES: none

QUADNAME: Oat Mountain

MEMO:

ITEMID: LA3405 **DATE:** 1971 **PAGES:** 15

AUTHOR: OTTE, JIM

FIRM:

TITLE: FIELD ARCHAEOLOGY 1971 CA-LAN-357

AREA: 0

SITES: 19-000357

QUADNAME: OAT MTN.

MEMO:

ITEMID: LA3452 **DATE:** 1976 **PAGES:** 16

AUTHOR: Wessel, Richard L.

FIRM: Northridge Archaeological Research Center

TITLE: Assessment of the Impact upon Archaeological Resources by Changing the Zoning Restrictions from A-1 to RA-1 of Tracts 31920 and 31904 in Chatsworth, Californina

AREA: 18 ac

SITES: 56-000148,56-000149,56-000292,56-000458,19-000021,19-000089,19-000093,19-000209,19-000244,19-000249,19-000251,19-000357,19-000448,19-000449,19-000502,19-000503,19-000544,19-000604,19-000647,19-000648,19-000649,19-000651,19-000652,19-000653,19-000660, 19-000661,19-000662,19-000663,19-000664,19-000665

QUADNAME: Oat Mountain,Santa Susana,Calabasas

MEMO: Same as VN1407.

ITEMID: LA3454 **DATE:** 1995 **PAGES:** 26

AUTHOR: King, Chester

FIRM: Topanga Anthropological Consultants

TITLE: Archaeological Reconnaissance at 3700 La Paz Lane Malibu, California

AREA: 15 ac

SITES: none

QUADNAME: Malibu Beach

MEMO:

ITEMID: LA3477 **DATE:** 1996 **PAGES:**

AUTHOR: Foster, John M.

FIRM: Greenwood and Associates

TITLE: Evaluation of Significance Campo de Cahuenga, CA-LAN-1945H Los Angeles, California

AREA:

SITES: 19-001945

QUADNAME: Burbank

MEMO:

ITEMID: LA3487 **DATE:** 1976 **PAGES:** 20

AUTHOR: Wessel, Richard L.

FIRM: Northridge Archaeological Research Center

TITLE: Assessment of the Impact Upon Archaeological Resources by the Development of Units 5,6,10,11,12,13,15,16,and 17 of Porter Ranch

AREA: 750 ac

SITES: 56-000148,56-000149,56-000292,56-000293,19-000021,19-000089,19-000093,19-000203,19-000204,19-000249,19-000251,19-000357,19-000448,19-000449,19-000459,19-000502,19-000503,19-000544,19-000640,19-000647,19-000648,
19-000649,19-000651,19-000652,19-000653,19-000660,
19-000661,19-000662,19-000663,19-000664,19-000665

QUADNAME: Oat Mountain

MEMO: Indexed. No specific location map provided. Sites mapped.

ITEMID: LA3499 **DATE:** 1994 **PAGES:** 98

AUTHOR: Eisentraut, Phyllisa

FIRM: Dames & Moore

TITLE: Metropolitan Water District West Valley Project Cultural Resources Technical Report

AREA: unknown

SITES: 56-000899,56-000478,56-001150, isolate

QUADNAME: Val Verde,Newhall,Piru,Simi Valley West,Fillmore,Moorpark
Thousand Oaks, Santa Susana,Oat Mountain,Calabasas,Canoga Park

MEMO: Mapped only areas designated as Surveyed. Same as VN1422.

ITEMID: LA3539 **DATE:** 1974 **PAGES:** 9

AUTHOR: Gates, Gerald R. and George M. Toren

FIRM: NARC

TITLE: Assessment of the Archaeological Impact by the Development of Browns Creek, Unit 4 and Browns Debris Basin City of Los Angeles and Unincorporated Territory of the County of Los Angeles, California

AREA: 35 ac

SITES: 19-000209, 19-000357, 19-000649

QUADNAME: Oat Mountain

MEMO:

ITEMID: LA3545 **DATE:** 1978 **PAGES:** 12

AUTHOR: Sanburg, Delmer, Jr., Sanburg, Dana Bleitz, Bleitz, Frank and Edith Bleitz

FIRM: Unknown

TITLE: Two Rock Art Sites in the San Fernando Valley: Ven-149 and LAn-357

AREA: unknown

SITES: 56-000149,19-000357

QUADNAME: Oat Mountain
Calabasas

MEMO: Same as VN1442.

ITEMID: LA3590 **DATE:** 1970 **PAGES:** 63

AUTHOR: Gutman, Ted

FIRM: UCLA AS

TITLE: Archaeological Survey at UCLA. Records and papers of my activity during 1969 (Aug) thru Dec 1970.

AREA: unknown

SITES: 56-000039,19-000197,19-000243,19-000217,56-000027,19-000397,19-000237,19-000357,56-000065,19-000422,19-000415,19-000414

QUADNAME: Malibu Beach, Mt. Baldy, Lake Hughes,Calabasas,Point Dume,Lancaster West,Thousand Oaks, Pitas Poi

MEMO: Same as VN1468. Report indexed. No specific location maps provided. Sites mapped This report consist

ITEMID: LA3622 **DATE:** 1996 **PAGES:** 12

AUTHOR: King, Chester

FIRM: Topanga Anthropological Consultants

TITLE: Archaeological Reconnaissance at the Dahl property, Chatsworth Los Angeles County, California Second Report

AREA: 20 ac

SITES: 19-001113, 19-002460

QUADNAME: Oat Mountain

MEMO:

ITEMID: LA3639 **DATE:** 1970 **PAGES:** 7

AUTHOR: King, Tom

FIRM: UCLA AS

TITLE: Santa Monica Mountains State Park (Undeveloped)

AREA: unknown

SITES: 19-000001,19-000357,19-000350,19-000002

QUADNAME: Point Dume,Topanga,Oat Mountain

MEMO: No specific map locations provided. Sites mapped.

ITEMID: LA3847 **DATE:** 1992 **PAGES:** 13

AUTHOR: Whitley, David S.

FIRM:

TITLE: Shamanism and Rock Art in Far Western North America

AREA: none

SITES: 19-000357

QUADNAME: Oat Mountain

MEMO:

ITEMID: LA3974 **DATE:** 1998 **PAGES:** 22

AUTHOR: McLean, Deborah

FIRM: LSA

TITLE: Archaeological Assesment for Pacific Bell Mobile Services Telecommunications Facility LA 172-01, 11200 De Soto Avenue, Chatsworth, City and County of Los Angeles, California

AREA: >1 ac

SITES: none

QUADNAME: Oat Mountain

MEMO:

ITEMID: LA4124 **DATE:** 1972 **PAGES:** 52

AUTHOR: Barajas, Luisa

FIRM: Unknown

TITLE: Semester Report For Anthropology 7

AREA: Unknown

SITES: 19-000357

QUADNAME: Oat Mountain

MEMO:

ITEMID: LA4128 **DATE:** 1976 **PAGES:** 20

AUTHOR: Wessel, Richard L.

FIRM: Nothridge Archaeological Center

TITLE: Assessment of the Impact Upon Archaeological Resources By the Development of Units 5, 6, 10, 11, 12, 13, 15, 16, and 17 of Porter Ranch

AREA: 750 ac

SITES: 19-000662,19-000663,19-000664

QUADNAME: Oat Mountain

MEMO:

ITEMID: LA4137 **DATE:** 1998 **PAGES:**

AUTHOR: none

FIRM: Southwest Museum

TITLE:

AREA: zero

SITES: 19-000021

QUADNAME: Oat Mountain

MEMO:

Oat Mountain Quad: Report and Site Lists

Reports	Sites	Built Environment
LA:		
14	19-000021	19-150423
26 *	19-000093	19-150430
71	19-000209	19-150431
76 *	19-000357	19-150432
81 *	19-000649 *	19-150433
160	19-000664	
304	19-000809	
306	19-000810	
468	19-000811	
762	19-000812	
838	19-000813	
883	19-000814	
1584	19-000815	
1744	19-000879	
1771 *	19-000880	
2034 *	19-000881	
2086 *	19-000882	
2096	19-000901	
2133	19-000995	
2204 *	19-000996	
2230	19-000997	
2366 *	19-000998	
2390	19-001740 H*	
2892	19-001741 H*	
2950	19-001742 H*	*Within the project area
3301	19-001743 *	
3405	19-001744 *	
3452 *	19-001745 *	
3454 *		
3477		
3487 *		
3499		
3539 *		
3545		
3590		
3622		
3639		
3847		
3974		
4124		
4128		
4137		

9.0
ARCHAEOLOGICAL SITE RECORDS

PRIMARY RECORD Primary #_____
HRI #_____
Trinomial_____
NRHP Status Code_____
Other listings_____
Review Code_____Reviewer_____Date_____

 Resource name: W&S 1

P1. Other Identifier: W&S 1
P2. Location: x Not for Publication
P2a. County: Los Angeles
P2b. USGS 7.5' quad: Oat Mountain, CA
Date: T 2N R 16W ; NW 1/4 of SE 1/4 of Sec 6 ; B.M. SB
P2c. Address: Not applicable
P2d. UTM: Zone: 11 ; 353100 mE/ 3794675 mN
P2e. Location: Site is located on a low ridge at the northern terminus of Saugus Road in the Deer Lake Highlands area.
P3a. Description: Large stone tool quarry/workshop that contains a low density scatter of quartzite and volcanic cores, flakes, hammerstones and scrapers.
P3b. Resource attributes: AP-12, AP-2
P3c. Resources present: x SITE
P6. Date/Age & sources: x Prehistoric. Prehistoric artifacts present on site.
P7. Owner & address: Presidio Group, 595 Market St., San Francisco, CA.
P8. Recorded by: JM Simon, W&S Consultants, 2242 Stinson St, Simi Valley, CA. 93065
P9. Date recorded: 5/3/00
P10. Survey type: Intensive Phase I
P11. Report citation: Phase 1 Archaeological Survey of the Chatsworth Ridge Estates in Chatsworth, California
Attachments: x Archaeological record

ARCHAEOLOGICAL SITE Primary #_____
RECORD Trinomial_____

A1. Dimensions: a. Length: 150 (m) x b. Width: 75 (m)
Method of measurement: x Taped
Method of determination: x Artifacts x Topography
Reliability of determination: x Medium
Limitations:
A2. Depth: Unknown Method of Determination:
A3. Human remains: x Unknown
A4. Features: none observed
A5. Cultural constituents: quartzite & volcanic cores, flakes, hammerstones and scrapers.
A6. Collected specimens: x No
A7. Site condition: Good X Fair Poor; Disturbance: Dirt road running N-S through the center of the site.
A8. Nearest water: Approximately 2000 ft. to east in Browns Canyon.
A9. Elevation: 1450 ft.
A10. Environmental setting: Site situated on low chaparral covered ridge that is due west of a small ephemeral drainage.
A11. Historical information: not applicable
A12. Age: x PREHISTORIC PROTOHISTORIC
1542-1769 1769-1848 1848-1880 1880-1914
1914-1945
A13. Interpretations: Site appears to be low density stone tool quarry/workshop.
A14. Remarks:
A15. References: Phase I archaeological survey of Chatsworth Ridge Estates in Chatsworth, CA.
A16. Photographs: None
A17. Form prepared by: JM Simon
Affiliation: W&S Consultants, 2242 Stinson St, Simi Valley, CA 93015
Date: 5/3/00

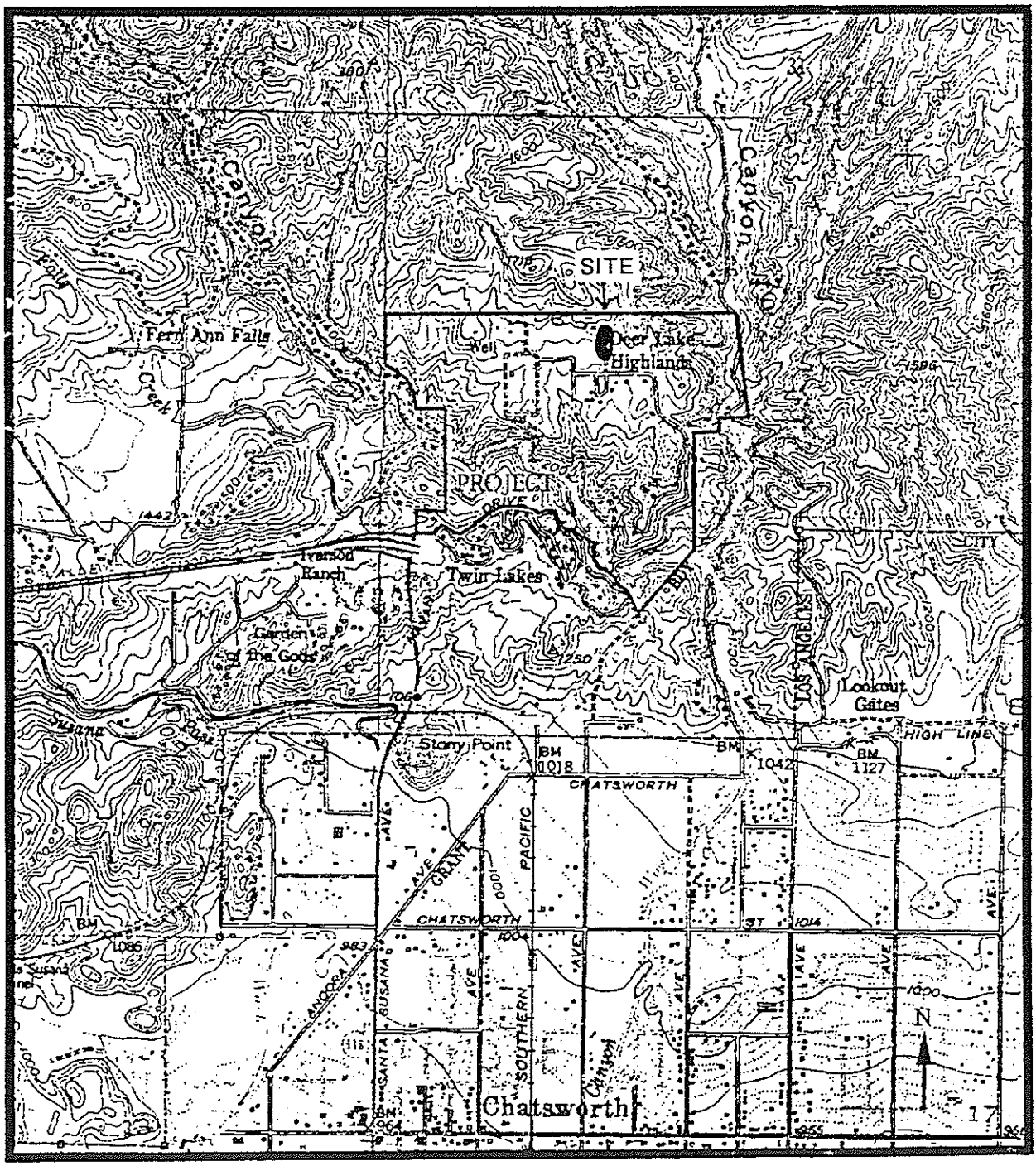
LOCATION MAP Primary #_____

HRI#_____

Trinomial_____

Page 3 of 4 Resource name: W&S 1

Map: USGS Scale: 1: 2000 Map date: 1952 (Photorevised 1969)



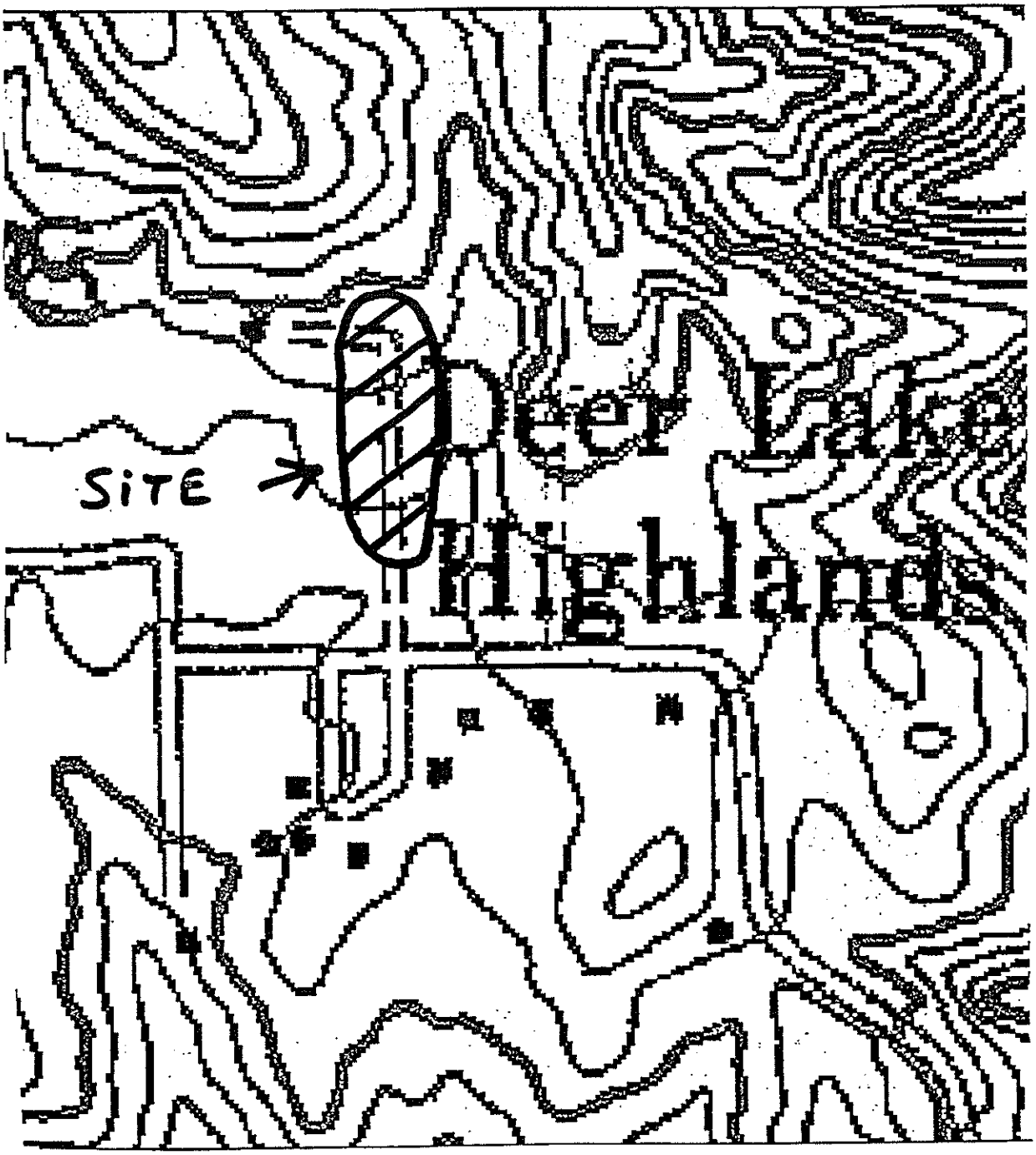
SKETCH MAP Primary #_____

HRI#_____

Trinomial_____

Page 4 of 4 Resource name: W&S 1

Drawn by: JM Simon Date: 5/3/00



PRIMARY RECORD Primary #_____
HRI #_____
Trinomial_____
NRHP Status Code_____
Other listings_____
Review Code_____Reviewer_____Date_____

 Resource name: W& 2

P1. Other Identifier: W&S 2
P2. Location: x Not for Publication
P2a. County: Los Angeles
P2b. USGS 7.5 quad: Oat Mountain, CA
Date: T 2N R 16W ; NE 1/4 of SW 1/4 of Sec 6 ; B.M. SB
P2c. Address: Not applicable
P2d. UTM: Zone: 11 ; 352975 mE/ 3794700 mN
P2e. Location: Site is located on low ridge that is approximately 125 meters west of the northern terminus of Saugus Road in the Deer Lake Highlands area.
P3a. Description: Small, low density stone tool quarry/workshop that contains quartzite and volcanic flakes.
P3b. Resource attributes: AP-12, AP-2
P3c. Resources present: x SITE
P6. Date/Age & sources: x Prehistoric. Prehistoric artifacts present on site.
P7. Owner & address: Presidio Group, 595 Market St., San Francisco, CA.
P8. Recorded by: JM Simon, W&S Consultants, 2242 Stinson St, Simi Valley, CA. 93065
P9. Date recorded: 5/3/00
P10. Survey type: Intensive Phase I
P11. Report citation: Phase 1 archaeological survey of the Chatsworth Ridge Estates in Chatsworth, California
Attachments: x Archaeological record

ARCHAEOLOGICAL SITE Primary #_____
RECORD Trinomial_____

 Resource name: W&S 2

A1. Dimensions: a. Length: 60 (m) x b. Width: 30 (m)
Method of measurement: x Taped
Method of determination: x Artifacts x Topography
Reliability of determination: x Medium
Limitations:
A2. Depth: Unknown Method of Determination:
A3. Human remains: x Unknown
A4. Features: None observed
A5. Cultural constituents: Quartzite and volcanic flakes.
A6. Collected specimens: x No
A7. Site condition: x Good Fair Poor; Disturbance:
A8. Nearest water: Approximately 2000 ft. to east in Browns Canyon
A9. Elevation: 1450 ft.
A10. Environmental setting: Site is situated on a low chaparral covere ridge that is roughly 125 meters due west of W&S 1 and ephemeral cha
A11. Historical information: not applicable
A12. Age: x PREHISTORIC PROTOHISTORIC
1542-1769 1769-1848 1848-1880 1880-1914
1914-1945
A13. Interpretations: Site appears to be low density stone tool works
A14. Remarks:
A15. References: Phase I archaeological survey of the Chatsworth Ri Estates in Chatsworth, California.
A16. Photographs: None
A17. Form prepared by: JM Simon
Affiliation: W&S Consultants, 2242 Stinson St, Simi Valley, CA 93015
Date: 5/3/00

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Permanent Trinomial: CA-LAn-209 Mo. Yr.

ARCHEOLOGICAL SITE RECORD

Other Designations:

18. Human Remains: None observed

19. Site Disturbances: Recent trash and debris was found in all rockshelters. Some areas have been subjected to road cuttings.

20. Nearest Water (type, distance and direction): Devil Canyon, creek, 150 meters north

21. Vegetation Community (site vicinity): Coastal sage scrub Plant List

22. Vegetation (on site): Coastal sage scrub and one Oak tree

23. Site Soil: Sand mixed with gray midden.

24. Surrounding Soil: sandy loam

25. Geology: Chatsworth Formation

26. Landform: Saddle and head of canyon

27. Slope: 0 to 3 percent ( ) 28. Exposure: northern

29. Landowner(s) (and/or tenants) and Address: Planning and Design Solutions, 4770 Campus Drive, Suite 240, Newport Beach, CA 92660 (Planning Firm)

30. Remarks: A large portion of the originally recorded site area has been destroyed by construction of the Simi Valley Freeway.

31. References: Pence, R.L. 1978. Archaeological assessment of a proposed development in Chatsworth, City of Los Angeles, California. On file at the Archaeological Survey, UCLA

32. Name of Project: Devil Canyon parcel

33. Type of Investigation: Surface reconnaissance

34. Site Accession Number: Curated At:

35. Photos: of cupules only

See Continuation Sheet

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD
Continuation Sheet

Permanent Trinomial: CA-LAn-209

Mo. Yr.

Other Designations:

Item No.	Continuation
8.	surface artifacts and pit and groove petroglyphs. It is obvious that those features are related to CA-LAn-209. Three of the rockshelters contain artifacts or have artifacts in close association. Petroglyphs appear as incised lines and cupules on one large sandstone outcrop.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE LOCATION MAP

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Permanent Trinomial: CA-LAN-209

Site. Yr.

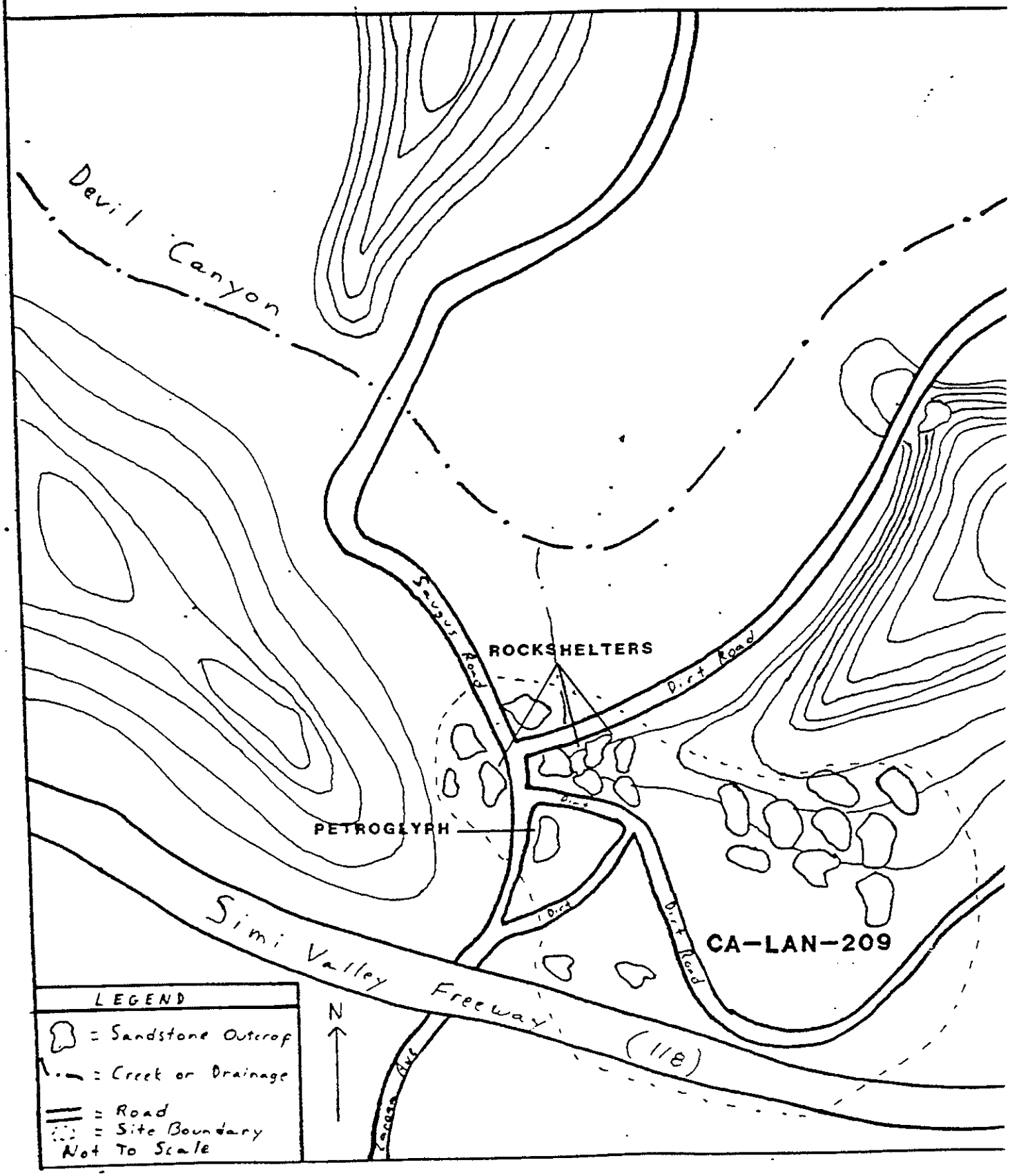
Other Designations:

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE MAP

Permanent Trinomial: CA-LAn-209 Mo. Yr.

Other Designations:



PRIMARY RECORD **Primary #**_____

UPDATE **HRI #**_____

Trinomial___**CA-LAN-649**____

NRHP Status Code_____

Other listings_____

Review Code _____ **Reviewer** _____ **Date** _____

Page 1 of 1 **Resource name:**

P1. Other Identifier:
P2. Location: x **Not for Publication**
P2a. County: Los Angeles
P2b. USGS 7.5 quad: Oat Mountain
Date: 1969 **T R ; 1/4 of 1/4 of Sec ; B.M.**
P2c. Address: Not applicable
P2d. UTM: 11 **Zone:** ; **mE/ mN** see Original Archaeological record
P2e. Location: see Original Archaeological record
P3a. Description: Site visit in May 2000 confirmed site location. Site attributes and condition are the same aS described in 1990 site record (attached).
P3b. Resource attributes: see Original Archaeological record
P3c. Resources present: x SITE
P6. Date/Age & sources: x Prehistoric. Prehistoric artifacts present on site.
P7. Owner & address: The Presidio Group
P8. Recorded by: DS Whitley, W&S Consultants, 2242 Stinson St, Simi Valley, CA
P9. Date recorded: Update - May 2000
P10. Survey type: Intensive Phase I
P11. Report citation: Phase 1 Archaeological Survey of the Chatsworth Ridge Estates Study area, Los Angeles County, California
Attachments: x Original Archaeological record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: CA-LAn-649 Supplement [x]

Other Designations:

1. County: Los Angeles

2. USGS Quad: Oat Mountain (7.5') 1952 (15') Photorevised 1969

3. UTM Coordinates: Zone 11 | 3,5 3,5 1,0 | m Easting | 3,7 9 4,0 6,5 | m Northing

4. Township 2N Range 16W ; SW % of SW % of SE % of SE % of Section 6 Base Mer. SB

5. Map Coordinates: 442 mmS 128 mmE (from NW corner of map) 6. Elevation 1260 feet

7. Location: On the top and slopes of the ridge overlooking the confluence of Devil and Browns Canyons.

8. Prehistoric x Historic ____ Protohistoric ____ 9. Site Description: Extensive scatter of chipped lithics. The site appears little changed from original recording.

10. Area 240 m( )x 80 m( ) 19200 m

Method of Determination: Map inspection

11. Depth: undetermined m Method of Determination:

12. Features: None observed

13. Artifacts: Numerous cores, flakes, hammerstones, and scrapers. All artifacts were quartzite except for 1 chert flake.

14. Non-Artifactual Constituents and Faunal Remains: None observed

15. Date Recorded: 12 March 1990 16. Recorded By: Kenneth Becker

17. Affiliation and Address: RMW Paleo Associates, 23352 Madero, Suite J, Mission Viejo, California 92691 (714) 770-8042.

See Continuation Sheet [X]

DPR 422 A (Rev. 4/80)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Permanent Trinomial: CA-LAN-649 ___ (No. / Rev.)

ARCHEOLOGICAL SITE RECORD

Other Designations:

18. Human Remains: None observed ( )

19. Site Disturbances: Some offroad vehicle use. Disturbance is minor. ( )

20. Nearest Water (type, distance and direction): Devil Canyon, creek 100 meters south ( )

21. Vegetation Community (site vicinity): Coastal sage scrub Plant List ( )

22. Vegetation (on site): Coastal sage scrub ( )

23. Site Soil: Sandy loam ( )

24. Surrounding Soil: Sandy loam with bedrock exposures. ( )

25. Geology: Chatsworth ( )

26. Landform: Hill and ridge top including the southern slope. ( )

27. Slope: 0 to 3 percent ( ) 28. Exposure: Southern ( )

29. Landowner(s) (and/or tenants) and Address: Planning and Design Solutions (Planning Firm) 4770 Campus Drive, Suite 240, Newport Beach, CA 92660 ( )

30. Remarks: This site was relocated to determine if it extended onto the clients property. A complete examination of the site was not included in the scope of the project. ( )

31. References: ( )

32. Name of Project: Devil Canyon Parcel ( )

33. Type of Investigation: Surface Reconnaissance ( )

34. Site Accession Number: ___ Curated At: ___ ( )

35. Photos: ( )

See Continuation Sheet ( )

DPR 422 B (Rev. 4/80)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE LOCATION MAP

Page 3 of 4

Permanent Trinomial: CA-LAN-649

Site. Yr.

Other Designations:

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

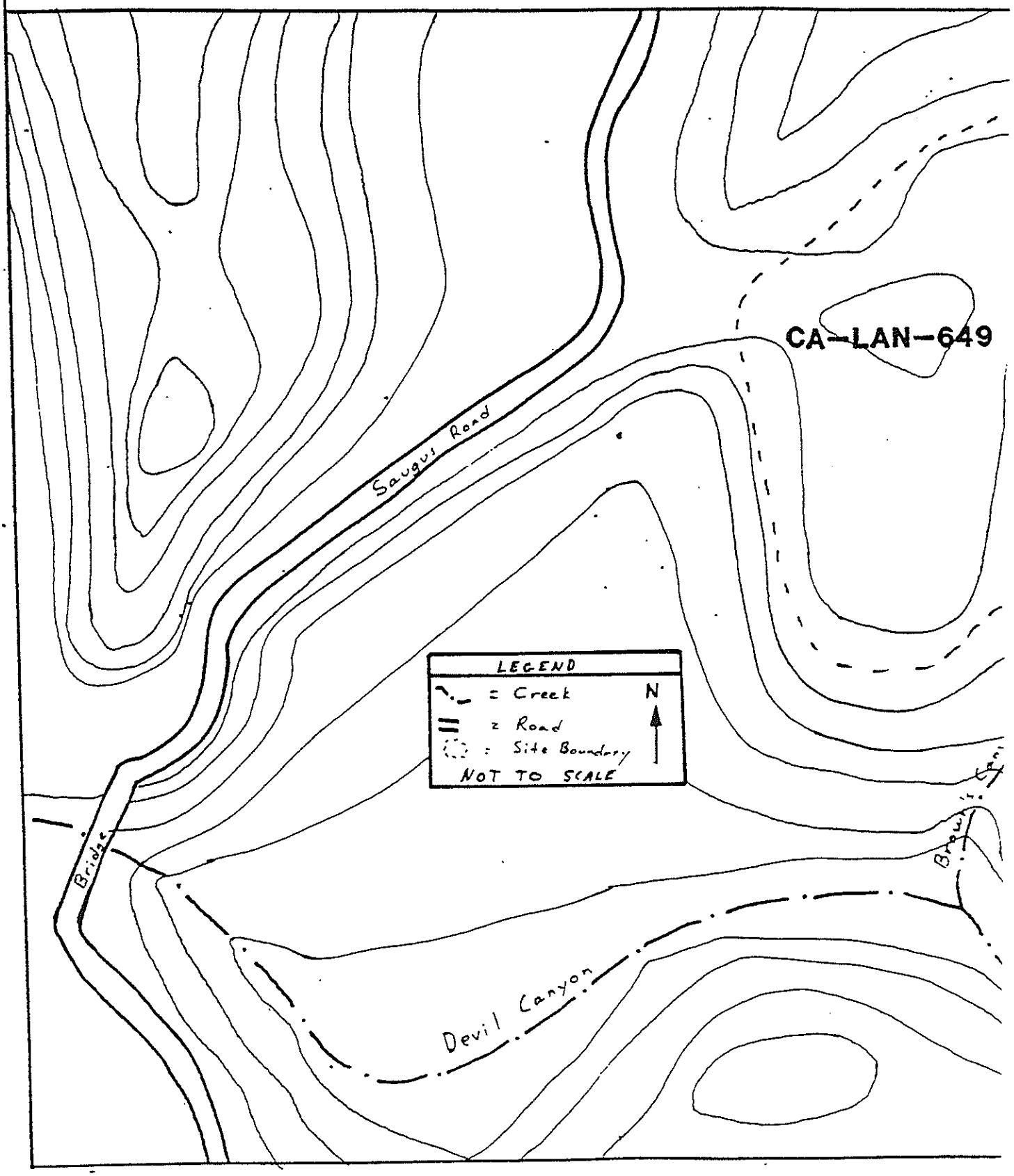
ARCHEOLOGICAL SITE MAP

Permanent Trinomial: CA-LAn-649

Mo. Yr.

Other Designations:

Page 4 of 4.



DPF 477 G (Rev. 4/85)

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Permanent Trinomial: LAN-1740H Site. Yr.

Other Designations: 9

ARCHEOLOGICAL SITE RECORD

18. Human Remains: NA ( )

19. Site Disturbances: Major destruction to the guard rails has occurred by what appears to be flooding. An informant claimed that the bridge has been damaged in the past by flooding and subsequently repaired. ( )

20. Nearest Water (type, distance and direction): Devil Creek. The bridge crosses the creek. ( )

21. Vegetation Community (site vicinity): NA Plant List ( )

22. Vegetation (on site): NA ( )

23. Site Soil: NA ( )

24. Surrounding Soil: NA ( )

25. Geology: NA ( )

26. Landform: NA ( )

27. Slope: NA ( ) 28. Exposure: ( )

29. Landowner(s) (and/or tenants) and Address: Planning and Design Solutions, 4770 Campus Drive, Suite 240, Newport Beach, CA 92660 (Planning Firm) (

30. Remarks: Another informant claimed that the bridge was originally constructed in the 1920's. (

31. References: (

32. Name of Project: Devil Canyon parcel (

33. Type of Investigation: Surface Reconnaissance (

34. Site Accession Number: Curated At: (

35. Photos: three on file at RMW (

See Continuation Sheet ( )

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE LOCATION MAP

Permanent Trinomial: LAN-1740H

Bio. Yr. 1

Other Designations:

Page 3 of 4.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

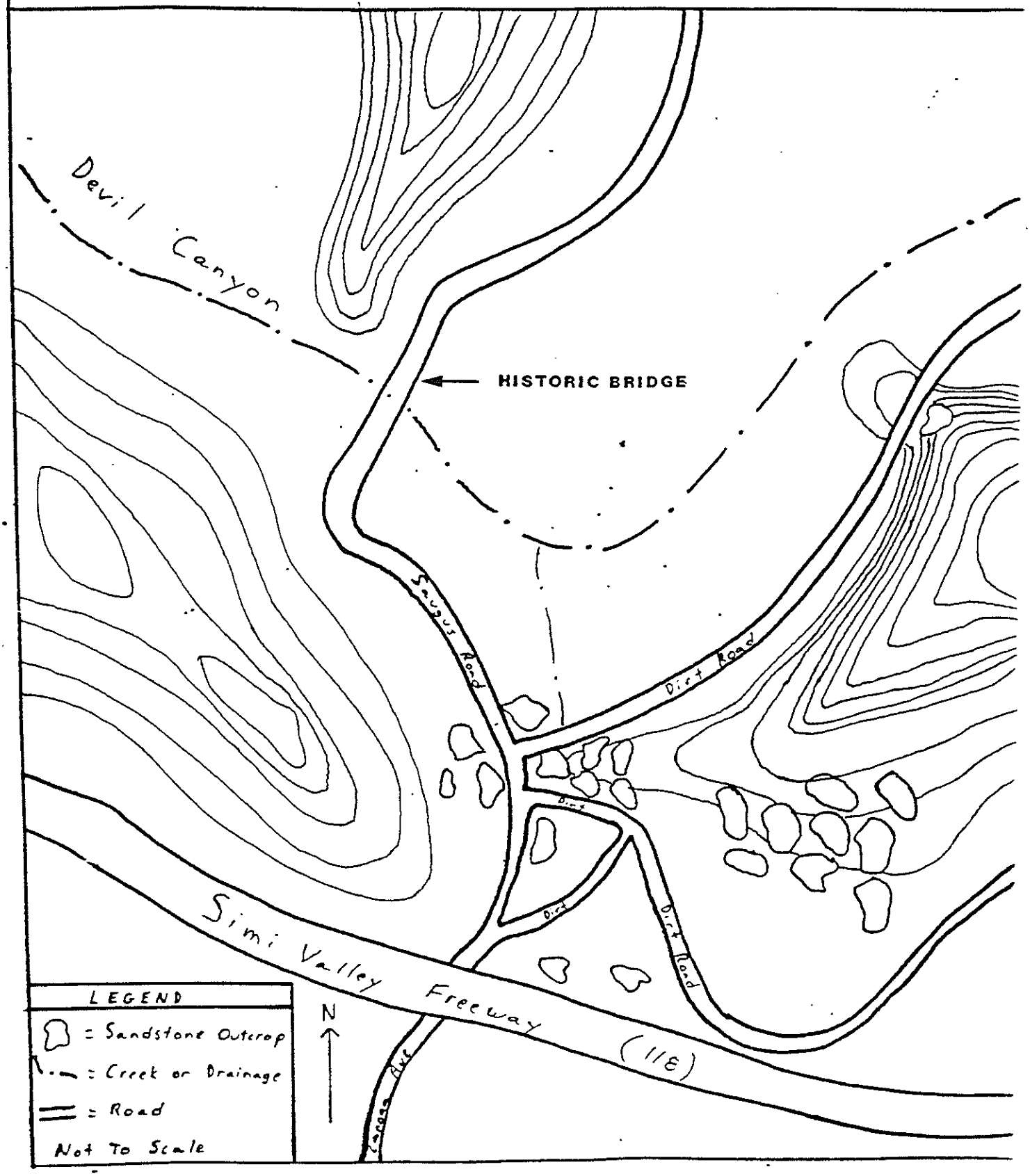
ARCHEOLOGICAL SITE MAP

Permanent Trinomial: LAN-1740 H

Mo. Yr.

Other Designations: 9

Page 4 of 4.



PRIMARY RECORD **Primary #**_____

UPDATE **HRI #**_____

Trinomial ___**CA-LAN-1741H**____

NRHP Status Code_____

Other listings_____

Review Code _____ **Reviewer** _____ **Date** _____

Page 1 of 1 **Resource name:**

P1. Other Identifier:
P2. Location: x **Not for Publication**
P2a. County: Los Angeles
P2b. USGS 7.5 quad: Oat Mountain
Date: 1969 **T R ; 1/4 of 1/4 of Sec ; B.M.**
P2c. Address: Not applicable
P2d. UTM: 11 **Zone: ; mE/ mN** see Original Archaeological record
P2e. Location: see Original Archaeological record
P3a. Description: Site visit in May 2000 confirmed site location. Site appears to be post-World War II in age. No evidence could be found of historical archaeological remains. No evidence exists to suggest that this locality should be considered a historical resource.
P3b. Resource attributes: see Original Archaeological record
P3c. Resources present: Contemporary trash and debris assoc'd with concrete foundations.
P6. Date/Age & sources:
P7. Owner & address: The Presidio Group
P8. Recorded by: DS Whitley, W&S Consultants, 2242 Stinson St, Simi Valley, CA
P9. Date recorded: Update - May 2000
P10. Survey type: Intensive Phase I
P11. Report citation: Phase 1 Archaeological Survey of the Chatsworth Ridge Estates Study area, Los Angeles County, California
Attachments: x Original Archaeological record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: LAN-1741H Supplement ☐

Other Designations: 8

Page 1 of 4.

1. County: Los Angeles

2. USGS Quad: Oat Mountain (7.5') 1952 (15') Photorevised 1969

3. UTM Coordinates: Zone 11 35279 m Easting 3794420 m Northing

4. Township 2N Range 16W, SE ¼ of SW ¼ of NE ¼ of SW ¼ of Section 6 Base Mer. SB

5. Map Coordinates: 427 mmS 98 mmE (from NW corner of map) 6. Elevation 1410 feet

7. Location:

8. Prehistoric ____ Historic ____ Protohistoric ____ 9. Site Description A series of foundation pads constructed of red brick and concrete. Iron reinforcements were seen in the foundation pads. Some water pipes and one electrical outlet box were seen. Some broken glass and other debris including mattress springs were seen in the ar

10. Area 20 m( )x 20 m( ) 400 m

Method of Determination: Visual Estimate

11. Depth: unknown m Method of Determination:

12. Features: See number 9 above

13. Artifacts: See number 9 above

14. Non-Artifactual Constituents and Faunal Remains: None observed

15. Date Recorded 12 March 1990 16. Recorded By: Kenneth Becker

17. Affiliation and Address RMW Paleo Associates, 23352 Madero, Suite J, Mission Viejo, CA 92691 (714) 770-8042.

See Continuation Sheet (X)

DPR 422 A (Rev. 4/85)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: CAN-1741H ____ Mo. ____ Yr.

Other Designations: 8

18. Human Remains: None observed ( )

19. Site Disturbances: Structure was apparently burned to the ground ( )

20. Nearest Water (type, distance and direction): Devil Canyon, creek, 100 meters south ( )

21. Vegetation Community (site vicinity): Coastal sage scrub Plant List ( )

22. Vegetation (on site): Coastal sage scrub ( )

23. Site Soil: Sandy loam ( )

24. Surrounding Soil: Sandy loam ( )

25. Geology: Chatsworth Formation ( )

26. Landform: Side of a ridge ( )

27. Slope: 10 to 15 percent ( ) 28. Exposure: Southern ( )

29. Landowner(s) (and/or tenants) and Address: Planning and Design Solutions, 4770 Campus Drive Suite 420, Newport Beach, Ca 92660 ( )

30. Remarks: There is very little visible material on which to judge the age of the deposit. ( )

31. References: ( )

32. Name of Project: Devil Canyon ( )

33. Type of Investigation: Surface reconnaissance ( )

34. Site Accession Number: ____ Curated At: ____ ( )

35. Photos: ____ ( )

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

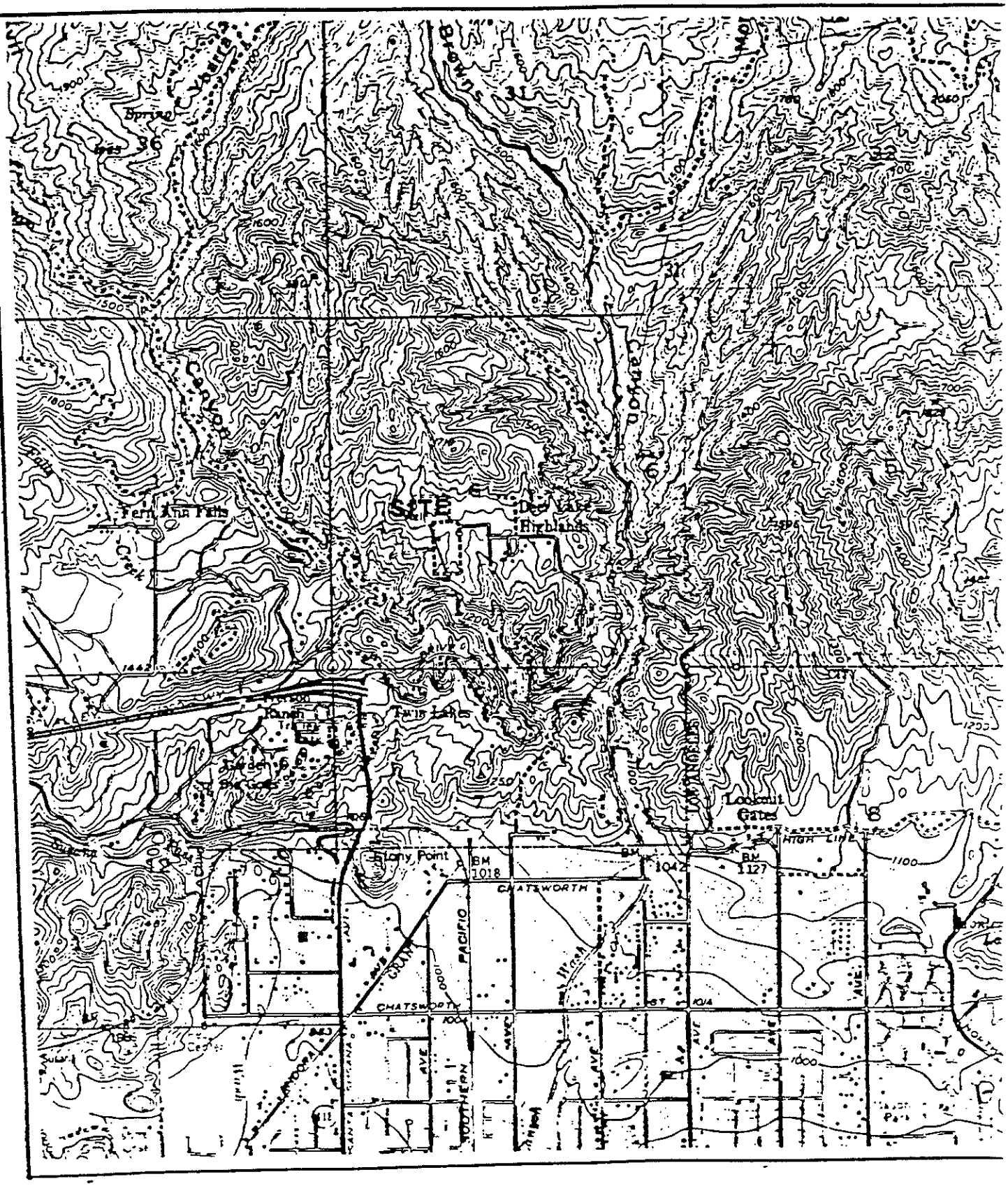
ARCHEOLOGICAL SITE LOCATION MAP

Permanent Trinomial: CAN-1741H

Mo. Yr.

Other Designations:

Page 3 of 4.



DPR 523C (Rev. 4/88)

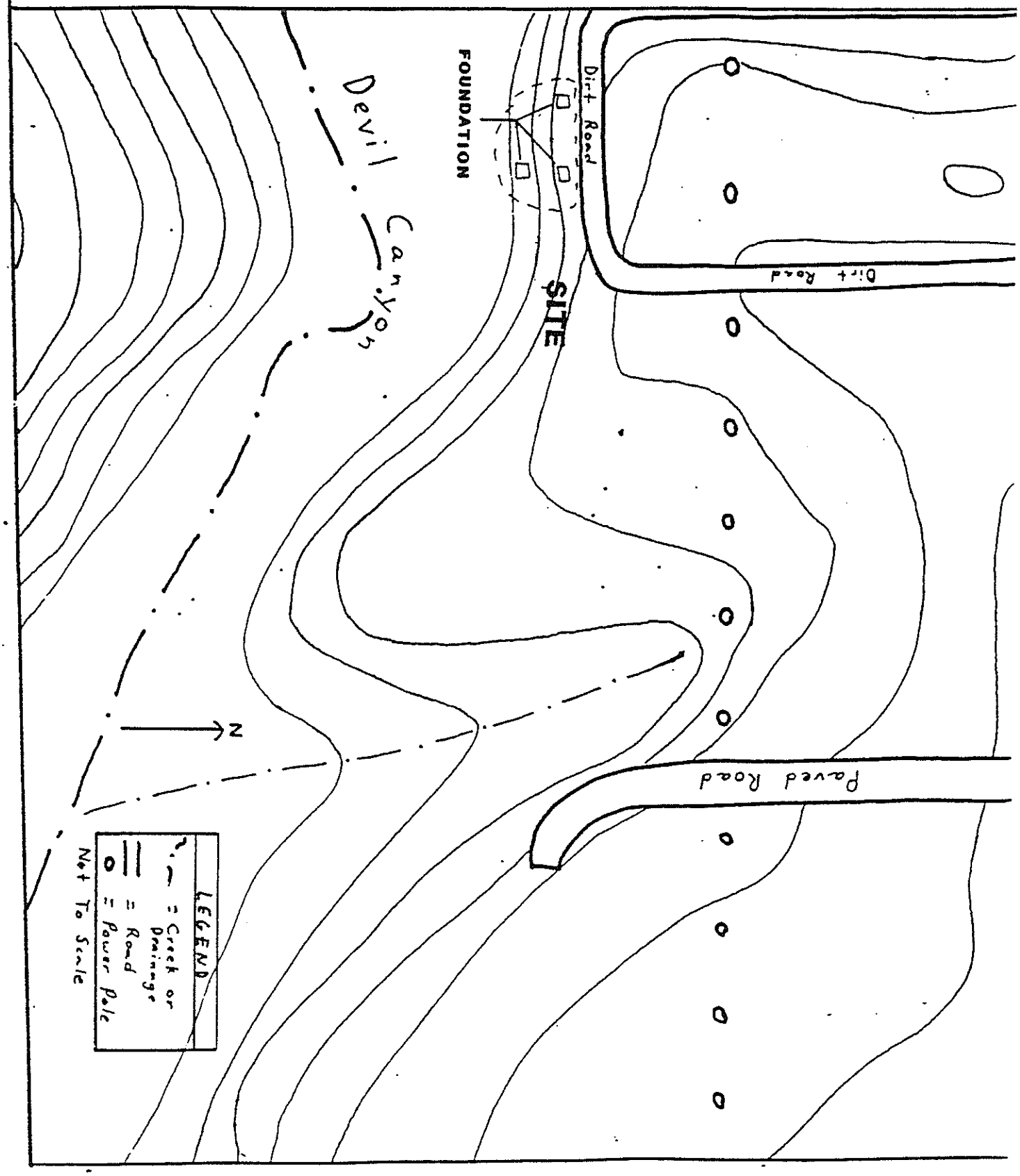
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE MAP

Permanent Trinomial: LAN-1741H

Mo. 1 Yr.

Other Designations: 8



PRIMARY RECORD **Primary #**_____

UPDATE **HRI #**_____

Trinomial___**CA-LAN-1742H**____

NRHP Status Code_____

Other listings_____

Review Code _____ **Reviewer** _____ **Date** _____

Page 1 of 1 **Resource name:**

P1. Other Identifier:
P2. Location: x **Not for Publication**
P2a. County: Los Angeles
P2b. USGS 7.5 quad: Oat Mountain
Date: 1969 **T R** ; **1/4 of 1/4 of Sec** ; **B.M.**
P2c. Address: Not applicable
P2d. UTM: 11 **Zone:** ; **mE/ mN** see Original Archaeological record
P2e. Location: see Original Archaeological record
P3a. Description: Site visit in May 2000 confirmed site location. Site appears to be post-World War II in age. No evidence could be found of historical archaeological remains. No evidence exists to suggest that this locality should be considered a historical resource.
P3b. Resource attributes: see Original Archaeological record
P3c. Resources present: Contemporary trash and debris assoc'd with concrete foundations.
P6. Date/Age & sources:
P7. Owner & address: The Presidio Group
P8. Recorded by: DS Whitley, W&S Consultants, 2242 Stinson St, Simi Valley, CA
P9. Date recorded: Update - May 2000
P10. Survey type: Intensive Phase I
P11. Report citation: Phase 1 Archaeological Survey of the Chatsworth Ridge Estates Study area, Los Angeles County, California
Attachments: x Original Archaeological record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: LAN-1742H Supplement ☐

Other Designations: 7

Page 3 of 5.

1. County: Los Angeles

2. USGS Quad: Oat Mountain (7.5') 1952 (15') _____ Photorevised 1969

3. UTM Coordinates: Zone 11 | 3,5 3,0 0,0 | m Easting | 3,7 9,4 4,4 0 | m Northing

4. Township 2N Range 16W, SE % of SE % of NE % of SW % of Section 6 Base Mer. SB

5. Map Coordinates: _____ mmS _____ mmE (from NW corner of map) 6. Elevation _____

7. Location: At the southern end of an old paved road coming from Deer Lake Highlands.

8. Prehistoric _____ Historic x Protohistoric _____ 9. Site Description: Stone retaining wall constructed of native cobbles, concrete walkway, a fragment of a fence line and introduced plants.

10. Area 20 m( )x 20 m( ) 400 m²

Method of Determination: visual estimate

11. Depth: unknown m Method of Determination: _____

12. Features: See number 9 above

13. Artifacts: See number 9 above

14. Non-Artifactual Constituents and Faunal Remains: Introduced plants noted in number 9 above

15. Date Recorded: 12 March 1990 16. Recorded By: Kenneth Becker

17. Affiliation and Address: RMW Paleo Associates, 23352 Madero, Suite J, Mission Viejo, CA 92691 (714) 770-8042

☞ Continuation Sheet (X

DPR 422 A (Rev. 4/80)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: CAN-1742H 1 (Mo. Yr.)

Other Designations: 7

18. Human Remains: None observed ( )

19. Site Disturbances: Any structure that was constructed there is gone. A lot of recent building debris and trash have been dumped on the site. ( )

20. Nearest Water (type, distance and direction): Devil Canyon, creek 275 meters south ( )

21. Vegetation Community (site vicinity): Coastal sage scrub and Oak Woodland. Plant List ( )

22. Vegetation (on site): Mix of native and introduced species. Eucalyptus, succulents and other ornamental plants. Native species are indicative of an Oak woodland (X)

23. Site Soil: Sandy ( )

24. Surrounding Soil: Sandy ( )

25. Geology: Chatsworth Formation ( )

26. Landform: Side of a Canyon ( )

27. Slope: Undetermined ( ) 28. Exposure: western ( )

29. Landowner(s) (and/or tenants) and Address: Planning and Design Solutions, 4770 Campus Drive, Suite 240, Newport Beach, CA 92660 (Planning Firm) ( )

30. Remarks: Although no foundation was seen, the latest USGS topographic map (1957, photorevised 1969) shows a structure at this location. No diagnostic artifacts were seen at the site. ( )

31. References: ( )

32. Name of Project: Devil Canyon parcel ( )

33. Type of Investigation: Surface reconnaissance ( )

34. Site Accession Number: Curated At: ( )

35. Photos: Three, in possession of RMW ( )

See Continuation Sheet (X)

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD
Continuation Sheet

Permanent Trinomial: CAN-1742H

Mo. Yr.

Other Designations: 7

Item No.	Continuation
22.	community.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE LOCATION MAP

Permanent Trinomial: LAN-1742H

Mo. Yr.

Other Designations:

Page 4 of 5.

DPR 477 (Rev. 4/80)

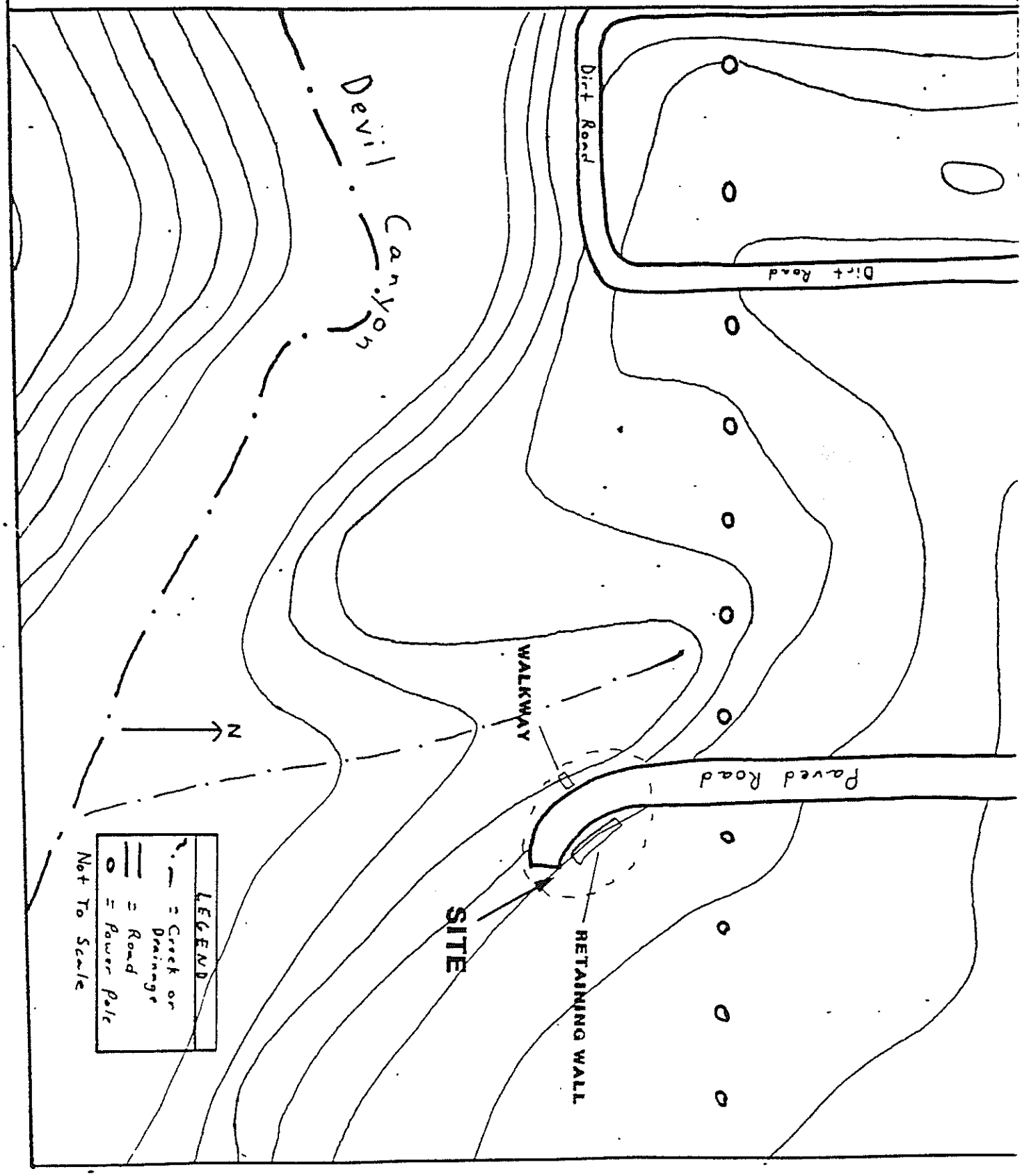
State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE MAP

Permanent Trinomial: LAN-1742H

Mo. Yr.

Other Designations: 7



PRIMARY RECORD
UPDATE

Primary #_____
HRI #_____
Trinomial CA-LAN-1743
NRHP Status Code_____

Other listings_____

Review Code _____ **Reviewer** _____ **Date** _____

Page 1 of 1 **Resource name:**

P1. Other Identifier:
P2. Location: x **Not for Publication**
P2a. County: Los Angeles
P2b. USGS 7.5 quad: Oat Mountain
Date: 1969 **T R ; 1/4 of 1/4 of Sec ; B.M.**
P2c. Address: Not applicable
P2d. UTM: 11 **Zone: ; mE/ mN** see Original Archaeological record
P2e. Location: see Original Archaeological record
P3a. Description: Site visit in May 2000 confirmed site location. Site attributes and condition are the same aS described in 1990 site record (attached).
P3b. Resource attributes: see Original Archaeological record
P3c. Resources present: x SITE
P6. Date/Age & sources: x Prehistoric. Prehistoric artifacts present on site.
P7. Owner & address: The Presidio Group
P8. Recorded by: DS Whitley, W&S Consultants, 2242 Stinson St, Simi Valley, CA
P9. Date recorded: Update - May 2000
P10. Survey type: Intensive Phase I
P11. Report citation: Phase 1 Archaeological Survey of the Chatsworth Ridge Estates Study area, Los Angeles County, California
Attachments: x Original Archaeological record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: LAN-1743 Supplement ☐

Other Designations: 5

Page 1 of 4.

1. County: Los Angeles

2. USGS Quad: Oat Mountain (7.5') 1952 (15') _____ Photorevised 1969

3. UTM Coordinates: Zone 11 | 3 5 3 3 0 5 m Easting | 3 7 9 3 7 8 5 m Northing

4. Township 2N Range 16W , SW ¼ of NE ¼ of NW ¼ of NE ¼ of Section 7 Base Mer. SB

5. Map Coordinates: _____ mmS _____ mmE (from NW corner of map) 6. Elevation 1210 feet

7. Location: On a small toe on the northwestern side of the high hill which is north of CA-LAn-209. The site overlooks Devil Canyon.

8. Prehistoric x Historic _____ Protohistoric _____ 9. Site Description: Sparse lithic scatter

10. Area 10 m( )x 10 m( ) 100 m²

Method of Determination: visual estimate

11. Depth: unknown cm Method of Determination: _____

12. Features: None observed

13. Artifacts: 1 quartzite scraper and 3 quartzite flakes

14. Non-Artifactual Constituents and Faunal Remains: none

15. Date Recorded 12 March 1990 16. Recorded By: Kenneth Becker

17. Affiliation and Address RMW Paleo Associates, 23352 Madero, Suite J, Mission Viejo, CA 92691 (714) 770-8042.

☞ Continuation Sheet (X)

DPR 422 A (Rev. 4/82)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Permanent Trinomial: CAN-1743 ____ Mo. ____ Yr.

ARCHEOLOGICAL SITE RECORD

Other Designations: 5

18. Human Remains: None observed ( )

19. Site Disturbances: Heavily disturbed by road cutting. Most of the site has probably been destroyed. ( )

20. Nearest Water (type, distance and direction): Devil Canyon, creek 75 meters west ( )

21. Vegetation Community (site vicinity): Coastal sage scrub Plant List ( )

22. Vegetation (on site): Coastal sage scrub ( )

23. Site Soil: sandy loam ( )

24. Surrounding Soil: Sandy loam and one large sandstone exposure. ( )

25. Geology: Chatsworth Formation ( )

26. Landform: small ridge/toe ( )

27. Slope: 0 to 3 percent ( ) 28. Exposure: Western ( )

29. Landowner(s) (and/or tenants) and Address: Planning and Design Solutions, 4770 Campus Drive, Suite 240, Newport Beach, CA 92660 ( )

30. Remarks: A small hole in the sandstone outcrop could have been used as a rock-shelter. ( )

31. References: ( )

32. Name of Project: Devil Canyon parcel ( )

33. Type of Investigation: Surface reconnaissance ( )

34. Site Accession Number: None Curated At: None ( )

35. Photos: None ( )

See Continuation Sheet ( )

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

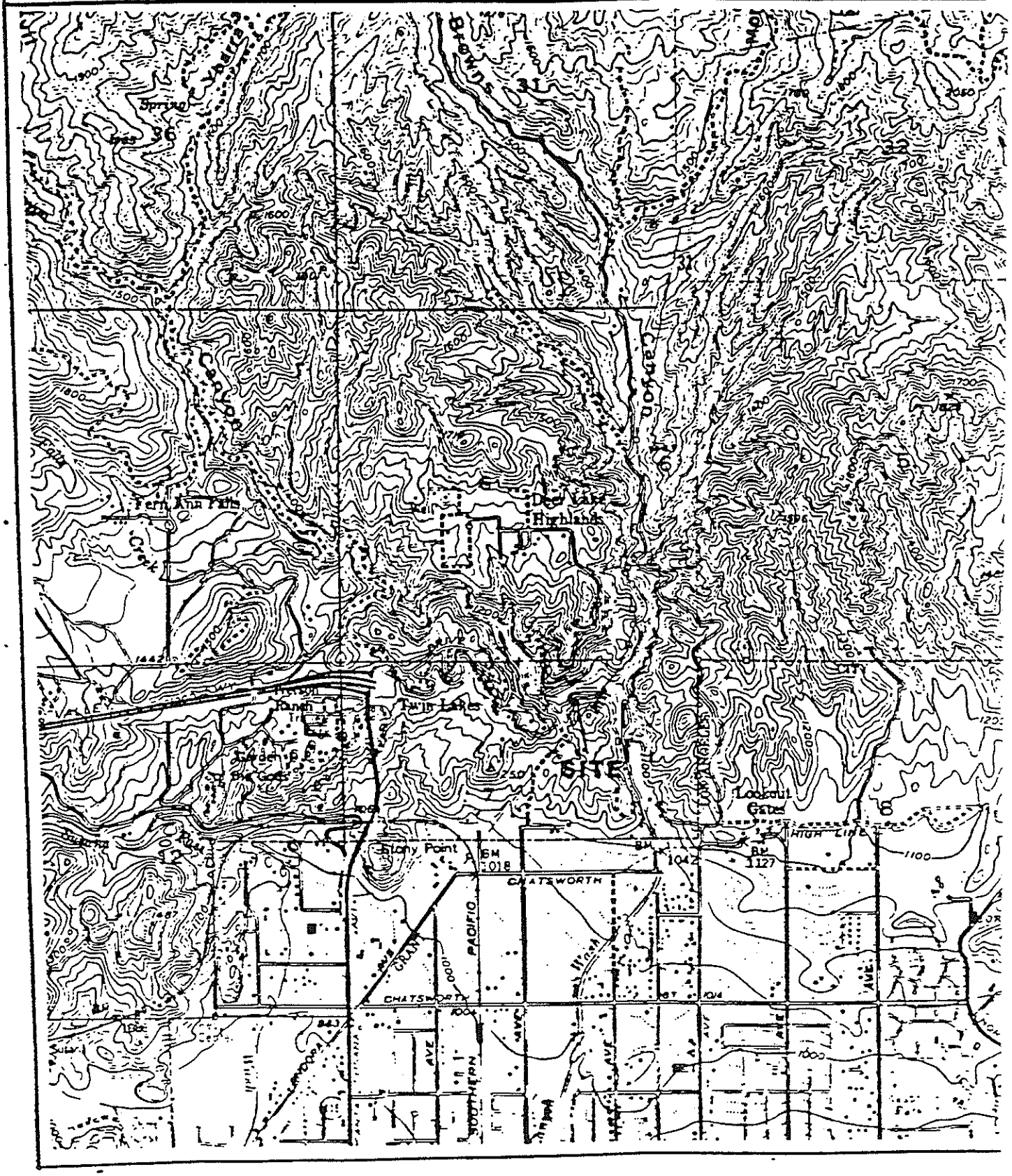
ARCHEOLOGICAL SITE LOCATION MAP

Permanent Trinomial: LAN-1743

Mo. Yr.

Other Designations:

Page 3 of 4.

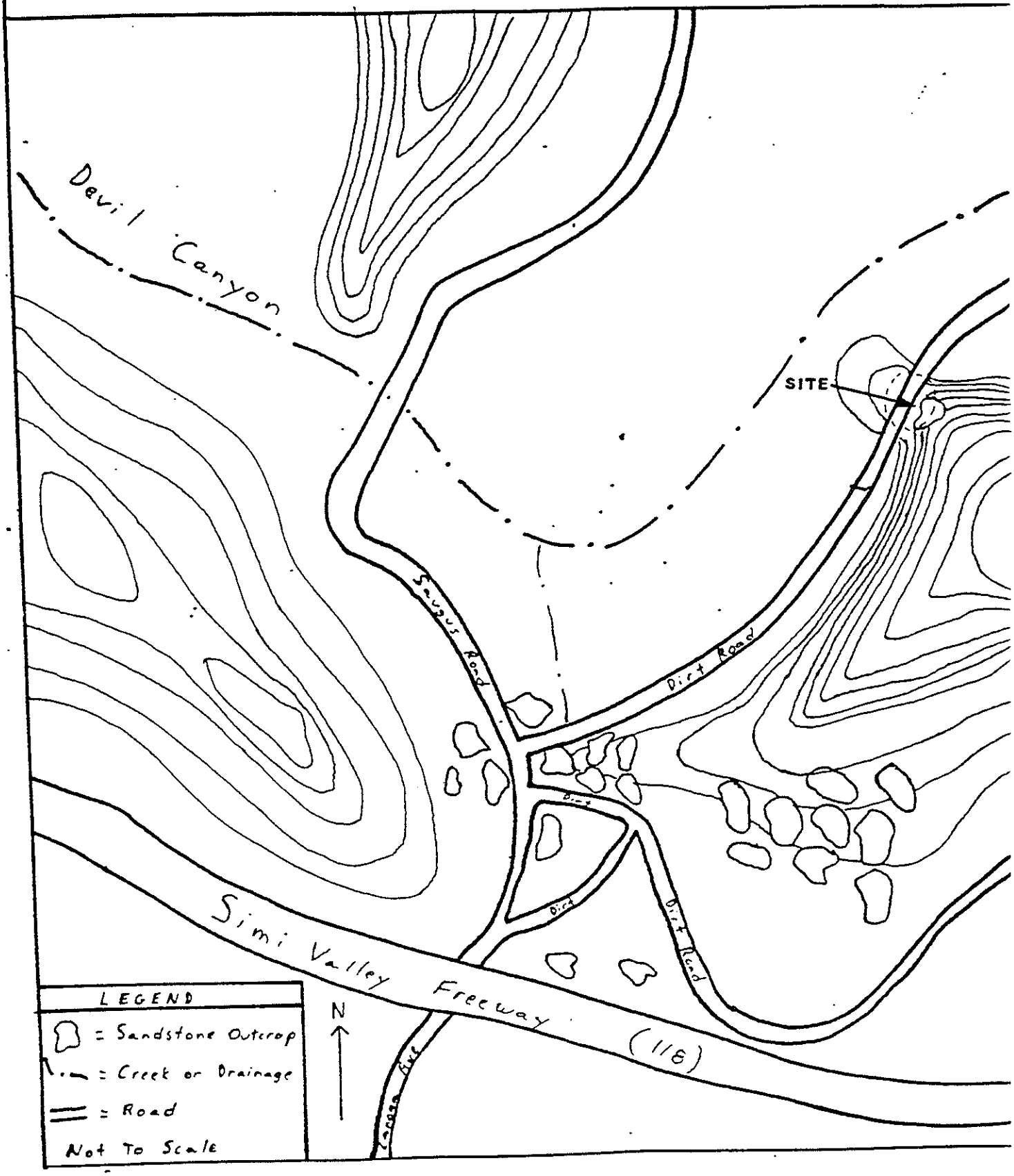

Fern Ana Falls
Creek
Dog Lake Highlands
Twin Lakes
Ranch
Garden
SITE
Lookout Gates
HIGH LINE
Stony Point
BM 1018
BM 1042
BM 1127
CHATSWORTH
GRANT
PACIFIC
CHATSWORTH
AVE
SOUTHERN
AVE
AVE
AVE

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE MAP

Permanent Trinomial: LAN-1743 Mo. Yr.

Other Designations: 5



PRIMARY RECORD **Primary #**_____

UPDATE **HRI #**_____

Trinomial___**CA-LAN-1744**____

NRHP Status Code_____

Other listings_____

Review Code _____ **Reviewer** _____ **Date** _____

Page 1 of 1 **Resource name:**

P1. Other Identifier:
P2. Location: x **Not for Publication**
P2a. County: Los Angeles
P2b. USGS 7.5 quad: Oat Mountain
Date: 1969 **T R ; 1/4 of 1/4 of Sec ; B.M.**
P2c. Address: Not applicable
P2d. UTM: 11 **Zone: ; mE/ mN** see Original Archaeological record
P2e. Location: see Original Archaeological record
P3a. Description: Site visit in May 2000 confirmed site location. Site attributes and condition are the same aS described in 1990 site record (attached).
P3b. Resource attributes: see Original Archaeological record
P3c. Resources present: x SITE
P6. Date/Age & sources: x Prehistoric. Prehistoric artifacts present on site.
P7. Owner & address: The Presidio Group
P8. Recorded by: DS Whitley, W&S Consultants, 2242 Stinson St, Simi Valley, CA
P9. Date recorded: Update - May 2000
P10. Survey type: Intensive Phase I
P11. Report citation: Phase 1 Archaeological Survey of the Chatsworth Ridge Estates Study area, Los Angeles County, California
Attachments: x Original Archaeological record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: LAN-1744 Supplement ☐

Other Designations: 3

Page 1 of 5.

1. County: Los Angeles

2. USGS Quad: Oat Mountain (7.5') 1952 (15') Photorevised 1969

3. UTM Coordinates: Zone 11 35 31 35 m Easting 3 79 43 55 m Northing

4. Township 2N Range 16W, NW % of NW % of SW % of SE % of Section 6 Base Mer. SB

5. Map Coordinates: 431 mmS 112 mmE (from NW corner of map) 6. Elevation 3180 feet

7. Location: On a small flat above the confluence of two miner drainages which are oriented north/south and empty into Devil Canyon.

8. Prehistoric x Historic ___ Protohistoric ___ 9. Site Description: Sparse lithic scatter

10. Area 30 m( )x 5 m( ) 150 m²

Method of Determination: Pacing. With only three artifacts seen it is difficult (x

11. Depth: Unknown cm Method of Determination:

12. Features: None observed

13. Artifacts: 2 quartzite cores, 1 quartzite core/chopper

14. Non-Artifactual Constituents and Faunal Remains: None observed

15. Date Recorded: 12 March 1990 16. Recorded By: Kenneth Becker

17. Affiliation and Address: RMW Paleo Associates, 23352 Madero, Suite J, Mission Viejo, CA 92691 (714) 770-8042

☞ Continuation Sheet (X)

DPR 422 A (Rev. 4/80)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: LAN-1744 ___ 1 (Sec. Yr.)

Other Designations: 3

18. Human Remains: None observed

19. Site Disturbances: None

20. Nearest Water (type, distance and direction): Devil Canyon, creek 300 meters south

21. Vegetation Community (site vicinity): Coastal sage scrub Plant List

22. Vegetation (on site): Coastal sage scrub

23. Site Soil: Medium grained sand and sandstone bedrock exposures

24. Surrounding Soil: same as above

25. Geology: Chatsworth Formation

26. Landform: low ridge/flat

27. Slope: 0 to 3 percent ( ) 28. Exposure: Southwest

29. Landowner(s) (and/or tenants) and Address: Planning and Design Solutions, 4770 Campus Drive, Suite 240, Newport Beach, CA 92660 (Planning Firm)

30. Remarks: None

31. References:

32. Name of Project: Devil Canyon parcel

33. Type of Investigation: Surface reconnaissance

34. Site Accession Number: none Curated At: none

35. Photos: none

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD
Continuation Sheet

Permanent Trinomial: CSN-1744 Mo. 1 Yr.

Other Designations: 3

Item No.	Continuation
10.	to accurately determine the area.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE LOCATION MAP

Permanent Trinomial: LAN-1744

Site. Yr.

Other Designations:

Page 4 of 5.

Fern Ann Falls
Creek
SITE
Deer Lake Highlands
Twin Lake
Ranch
Lookout Gate
HIGH LINE
Stony Point
CHATSWORTH
CHATSWORTH
CRANE
PACIFIC
NORTHERN
AVE
AVE
AVE

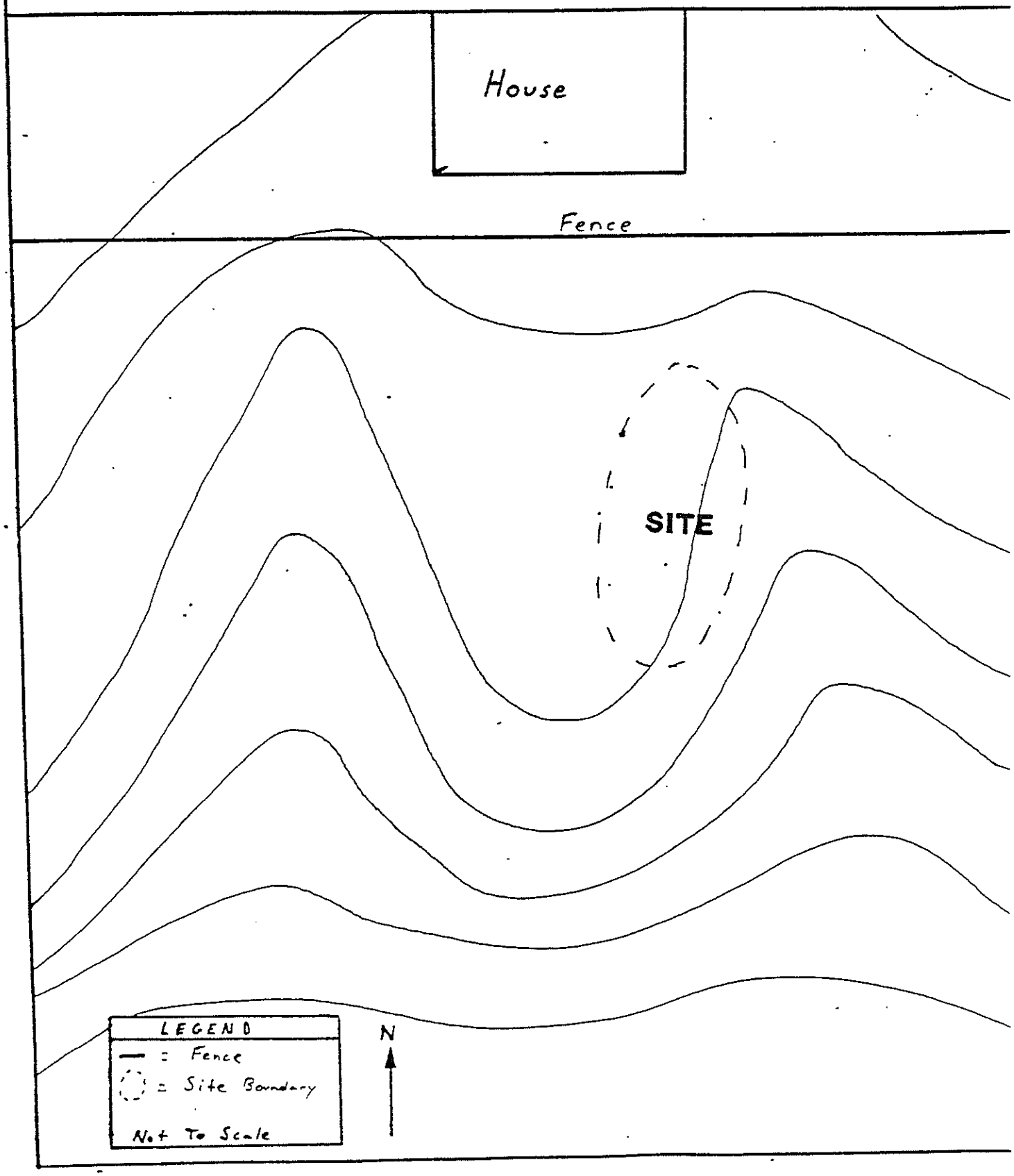
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE MAP

Page 5 of 5.

Permanent Trinomial: LAN-1744 1 Mo. Yr.

Other Designations: 3



DPR 523 C (Rev. 4/85)

PRIMARY RECORD **Primary #**_____

UPDATE **HRI #**_____

Trinomial___**CA-LAN-1745**____

NRHP Status Code_____

Other listings_____

Review Code_____ **Reviewer**_____ **Date**_____

Page 1 of 1 **Resource name:**

P1. Other identifier:
P2. Location: x **Not for Publication**
P2a. County: Los Angeles
P2b. USGS 7.5 quad: Oat Mountain
Date: 1969 **T R** ; **1/4 of 1/4 of Sec** ; **B.M.**
P2c. Address: Not applicable
P2d. UTM: 11 **Zone:** ; **mE/ mN** see Original Archaeological record
P2e. Location: see Original Archaeological record
P3a. Description: Site visit in May 2000 confirmed site location. Site attributes and condition are the same aS described in 1990 site record (attached).
P3b. Resource attributes: see Original Archaeological record
P3c. Resources present: x SITE
P6. Date/Age & sources: x Prehistoric. Prehistoric artifacts present on site.
P7. Owner & address: The Presidio Group
P8. Recorded by: DS Whitley, W&S Consultants, 2242 Stinson St, Simi Valley, CA
P9. Date recorded: Update - May 2000
P10. Survey type: Intensive Phase I
P11. Report citation: Phase 1 Archaeological Survey of the Chatsworth Ridge Estates Study area, Los Angeles County, California
Attachments: x Original Archaeological record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD

Permanent Trinomial: LAN-1745 Supplement ☐

Other Designations: 4

Page 1 of 5.

1. County: Los Angeles

2. USGS Quad: Oat Mountain (7.5') 1952 (15') _____ Photorevised 1969

3. UTM Coordinates: Zone 11 352820 m Easting 3794490 m Northing

4. Township 2N Range 16W SE ¼ of SW ¼ of NE ¼ of SW ¼ of Section 6 Base Mer. SB

5. Map Coordinates: 426 mmS 100 mmE (from NW corner of map) 6. Elevation 1340 feet

7. Location: On the eastern side of a ridge that extends into Devil Canyon. 40 meters north of the western power pole closest to the top of the ridge. 15 meters west of the power line access road running north and south.

8. Prehistoric x Historic ____ Protohistoric ____ 9. Site Description: sparse lithic scatter

10. Area 15 m( )x 10 m( ) 150 m

Method of Determination: pacing

11. Depth: unknown m Method of Determination: The site is probably shallow as is

12. Features: None observed

13. Artifacts: 1 quartzite scraper, approximately 10 flakes, two quartzite hammerstone fragments and debitage

14. Non-Artifactual Constituents and Faunal Remains: None

15. Date Recorded: 12 March 1990 16. Recorded By: Kenneth Becker

17. Affiliation and Address: RMW Paleo Associates, 23352 Madero, Suite J, Mission Viejo, CA 92691 (714) 770-8042

☞ Continuation Sheet (X)

DPR 422 A (Rev. 4/80)

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Permanent Trinomial: LAN-1745 ___ / ___ (No. / Yr.)

ARCHEOLOGICAL SITE RECORD

Other Designations: 4

18. Human Remains: None observed ( )

19. Site Disturbances: The north/south trending powerline road may have cut through the eastern edge of the site. ( )

20. Nearest Water (type, distance and direction): Devil Canyon, creek 200 metters south ( )

21. Vegetation Community (site vicinity): Coastal sage scrub Plant List ( )

22. Vegetation (on site): Coastal sage scrub ( )

23. Site Soil: Medium grained sand and some gravel ( )

24. Surrounding Soil: Same as number 23. ( )

25. Geology: Chatsworth Formation ( )

26. Landform: Slope of ridge ( )

27. Slope: 0 to 3 percent ( ) 28. Exposure: Eastern ( )

29. Landowner(s) (and/or tenants) and Address: Planning and Design Solutions, 4770 Campus Drive, Suite 240, Newport Beach, CA 92660 (Planning Firm) ( )

30. Remarks: The artifacts observed were of a poor quality of workmanship. ( )

31. References: ( )

32. Name of Project: Devil Canyon parcel ( )

33. Type of Investigation: Surface reconnaissance (

34. Site Accession Number: none Curated At: none (

35. Photos: none (

See Continuation Sheet ( )

DPR 523 B (Rev. 4/80)

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE RECORD
Continuation Sheet

Permanent Trinomial: LAN-1745 Mo. Yr.

Other Designations: 4

Item No.	Continuation
11.	indicated by the pressure of bedrock exposures.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE LOCATION MAP

Permanent Trinomial: LAN - 1745

Mo. Yr.

Other Designations:

Page 4 of 5.

SITE
Fern Ann Falls
Dell Lake
Highlands
Twin Lakes
Lookout
Gates
Stony Point
CHATSWORTH
CHATSWORTH
PACIFIC
GRANT
AVE
AVE
AVE
AVE
AVE
AVE
AVE
NORTHERN
HIGH LINE
Canyon
Canyon
Creek
Brush
Bryant
Canyon
Canyon
Canyon

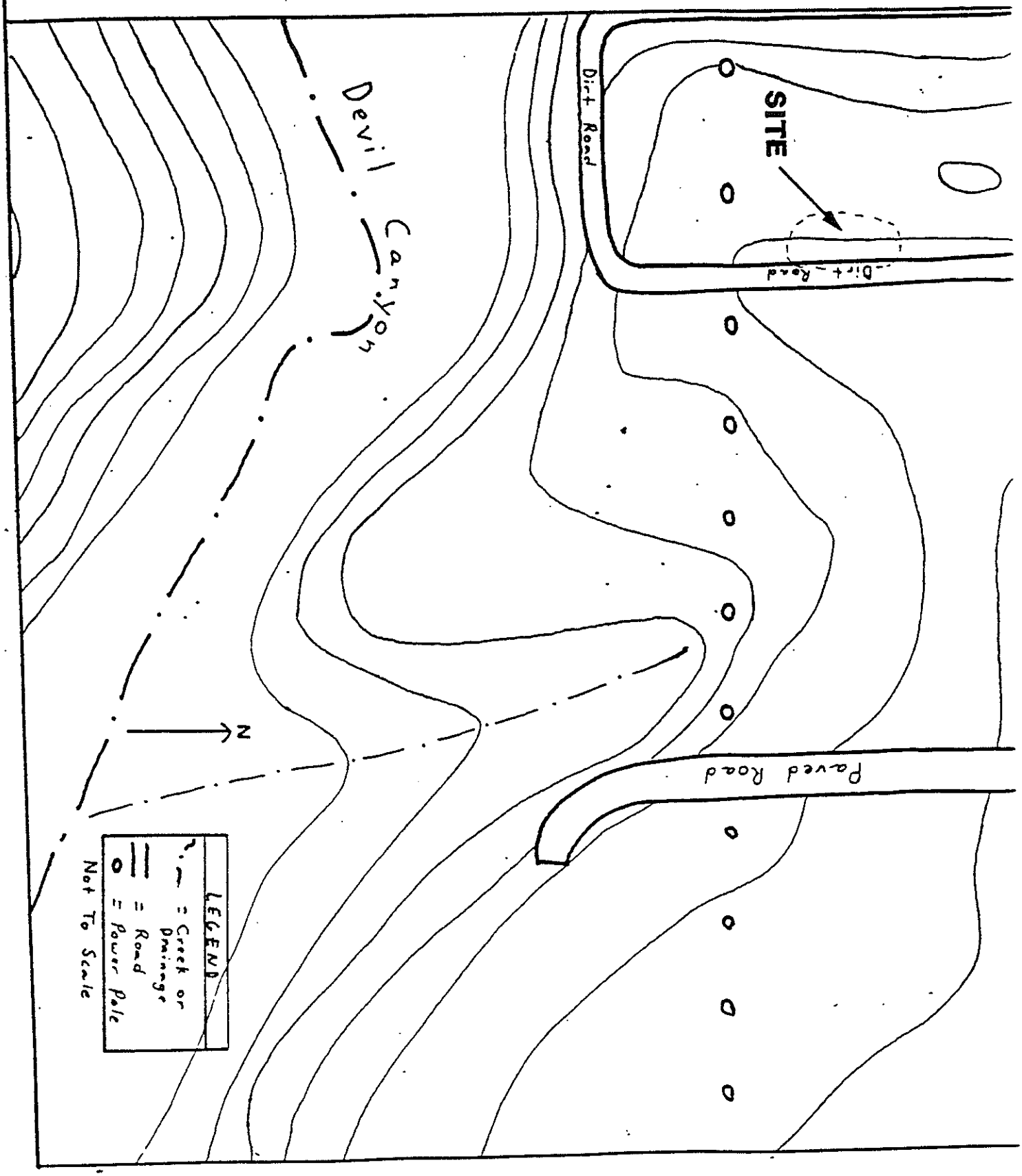
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE MAP

Permanent Trinomial: LAN-1745

Mo. Yr.

Other Designations: 4



PHASE II TEST EXCAVATIONS AND DETERMINATIONS OF SIGNIFICANCE AT CA-LAN-209, -649, -1740H, -1743, -1744, -1745, -2826 AND -2827, CHATSWORTH RIDGE ESTATES STUDY AREA, LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

Mr. Richard Garlinghouse
The Presidio Group, LLC
595 Market Street, Suite 2400
San Francisco, CA 94105

Prepared by:
W & S Consultants
2242 Stinson Street
Simi Valley, California 93015
805-581-3577

October 6, 2000

MANAGEMENT SUMMARY

Phase II archaeological test excavations and determinations of significance were conducted on sites CA-LAN-209, -649, -1740H, -1743, -1744, -1745, -2826 and -2827, Chatsworth Ridge Estates, Los Angeles County, California. This included mapping, surface collection and the hand excavation of test pits or augers on these site, as well as an analysis of the recovered archaeological assemblages, on the prehistoric sites, and documentation and analysis of the historical site. Two recorded sites (CA-LAN-209 and -649) were determined to have no intact components extending into the study area. Sites CA-LAN-1743 and -1744 were no longer extant at the time of the fieldwork. CA-LAN-1745, -2826 and -2827 were found to comprise low density, sparse surface lithic scatters. Fieldwork on them resulted in the recovery of all extant archaeological remains present at these locations. This has served to fully mitigate any adverse impacts that might result from the development of the project. Historical site CA-LAN-1740H is a bridge and dam built in approximately 1928. Examination of it demonstrated that it has experienced numerous cycles of storm damage and repair which has not been consistent with either original construction materials or architecture. From the perspective of historical resources it therefore lacks integrity and is not significant. Development of the Chatsworth Ridge Estates, therefore, will not result in adverse impacts to extant, significant cultural resources.

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INTRODUCTION

1.1 Introduction

At the request of Mr. Richard Garlinghouse, The Presidio Group LLC, Phase II archaeological test excavations and determinations of significance were conducted at eight archaeological sites in the Chatsworth Ridge Estates study area, Chatsworth, Los Angeles County, California (Figure 1). These sites are CA-LAN-209, -649, -1740H, -1743, -1744, -1745, -2826 (W&S-1) and -2827 (W&S-2). With the exception of CA-LAN-1740H, a historical bridge, these sites are all prehistoric in nature. This project was intended to determine the size, nature and significance of these sites, and thereby to provide baseline data from which an assessment of potential adverse impacts to these resources could be made. These data have been employed to develop final management recommendations for the treatment of these cultural resources.

This study was conducted by W and S Consultants during August, 2000. Joseph M. Simon and David S. Whitley, Ph.D., served as principal investigators/project directors for the study; laboratory analysis was conducted by Tamara K. Whitley, M.A., and David S. Whitley, Ph.D.; this report was prepared by David S. Whitley, Ph.D., and Joseph M. Simon. Richard Angulo served as Native American monitor for the project, representing the California Indian Foundation.

The remainder of this chapter provides environmental and cultural background to the prehistory of the region, including a summary of previous archaeological research conducted in this region; and descriptions of the eight sites. This is followed by the field methods used at each, along with a summary of the field results. We then turn to an assessment of the recovered artifact assemblages. We conclude with final recommendations for the cultural resources within the Chatsworth Ridge Estates study area.

1.2 Environmental and Cultural Overview

1.21 Environmental Background

The Chatsworth Ridge Estates study area is located near the northwestern side of the San Fernando Valley (Figure 1), north of the Simi Valley Freeway (Highway 118), with the southwestern corner of the property at the intersection of this highway and Topanga Canyon Boulevard. This places it within the southern foothills of the Santa Susana Mountains. The study area can be described as a moderately sized mesa, the Deer Lake Highlands. Browns Canyon, on the east, and Devil Canyon, to the west and south, are the approximate limits of the study area in these directions. Roughly the northern half of the study area consists of the flat mesa like area, with elevation ranging from about 1300 to 1400 feet a.s.l., whereas the canyons on the periphery are steep and very rugged.

Historic and recent land-use changes have in some areas altered the environment from its status during prehistoric times. At least four major plant associations probably characterized the region containing the study area during the aboriginal period, however. These are chaparral, coastal sage scrub, southern oak woodlands, and riparian associations (cf. Muntz 1974).

The chaparral association covers steeper slopes with poorly developed soils and xeric conditions. It includes the following species: California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), black sage (*S. mellifera*), purple or white-leaved sage (*S. leucophylla*), California encilia (*Encilia californica*), California buckwheat (*Eriogonum fasciculatum*), scrub oak (*Quercus biberidifolia*), toyon (*Heteromeles arbutifolia*), mountain mahogany (*Cercocarpus betuloides*), lemonade sumac (*Rhus integrifolia*) and sugar sumac (*R. ovata*).

The coastal sage scrub community is the climax community for portions of inland coastal-southern California. It is generally composed of coast buckwheat (*Eriogonum cinereum*), although this species is absent in some of the inland valleys, and California buckwheat (*E. fasciculatum*), along with black sage (*Salvia mellifera*), sawtooth goldenbrush (*Hazardia squarrosa*), prickly phlox (*Leptodactylon californicum*), yucca (*Yucca* spp.) and California sagebrush (*Artemisia californica*) as major constituents.

The chaparral and coastal sage scrub communities are still present on the slopes of the study area, and were undoubtedly of subsistence importance to the aboriginal population of the region, the third association, the southern

oak woodland, may have been of primary significance in the inland zones adjacent to the coastal strip. This results because of the great importance placed on the acorn as a food staple by Native Californians (Kroeber 1925), and the rarity of this resource on the coastal side of the Santa Monica Mountains. The association is characterized by the coast live oak (*Quercus agrifolia*) and the valley oak (*Q. lobata*), but also would have included various species of native grasses. Although currently restricted in distribution, this association was once more widespread in the region. The open flats of the San Fernando Valley in fact, were once partly covered by oak woodland, and it is possible that the mesa like setting of the Deer Lake Highlands also may have contained this plant association.

The fourth and final plant association consists of riparian habitats, which are localized and poorly diversified woodlands found in areas of perennial moisture. They include such species as arroyo willow (*Salix lasiolespi*), mule fat (*Baccharis glutinosa*), curly dock (*Rumex crispus*), swamp knotweed (*Polygonum coccineum*), nettle (*Urtica holosericea*), cocklebur (*Xanthium strumarium*) and rabbit foot grass (*Polypogon monspeiensis*). Though this plant association is limited in distribution, it still had significant economic importance in aboriginal times, especially in terms of the acquisition of raw materials for items like baskets, cordage and netting. Riparian habitat would have been present in both of the canyons which border the study area.

The majority of the Chatsworth Ridge Estates study area continues to support native vegetation, with most of the existing disturbance within the study area localized in the Deer Lake Highlands area, proper. Here there are a few cleared and disked areas, an occupied house, and remnants of post-World War II structures along with a limited network of roads. Again, however, the majority of the study area is relatively undisturbed, reflecting in part the fact that portions of it are topographically rugged and isolated.

1.22 Regional Prehistory

The Chatsworth Ridge Estates study area is situated in a zone known prehistorically to have comprised a portion of the prehistoric Canaliño culture area (Rogers 1929; Wallace 1955), and historically to have been located just within the territory of the Fernandeño branch of the Gabrielino ethnolinguistic group (Kroeber 1925; Johnston 1962; Bean and Smith 1978). Our current understanding of the Canaliño prehistory is summarized below.

Canaliño prehistory was first defined in a chronological system established by D.B. Rogers (1929), working on the Channel Islands and the Santa Barbara

coastline. At a later date, Rogers' scheme was modified in terminology and improved with additional and more detailed data and radiocarbon dates by W.J. Wallace (1955), who applied it to southern California more generally. Subsequently, the Rogers/Wallace chronology had been successfully applied to inland Los Angeles County (e.g., McIntyre 1990), and is now recognized as having applicability to a wide area of mesic (i.e., that area west of the xeric desert zone) Los Angeles, Ventura, Riverside, San Bernardino and Orange Counties. Due to the widespread application of this chronological scheme, we employ Wallace's framework for the purposes of this study.

Late Pleistocene Period (Pre-10,000 years B.P.)

Wallace's chronology for southern California includes four time periods, the earliest of which (Early Man/Big Game Hunting period) was considered speculative, and was correlated with the end of the Pleistocene, or Ice Age. This would represent an occupation prior to about 10,000 years B.P. (Before Present). Although it is likely that inhabitation of the southern California coastal region occurred during this early time period, evidence for such is currently extremely limited. To date, Late Pleistocene archaeological remains in southern California comprise two kinds of evidence. First, in the inland Mojave Desert region, petroglyphs (rock engravings) and surface stone tools have been dated back to approximately 20,000 and 30,000 years B.P., respectively (Whitley and Dorn 1993; Whitley et al 1996). These may well reflect the initial human occupation of North America. The contexts of these dated finds provide only limited kinds of archaeological information and, while there is much more to be discovered about this earliest prehistoric culture, existing data nonetheless suggest that these earliest inland Californians may have dwelled along the shores of Pleistocene lakes; that they exploited chert quarries to make relatively crude stone chopping tools; and that they also made rock art, perhaps as part of shamanistic religious practices.

Second, a limited number of large fluted projectile points have been found in isolated locales in the Mojave Desert and along the California coast. These projectile points functioned as parts of spears and are known to date between 11,200 and 10,000 years B.P., falling within what is called the Paleoindian Period on the Great Plains. On the Plains, such points are associated with the hunting of extinct Pleistocene fauna, such as the Columbian Mammoth. Although it is likely that these spear points were similarly used in southern California, the isolated nature of the discovered artifacts precludes any certain inference about their use or function in the California region.

Uncertainty concerning these early prehistoric cultures results from the

characteristic geomorphological instability of the California coastline and the general youthfulness of the southern California interior, combined with the major change in erosional/degradational regimes that occurred at the end of the Pleistocene (Whitley and Dorn 1993). Each of these factors does not favor the preservation of remains from this period. It is therefore likely that Late Pleistocene human occupation of Los Angeles is under-represented in the local prehistoric record, simply due to problems in site preservation.

Early Millingstone Period (10,000 - 3500 years B.P.)

With the transition towards a modern environment, starting approximately nine to ten thousand years ago, an adaptation referred to as the Early Millingstone Period or Horizon began. This is particularly evident along the coast, where many such sites are found, although a few examples are known from the inland region. Most sites of this stage date between 8500 and 3500 years in age.

Recent studies by Erlandson (1988; see also Erlandson and Colton 1991) provide evidence of a significant, even if small, population of coastal hunter-gatherers in the region before 7000 years ago, or essentially at the beginning of this Early Millingstone period. He has shown that these were neither Big Game hunters, nor specialized, hard-seed gatherers, but instead generalized foragers that relied on a variety of different kinds of terrestrial, coastal and marine resources, and that they were adapted to estuarine embayments that have long since disappeared from the local environment. Further, his evidence indicates that their primary protein sources were shellfish and other marine resources. Extending a pattern first identified by Meighan (1959) on the Channel Islands, in other words, this suggests that the adaptation to the seashore is a very ancient and long-lived tradition in local prehistory.

In the inland region, perhaps the earliest evidence of the Early Millingstone Period is provided by so-called Los Angeles Woman, a female skeleton found in the La Brea Tar Pits which has been radiocarbon dated to 9000 years B.P. Lacking clearly associated artifacts or other remains, it is difficult to interpret the Los Angeles Woman beyond observing simply that her discovery signals the fact that the inland region was in use shortly after the end of the Late Pleistocene.

Later Early Millingstone sites (post-dating approximately 6000 years B.P.) are dominated by assemblages containing large numbers of groundstone artifacts, along with crude choppers, scraper planes, and other core/cobble tools. These are thought to represent an adaptation to gathered plant foods, especially a reliance on hard-shelled seeds. Accordingly, it has been common

practice to identify any site with a dominance of these plant processing implements as Early Millingstone in age. More recently, it has also been suggested that scraper planes, in particular, may have served in the processing of agave (Kowta 1969; Salls 1985); that the association of groundstone and core/cobble tools represents a generalized plant processing toolkit, rather than one emphasizing hard-seeds, per se (Whitley 1979), and that this toolkit was used in appropriate environmental settings throughout the prehistoric past. That is, that the so-called millingstone toolkit is environmentally rather than chronologically specific and reflects localized exploitative patterns, rather than a chronologically specific adaptational strategy (Kowta 1969; Leonard 1971; McIntyre 1990). Thus, many inland sites identified as dating to the Early Millingstone Period solely on the basis of their groundstone toolkits may, in fact, not be of such age at all. However, on the coastal strip there continues to be evidence that such sites date to the earlier end of the time-frame. These sites are generally located on terraces and mesas, above the coastal verge, near permanent streams.

Although Early Millingstone period sites are relatively common along the coast, there is little evidence for the occupation of the inland region during this early time period. That is, although the millingstone adaptation to seeds and plants, and toolkits dominated by plant processing tools, are present in the inland zone, they appear to date to a later time period, with true Early Millingstone period occupation apparently restricted to the coastal strip, proper (Whitley and Beaudry 1991; cf. Leonard 1971; McIntyre 1990). Again, it is currently unclear whether this pattern reflects real differences in inland versus coastal settlement distributions, or is simply a function of site preservation problems in the inland region. Whatever the cause, it is worth noting that there are currently very few reliable or plausible chronometric dates from inland sites that are Early Millingstone in age. All current temporal assignments of inland sites to the Early Millingstone period are based on putative diagnostic artifacts but, when these are examined critically, the verity of the early age assignments become dubious. And, too often, such early age assignments are based on functional/adaptive traits rather than stylistic criteria, thus confusing adaptive patterns for temporal ones.

A good example of the confusion of millingstone functional and adaptational patterns for Early Millingstone chronological diagnostics in inland Los Angeles County is provided by the so-called "Topanga Culture", as exemplified by excavations at CA-LAN-1, the "Tank Site" (cf. Heizer and Lemert 1947; Treganza and Malamud 1950; Treganza and Bierman 1958), located in the Santa Monica Mountains immediately south of the San Fernando Valley. This is widely regarded as "Early Millingstone" chronologically, and its base

("Phase I") has been assigned 10,000 years of age, essentially due to the large numbers of millingstones, crude choppers and "cog stones" (see Treganza and Bierman 1958:75, Table 1). But, as Johnson (1966) has rightly pointed out, Phase III of the Topanga Culture is only 3000 years old, as demonstrated by his excavations at CA-LAN-2. That is, it is Intermediate and not Early Millingstone in age. It then must follow that the preceding Phase II can only be considered 3500 to 3000 years old, due to the presence of (Intermediate period) mortars and pestles in the Phase II assemblage. That is, Phase II of the Topanga Culture also can only be Intermediate period in age. Since Phase I lies conformably and immediately below Phase II stratigraphically, it likewise must follow that it immediately predates the Intermediate period Phase II remains. At best, then, Phase I of the Topanga Culture is terminal Early Millingstone or transitional Early Millingstone/Intermediate, but not necessarily of any great antiquity.

This fact is emphasized when it is recognized that one of the key classes of temporal diagnostics said to support the very early age assignment for Phase I at the Topanga Site, the cog stones, were all recovered from the Phase II deposit, even though Treganza and Bierman (1958) incorrectly assign them to the Phase I assemblage (Eberhart 1961:366-7). Thus, there is currently no evidence to suggest any great antiquity for Phase I of the Topanga culture; instead it may simply be 4000, rather than 10,000 years in age, and may represent an early manifestation of the Intermediate Period movement of a millingstone adaptation into the interior, rather than a manifestation of a coastal Early Millingstone culture in the inland zone.

Intermediate Period (3500 - 800 years B.P.)

As implied above, a transitional stage followed the Early Millingstone, which is referred to as the Intermediate Period (Wallace 1955). It is believed to have begun about 3500 years ago, and to have lasted until about A.D. 1200 (according to the latest revisions; cf. Arnold 1987). It is marked on the coast by a growing exploitation of marine resources, the appearance of the hopper mortar and stone bowl/mortar, and a diversification and an increase in the number of chipped stone tools. Projectile points, in particular, are more common at sites than previously, while artifacts such as fish hooks and bone gorges also appear.

As noted above, cog stones also first appear during the Intermediate Period, although they are widely misinterpreted as Early Millingstone in age. These are relatively small, flat cobbles, about the size of a large biscuit, that were shaped to resemble a kind of mechanical cog or gear. Although the function of these is unknown, it is likely they served as ceremonial objects, and their

geographical distribution has an important implication for regional prehistory. As first identified by Eberhart (1961), cog stones are only found from Los Angeles County south and eastward; that is, they are absent in the areas of the Santa Barbara Channel region (Ventura and Santa Barbara Counties) that, historically, were occupied by Chumash speaking groups. Although speculative, this suggests that the initial distinction between the Hokan Chumash and Takic speaking groups (which included the Gabrielino) may have developed as early as 3500 years ago (cf. Kowta 1968:50; McIntyre 1990:5), rather than only 1500 years B.P., as Kroeber (1925) first hypothesized. That is, the distribution of these "ceremonial" artifacts essentially follows the boundaries of ethnolinguistic groups during the historical period, suggesting that such boundaries may have been more-or-less stable for about 3500 years. Notably, this hypothesis is supported by excavations at Intermediate Period site CA-LAN-2233, in the Santa Clara River Valley to the north. At this site, osteometric and DNA analyses indicate that the resident population was non-Chumash genetically (Waugh 1999).

As also implied above, there is growing evidence that it was at the beginning of this Intermediate Period that inland sites, such as those found in the Conejo area on the north side of the Santa Monica Mountains, the upper Santa Clarita Valley, the Antelope Valley, and western Riverside and San Bernardino Counties, were first established and occupied. Whether this pattern holds for the interior Los Angeles Basin, including the San Fernando Valley, has yet to be determined but seems likely. This suggests the exploitation of more varied environments and perhaps an increase in population at this time and, again, it may correlate with Kroeber's "Shoshonean Wedge" moving into mesic southern California at circa 3500 years B.P. (Whitley et al n.d.; cf. Whitley and Beaudry 1991). In general, however, the Intermediate Period can be argued to have set the stage for the accelerated changes that took place immediately following it.

Canaliño/Late Prehistoric (800 to 200 years B.P.)

With the transition to the Canaliño or Late Prehistoric period at A.D. 1200, we can correlate local prehistory with the ethnographic societies as described (even if in abbreviated form) by early chroniclers and missionaries. However, this is not to suggest that local societies and cultures were in any way static, for the transition to the Canaliño period was marked by the evolution and eventual dominance of a sophisticated maritime economy. Further, among the Chumash to the west, a rise in social complexity has been shown to have been associated with the development of craft specialization, involving the use of standardized micro-drills to mass produce shell beads on Santa Cruz Island (Arnold 1987), which occurred during this period. This,

apparently, contributed if not caused the appearance of a simple chiefdom in the southern Chumash region (cf. Whitley and Clewlow 1979; Whitley and Beaudry 1991).

Although we do not have evidence that the Gabrielino developed into a chiefdom like the neighboring Chumash, the Canaliño period nonetheless witnessed a fluorescence of local aboriginal culture paralleling the Chumash case. This included a substantial growth in population, the establishment of permanent settlements on the coast (and probably at favored locales in the inland area), a high degree of sociopolitical complexity, and the development of a very sophisticated maritime economy. It was during the Canaliño period, thus, that the occupants of the Santa Barbara Channel and Los Angeles County region achieved levels of cultural and social sophistication perhaps unrivaled by hunter-gatherer-fisher groups anywhere else in the world (Wallace 1955; Johnston 1962; Landberg 1965; Brown 1967).

1.23 Ethnographic Background

As noted above, the study area falls within the ethnographic territory of the Takic speaking Gabrielino; specifically, of the Fernandeño dialect of Gabrielino. "Fernandeño" and "Gabrielino" are terms of Spanish derivation, resulting from the standard missionary practice of naming indigenous peoples after the mission to which they were attached, in this case the Missions San Fernando Rey and San Gabriel Arcangel, respectively. True indigenous names for the Gabrielino included *Kij* or *Kizh* (Johnston 1962; Reid 1968), the etymology of which is unknown; *Kumivit*, "easterner"; and *Tobikhar*, etymology again unknown (Bean and Smith 1978:548), although it is not clear that any of these terms were actually employed by the Gabrielino as self referents (see below). In contrast, the Fernandeño were known to the Gabrielino as *Pasekwarum*, from *Paseknga* (referring to a village near the San Fernando Mission). Thus, although "Gabrielino" and "Fernandeño" are in some senses inappropriate, they continue in standard usage.

Regardless of appelative, what historically have been referred to as the Gabrielino extended from Orange County north through the Los Angeles Basin to the crest of the San Gabriel Mountains, including the headwaters and watershed of the San Gabriel River, and from the coast eastward to include Mt. San Antonio (Mt. Baldy) and western Riverside and San Bernardino Counties. To the west, Gabrielino territory extended to Topanga Canyon, and included the San Fernando Valley (Kroeber 1925: Plate 57; Johnston 1962; Bean and Smith 1978a:538). Fernandeño was spoken primarily if not

exclusively within the confines of this large inland valley.

According to Bean and Smith (1978a:538), the Gabrielino were culturally extinct by the beginning of this century -- that is, prior to the recording of any detailed ethnography on them -- various sources, and analogies with better known surrounding groups, can be employed to reconstruct aspects of their ethnographic lifeways. For example, the Gabrielino and the linguistically related Serrano shared many, if not most, cultural traits (Kroeber 1925:578-580; Bean 1972:69, 1978:575-576). We base the following reconstruction, accordingly, on Gabrielino, Serrano and Cahuilla sources (e.g., for the Gabrielino, see Dakin 1939, Reid 1968, Kroeber 1925, Johnston 1962, and Bean and Smith 1978a; for the Serrano, see Benedict 1924, Kroeber 1925, Strong 1929, and Bean and Smith 1978b; for the Cahuilla, see Barrows 1900, Kroeber 1908, 1925, Hooper 1920, Strong 1929, Bean 1972, 1978; and Bean and Saubel 1972, etc.).

The terms "Gabrielino" and "Fernandeño" strictly apply to groups of people united only by the use of a dialectical variant of the Gabrielino language (itself a Cupan language of the Takic branch of the Uto-Aztecan linguistic family). That is, they imply no necessary sociopolitical unity (as in a single 'tribe') and, in fact, a series of different political units may have existed among the Gabrielino at the time of Spanish contact, explaining why there were no generic terms for these groups as unified corporate units. Further, there may have been as many as six dialectical variants of the larger Gabrielino language (Kroeber 1925:620), the best known of which was Fernandeño (cf. Englehardt 1927).

Based on these ethnographic sources combined with early Spanish accounts, we may confidently infer that the inhabitants of the San Fernando Valley region were hunters-gatherers, with subsistence emphasizing acorns, yucca, juniper berries, sage seeds, mesquite, pinyon and islay and other plant resources. Following a sexual division of labor common throughout native California, women were principally responsible for the acquisition and preparation of plant foods. Game was also hunted, with small animals, such as rabbits/hares and rodents, probably representing more significant contributions of meat protein than larger game, such as deer. Women and children contributed to the hunting (often with nets and drives) of the smaller game. The large game, however, was the exclusive domain of the adult male hunters. Also following practices common throughout the state, specific resources exploited at any given time were a function of what was then seasonally available. Since this was somewhat a function of time of year and elevation, a pattern of transhumance was followed, indicating that only a

few of the local villages (exclusive of those on the coast) would have been inhabited year around. Instead, inhabitation followed a pattern of population aggregation into large villages, usually during the Fall/Winter, when stored resources like acorns and pinyon nuts were eaten, and dispersal into single family units, typically during the Spring/Summer, when resources were more widely distributed.

It is likely that Gabrielino inhabitants wintered in large villages near permanent water sources on the Los Angeles Basin floor, whereas the Fernandeño would have occupied similar villages at springs on the San Fernando Valley floor or foothill edges. Upland zones, such as are found in the San Gabriel and Santa Susana Mountains to the north and the Santa Monicas to the south, would have been exploited seasonally, during the Spring, Summer and Fall, when valuable plant species ripened (e.g., on the northern slopes, pinyon nuts in the fall). Small, single family camp-sites would have been established near to the plant resources at this time. The highest elevations of the mountains, comprising pine forests, would probably only have been usable for hunting, with only minimal camp-sites established.

Social and political organization can be assumed to have been similar to the well described systems of the Cahuilla (see Strong 1929; Bean 1972, 1978). These involved patrilineal moieties and clans of three to ten lineages that served as political-ritual-corporate units (Bean 1978:580). Each lineage maintained a village site and resource exploitation area. The office of the ceremonial leader was usually restricted to the founding lineage of the clan, which also owned the ceremonial house and ceremonial bundle. Each lineage had its own lineage leader who served in a variety of sacred and secular capacities, and who met with other such leaders to adjudicate inter-lineage disputes. This office was hereditary and patrilineal. He was assisted in many tasks and responsibilities by a *paxa*, or assistant, also an inherited office. Ceremonial song leaders also aided in ritual activities (ibid).

It is also likely that religion followed the patterns found among surrounding groups. In this case, shamanism would have functioned as the central element. This posits a direct and personal relationship between each individual and the supernatural world, with this relationship enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychotropic plants, such as jimsonweed and, especially, native tobacco). Shamans, per se, were considered individuals with an unusual degree of supernatural power, and served as healers or curers, diviners, and controllers of natural phenomena (such as rain or thunder). Shamans are also known to have produced the rock art of this region, which depicted the hallucinations

and spirits they observed in their vision quests. In addition, however, rock art was also painted by male and female initiates at the conclusion of a puberty ritual. Importantly, this initiatory art was also intended to display the spirit helper the initiate received during these ceremonies. Thus, two kinds of ethnographic rock art can be expected in the region: sites owned and made by shamans, and sites used for village initiations (Whitley 1992, 2000).

Given the early disruption of aboriginal lifeways in historical times, it is not surprising that little in the way of information about historical villages and aboriginal place names has been recorded for Gabrielino and Fernandeño territory. However, the exploration and settlement of the San Fernando Valley region did result in the recording of a small number of place-names. As noted above, *Paseknga* was a village near the San Fernando Mission, while *Achoicomingna* was the location of the mission itself. *Tuhungna* was a village located on the north bank of Big Tujunga wash, while *Muhungna* served the same purpose near the mouth of the Little Tujunga. *Tongva* was another village name in the Tujunga area, and was sometimes used to refer to the residents of this area, while *Kawengna* contributed its name to the Cahuenga Pass.

1.24 Historical Background

Local history may be best considered with reference to three periods: Spanish, Mexican, and American. These are discussed below in turn.

The Spanish Period (A.D. 1542 - 1821)

Initial contact between the indigenous Gabrielino and the Spanish occurred in October, 1542, with the arrival of Juan Rodriguez Cabrillo along the Los Angeles County coast. This was followed in 1602 by the Vizcaino expedition, which landed on Catalina Island and visited local inhabitants there (Bancroft 1963). As exploratory expeditions, the early Spanish sailors' impact on the Gabrielino is difficult to gauge: while they clearly resulted in no permanent European settlements and made no consequential forays into the interior, it is nonetheless possible that they may have introduced diseases with widespread deleterious effects on the local population.

Substantial contact between inland Gabrielino and the Spanish did not occur for over two-hundred years after Rodriguez Cabrillo's initial foray. This event was the arrival of the overland party of Don Gaspar de Portolá in the Los Angeles Basin in 1769, preparatory to the establishment of a Spanish colony in the region (Brandes 1970; Bolton 1971; Boneau Companys 1983).

Subsequent to a stop at what would become the pueblo of Los Angeles, Portolá and his men passed through the San Fernando Valley before preceding northwards to the Santa Clara River Valley and then turning west to the sea. Called the "Encino Valley" when the expedition visited it on August 5 and 6, 1769, the San Fernando Valley was christened *Santa Catalina de Bononia de los Encinos* by Father Crespi, chaplain of the expedition.

Following Portolá's expedition, Spanish settlement of Upper California was initiated with the establishment of a series of missions, presidios (forts), and pueblos (towns). Mission San Gabriel Arcangel, in 1771, was the fourth mission founded in Upper California, and represented the first Spanish settlement in the greater Los Angeles area. With the appointment of a military governor, Felipe de Neve, in 1775, Spanish efforts to establish civilian settlements independent of the missions were also initiated. De Neve selected a possible site for such a pueblo on the Porciuncula (later Los Angeles) River in 1777 and began the process of enlisting settlers to inhabit it. These were derived from colonies in Sinaloa and Sonora and included settlers of Native American, African and Spanish descent, as well as various admixtures thereof. In all, 11 families comprising 44 individuals settled the newly founded pueblo, arriving between June and October, 1781. *Nuestra Señora de la Reina de los Angeles de Porciuncula*, as the new town was called, was officially chartered on September 4, 1781, shortly before all of the settlers had arrived (Bancroft 1963; Robinson 1981). This was the origin of what would become the City of Los Angeles.

The growth of the pueblo was relatively rapid, with population more than tripling to 139 by 1790 - that is, in less than ten years - with 29 adobe residences constructed, a town hall, barracks, bodega (municipal storehouse), and a surrounding adobe wall. This growth was aided by the establishment of ranchos, or large ranch concessions, the first three of which were granted in Los Angeles County in 1784.

Settlement and use of the San Fernando Valley, somewhat isolated from the growing pueblo by the Hollywood Hills (the eastern extension of the Santa Monica Mountains), however, lagged behind the growth of the pueblo itself and the Los Angeles Basin to the south. The initial Euro-American entrants into the valley were apparently illegal users of the lands, the rights to which were retained under Spanish law by their Native American occupants unless and until they were formally awarded by the government to non-Indian recipients. Records on these early Euro-American squatters are close to non-existent, as might be expected. One who has entered the record and who figures directly in the history of the valley, however, is Francisco Reyes.

Reyes arrived in California from Mexico in 1787, built an adobe in the pueblo of Los Angeles, and was alcalde (mayor) there between 1793 and 1795. He also built a house on an illegal ranch he was operating in the San Fernando Valley at this same time. He and one Comelio Avila kept their livestock at this ranch, which shortly thereafter became the foundation for the Mission San Fernando (Engelhardt 1927:140-141; 1930:509-513). The early Euro-American history of the San Fernando Valley is necessarily tied to the development and decline of this mission, even though it does not fall within the current study area, per se.

The decision to build a mission in the San Fernando Valley was reached in 1797, when ecclesiastical authorities recognized a need for a mission intermediate between San Gabriel and San Buenaventura (Ventura). An expedition was sent out at that time to locate a favorable spot for such an establishment. After scouting locales in the Simi, Santa Clara and Conejo Valleys, Reyes' Ranch with its nearby Fernandeño village of *Achois Comihabit* (rightly, probably "*Comihangna*") was visited and chosen as the preferred spot. Father Vicente de Santa Maria, chaplain to this expedition, noted that: "To this village belong, and they acknowledge it, the gentiles of other rancherias, such as *Taapa, Tacuyama, Tucuenga, Juyunga, Mapipinga*, and others, who have not affiliated with Mission San Gabriel" (quoted in Engelhardt 1927:5). Even at this early date, then, it appears that Native American settlement had been disrupted, and inhabitants of distant villages were congregating in newly formed aggregations. This set the stage for population distribution during the mission period in the valley, per se: the further aggregation of Fernandeño, Tataviam and some Chumash peoples into a single settlement, based on a corporate system of agricultural production.

The dedication and then construction of the mission followed closely thereafter. On September 8, 1797, Father Fermin Lasuen dedicated the mission and baptized ten children (Engelhardt 1930:513). It was named San Fernando Rey in honor of King Ferdinand V, at the request of the Spanish king, Charles IV (Thompson and West 1880:104). Father Francisco Dumetz (1743 - 1811) served as first pastor at San Fernando.

Dumetz had been born in Majorca, Spain, and first arrived in California in 1771, bringing with him the first sheep introduced into Upper California. He presided over nearby Mission San Buenaventura from 1782 to 1797 before being put in charge of San Fernando. At San Fernando he was responsible for erecting the initial buildings, building the second church and quadrangle and the so-called Christian village, and for starting the third and final church, begun in 1804. He was reassigned to Mission San Gabriel in 1805, where he

died in 1811 (Geiger 1969:66-69).

Dumetz established a stable institution which expanded in size and influence over the next few years. This included the development of the *Asistencia* (or sub-mission) of San Francisco Xavier, in the Santa Clara Valley, in 1804. This served both ecclesiastical and economic needs, as it provided a religious center for Native Americans living in the Newhall area, as well as access to additional grazing and farming lands for the growing mission population. Growth and stability of the mission was not, however, continuous during the Spanish period. In 1810 Mexico declared independence from Spain. This was not gained for another eleven years but, during this decade, economic conditions deteriorated radically. Soldiers and priests, for example, were essentially not paid, and the missions were forced to contribute to the upkeep of the local Mexican government (Englehardt 1927:35). Because of this disruption the mission system to begin to fray, although circumstances deteriorated much more rapidly once independence was achieved.

The Mexican Period (A.D. 1821 - 1848)

With Augustin de Iturbide's *Plan de Iguala*, proclaimed on September 16, 1821, Mexico finally achieved independence from Spain. Shortly prior to independence, however, a new pastor was assigned to Mission San Fernando, Father Francisco Gonzalez de Ibarra. Gonzalez de Ibarra had the unfortunate luck to run the mission during its greatest and most devastating period of decay: 1821 to 1835.

Gonzalez de Ibarra (1782 - 1841) was born in Navarre, Spain, arriving in America in 1819. He was first assigned to Monterey in 1820 and was transferred to San Fernando in 1821. Prior to his arrival, Mission San Fernando had been responsible for 2442 baptisms from the period of 1797 to 1820, averaging over 105 per year. During Gonzalez de Ibarra's 14 year tenure baptisms totaled only 412, dropping to an average of less than 30 per year. Similarly, the mission's herds of cattle dropped from a high of about 12,000 to approximately 7,000; while sheep were reduced from 7,600 to around 4,000 (Geiger 1969:110-111). These conditions resulted from the increasing financial demands made by the civil government on the missions and the resulting stress this placed on the indigenous population. Shortly after Mission San Fernando was secularized by the government in 1834, Gonzalez de Ibarra was so dispirited by these conditions that he fled California for Sonora, abandoning his ecclesiastical post without permission from his superiors. Although this act was sufficiently grievous to warrant de-frocking, his superiors recognized the very unusual circumstances which precipitated it and, following the reversal of secularization, allowed him to

return to California where he eventually died, in good graces, at Mission San Luis Rey (ibid).

Gonzalez de Ibarra was, however, a good administrator regardless of the difficult circumstances under which he was given his charge. The result was that even in its decline Mission San Fernando was one of the healthier of the California missions, and so was coveted by civil authorities as the mission system waned. The first formal step in this process (aside from the increasing demands to provide financial support to the civil government and military) was an 1827 decree requiring the missions to define their lands and assets. The San Fernando Mission declaration listed its domain as stretching 10 leagues from Cahuenga to Triunfo and northwards for five leagues to Camulos on the west and San Francisco Xavier on the east. It also declared that it was raising wheat, corn and beans and had about 6,000 cattle and 8,000 sheep at that date (Englehardt 1927:47).

The next formal action in the disbanding of the missions occurred in January, 1833, when Governor Jose Figueroa signed an act "secularizing", which is to say confiscating, the missions. Lt. Antonio del Valle was commissioned in 1834 to secularize San Fernando and, in 1835, was assigned to serve as mayordomo or administrator over its operations (ibid:50). He inventoried the mission holdings, recording that they included $5,700 in various assets, 32,000 grapevines and 1600 fruit trees, with a native population of 541. Del Valle also recorded that considerable difficulty was occurring with this native population, who according to him were responsible for constant thefts of horse and cattle (ibid:50-51). The Native American population had apparently recognized by this time that their best recourse was to retreat to more remote spots, taking with them some of the livestock and produce which they had spent their lives raising and growing. Still, some of them stayed on as the mission was reduced to the status of a parish. In 1839, when the Asistencia de San Francisco Xavier was removed from the mission and awarded as a rancho to del Valle, San Fernando still retained 416 Indian inhabitants, all of whom presumably worked as agricultural laborers for the new secular administrators (ibid:59).

Further dissolution of the mission system occurred in 1845 when Governor Pio Pico proclaimed that mission lands would either be sold by the civil government, or leased to individuals for commercial use. Pico's brother Andres and Juan Manso were awarded a nine year lease for San Fernando, at a term of $1,100/year, in 1846 (ibid:64-65). However, the ensuing war with the United States put a financial strain on the government, requiring Pico to sell the leased San Fernando mission lands to Eulogio de Celis for $14,000,

with the nine year term of Andres Pico and Manso still intact (Robinson 1961:12). Total land included in this sale was 13 square leagues, exceeding any previous land transfer in California because this sale was not constrained by the size restrictions placed on the award of rancho grants.

The American Period (A.D. 1846 -)

The American Period brought great changes to the San Fernando Valley but, unlike other regions within suburban southern California, this did not involve a continuous and relatively quick evolution from a large mission tract to the modern suburbanized and urbanized valley which exists today. For the southern half of the valley, in particular, the history of change in land-use comprised an initial phase of large-scale agricultural use (1846 - 1888) followed by a period of subdivision into small farms and ranches (1888 - 1940), followed ultimately by the suburban development evident today (1940 - present). The northern and especially northwestern areas, including the study area *per se*, were developed much later. These phases may be considered in turn.

With the transition to U.S. control of California an initial governmental concern was the examination and, where appropriate, validation of preexisting rights to land ownership. A Lands Commission was appointed in 1851 to hear lawsuits concerning contested lands. Among the first of those heard involved the mission lands, resulting from an action instituted by Bishop Jose Alemany in 1853. The civil possession of Mission San Fernando was determined illegal by the commission, and the mission buildings and lands immediately surrounding them (about 170 acres) were patented back to the Catholic Church in 1862. By this point, however, the mission was essentially in ruin.

The remaining Ex-Mission San Fernando lands stayed in civil hands, specifically under de Celis' ownership, albeit he (or, more rightly, his heirs) did not receive clear title in the form of a US patent until 1873. Moreover, he sold an undivided half interest to Andres Pico in 1854 for $15,000. Pico continued to use the land for cattle ranching, as he had under the terms of his former lease with the Mexican government. Pico subsequently sold his holdings to his brother Pio in 1862. Pio Pico, like many other Californians, suffered greatly from the droughts of the 1860s, causing him to mortgage his property to a New York bank. In 1869 he sold these mortgaged lands to the San Fernando Farm Homestead Association for $115,000 (Dumke 1944:98-99; Jorgensen 1982:85). This group got the Ex-Mission lands partitioned from de Celis' heirs, taking as their share about 60,000 acres which constituted the southern half of the valley (Robinson 1961:21). This

represented an investment of less than $2/acre for the area that would one-day become North Hollywood, Van Nuys, Reseda and Canoga Park.

The financier behind the San Fernando Farm Homestead Association was Isaac Lankershim, a Bavarian who had become rich as a grain farmer in northern California. Lankershim hired Isaac Newton Van Nuys to manage his newly acquired holdings, which they quickly put into livestock and then wheat production. Their first two years of farming were unsuccessful, largely because they had no ready means to ship their grain to port. The Southern Pacific Railroad, however, began the north-south rail route from Los Angeles to San Francisco in 1873 by laying 25 miles of track north out of Los Angeles. This first stretch of tracks (running through the area of modern Burbank) terminated at a townsite in the northern half of valley which was named San Fernando, after the mission. SPRR also extended a line from Los Angeles south to the port at Wilmington (Nadeau 1965:81-82). The establishment of the northern rail line directly led to the beginnings of development in the San Fernando Valley, albeit initially this was restricted to the northern half, some distance away from the East-West Transportation area study area.

The San Fernando line, still, provided the means for making Lankershim's large scale wheat farming economically successful. Initially, however, he and Van Nuys had to go to the effort and expense of constructing a wagon road across the Sepulveda Pass as a leverage to get the SPRR to give them a reasonable freight rate from their valley sidings to the wharves at Wilmington. Once these arrangements were worked out, truly massive farming began, with 10,000 acres seeded in wheat in 1875 (Nadeau 1965:89).

Lankershim's San Fernando Farm Homestead Association was succeeded by the Los Angeles Farming and Milling Company in 1880 in what looks largely like a paper transfer, name change, and minor reshuffling of investors; common usage still termed the property the "Lankershim Ranch" into the early 1900s (e.g., *Los Angeles Daily Times*, September 24, 1909, page 1). Large-scale farming, intended for the world market, continued into the late 1880s, when the world wheat supply exceeded demand and the price per bushel began to decline steadily (Jorgensen 1982:82). This led to the second phase of the American land-use history of the valley: a shift from large scale agriculture towards sub-division and the development of small-holdings.

This process began in 1888 when Lankershim divided off and bought outright for himself 12,000 acres of the Los Angeles Farming and Milling Company holdings in the east end of the valley (extending west to about Whitsett Avenue). With this he created the Lankershim Ranch, Land and Water

Company (Dumke 1944:99). With his son J.B. he subdivided this into small ranches and farms, selling them for $5 to $55 per acre. The population center for this development was a townsite located along the road running from Cahuenga Pass to San Fernando (near the corner of what is now Lankershim and Tujunga Blvds.), which they named Toluca. Subsequently the name of this town was changed to Lankershim and finally North Hollywood, when the local merchants decided there was something to gain by hitching their name recognition to the developing allure of Hollywood. Toluca failed to grow into a large settlement during this early period, although a hotel, school, some stores and several houses were built at this locale shortly after it went on sale (ibid). Still, Lankershim realized $200,000 in land sales in 1888, and the value of his land apparently went up rapidly. A front-page advertisement in *The Times* of April 7, 1889, for example, states the following:

> LANKERSHIM RANCH LAND AND WATER COMPANY - 12,000 Acres: Finest San Fernando Valley Lands, 10 Miles Northwest of Los Angeles on Main Line of the Southern Pacific Railroad, Now Offered in Tracts of 5, 10, 20 and 40 acres, $35 to $165 per acre! Terms, One-quarter cash. Balance 1, 2 and 3 years. Deferred payments bear interest at 7 per cent per annum.

Similar subdivisions were established in other parts of the valley, notably, the northern half, but one factor greatly impeded the development of small farms: an absence of water.

Due to complicated water rights, ultimately tied to the founding of the pueblo of Los Angeles under Spanish law, an 1881 California Supreme Court Decision held that all of the water in the San Fernando Valley belonged to the City of Los Angeles. Valley residents were therefore denied access to the surface water in the Los Angeles River, and they were denied the right to drill wells. Confounding matters even more, because these farms were situated outside of then existing City of Los Angeles limits, the city could not legally sell water rights to them. Although Los Angeles was relatively slow to enforce its rights, between 1900 and 1905 it instigated proceedings against 200 valley farmers and ranchers (Jorgensen 1982:140-141). This circumstance had a very simple effect: it further delayed the development of the San Fernando Valley relative to surrounding regions of southern California, such as the nearby San Gabriel Valley, until water became available. This effectively occurred in 1913, when the Owens Valley Aqueduct was completed, making water for the general Los Angeles region plentiful. In order to gain access to this water the inhabitants of the San Fernando Valley annexed themselves to the City of Los

Angeles shortly thereafter. Note, however, that the Chatsworth Ridge Estates study area lies a short distance west of the limits of incorporated Los Angeles, signaling the fact that it was peripheral to these early historical developments.

As is usually the case, a small group of leading citizens recognized, in advance, the economic potential of the valley once water became widely available, and so laid plans for its development. A syndicate of 30 men, including notable figures such as Harry Chandler and Harrison Gray Otis, founded the Los Angeles Suburban Homes Company by purchasing the 47,500 acres Lankershim Ranch from the Los Angeles Farming and Milling Company in 1909. (This was effectively all the land the company retained after divesting 12,000 acres to Lankershim for his Lankershim Ranch, Land and Water Company development). Their price was $2.5 million. They were led by H.J. Whitley, known as the "father of Hollywood", who served as general manager for the syndicate (*Los Angeles Daily Times*, September 24, 1909, page 1; Robinson 1961:37).

Whitley was responsible for the development of Hollywood in 1903, but even earlier had come to Los Angeles with a history of successful land development. Born in Canada, he started his American career as a professional townsite developer for the Rock Island and Northern Pacific Railroad, and later created a series of successful banks in Oklahoma prior to his arrival in California (Jorgensen 1982:144). His involvement with (and the activities of) the other members of the Los Angeles Suburban Homes Company extended beyond the San Fernando Valley, however: shortly after starting the development of the valley they purchased the 270,000 acres Tejon Ranch from Truxtun Beale (son of General Edward F. Beale) for $3 million, and were involved in a series of similar purchases at Dana Point, and in New Mexico and Baja California (Crowe 1957:118). Whitley's recognition of the development potential of the San Fernando Valley, however, apparently foreshadowed even that of his fellow syndicate members. While developing Hollywood he had the foresight to recognize the importance of Cahuenga Pass as the primary access into the valley. As a result, Whitley purchased title to the Cahuenga Pass years before the syndicate was established, thereby controlling commercial development in the "gateway to the valley".

The boundaries of the syndicate's valley purchase started at the western side of the Rancho Ex-Mission lands (i.e., Encino) and ran eastward to Lankershim's development (at Whitsett Ave.); north to Roscoe Blvd; and south to the crest of the Santa Monica Mountains. According to a period account, the property was 15 miles long and 6.5 wide (*Los Angeles Daily*

Times, September 24, 1909, page 1). The map for this subdivision was filed on March 14, 1911, and it was designated "Tract 1000", the largest subdivision in Los Angeles County history. The principles in the syndicate reserved certain portions of the tract for their personal development and/or use, with their personal parcels ranging up to 1000 acres in size. Whitley and Chandler both took only 500 acres each, located near the corner of modern Van Nuys Blvd. and Sherman Way. Whitley built his own mansion on this land, a three-story Italianate home, which faced modern Van Nuys Blvd. and was located just south of the town center of Van Nuys. In later years it served as the Praisewater Funeral Home (Jorgensen 1982:150).

Three town sites were laid out by Whitley: Van Nuys; Marian (now Reseda); and Owensmouth (Chatsworth), due south of the study area. Critical to the development of these, beyond water, was transportation or, more precisely, accessibility. This appeared in a series of forms. First, the SPRR constructed an east - west rail line across the valley in the late 1890s. Known as the Chatsworth Park Branch, it was part of the effort to create a coastal route through Simi Valley, Ventura and ultimately Santa Barbara before heading north (cf. Cameron 1963). One outcome of this line is that it made the townsite of Owensmouth, in the northwest corner of the valley, easily reached, but it also opened-up all of Whitley's development area. The Chatsworth Park Branch followed a route west from Lankershim essentially along what is now Chandler Blvd., heading northwest in the vicinity of Coldwater Canyon to skirt the modern location of L.A. Valley College, and then due west following a route that runs parallel to and a short distance north of modern Oxnard Blvd. This is one of the alternative routes for the current proposed project, and still constitutes a rail right-of-way.

The second improvement in transportation was the construction of an all-weather east - west roadway, making the valley accessible to cars, horses and wagons and, ultimately, the electric trolley. Whitley was responsible for the construction of such a thoroughfare, then known as Sherman Way, which comprised the first real road in the valley beyond the existing north - south route (Lankershim Blvd.) which ran from Cahuenga Pass to San Fernando. Sherman Way was constructed in 1911 (Jorgensen 1982:122).

A period account, published in *Sunset Magazine* in 1914, describes Whitley's Sherman Way in glowing (if not florid) terms, pointing to the fact that it represented a state-of-the-art transportation area and required an almost unheard of investment for that time. As this early author notes:

> [Whitley] made it two hundred feet wide, with the trolley in the center

> and a drive way on either side. He laid an oil macadam pavement for general traffic and an asphalt concrete pavement for exclusive automobile traffic, built concrete curbs for sixteen miles of the twenty-two...He laid out a strip of parking along the trolley tracks, other fifty-foot strips of parking on either side. Then he proceeded to embellish the highway. First he planted rosebushes five feet apart, four rows of them on the main boulevard, two rows on the connecting links, fifty miles of roses in all. Not the ordinary hedge variety but blooded stock...Behind the roses he planted rows of exotic shrubs, oleanders red and white...Behind the bushes he set out rows of magnolias from the south, of flowering acacias from Australia, alternating with stately fan-palms from the Canaries. Next he jumped to India, to the shoulders of the Himalayas, planting a double row of the deodars made famous by Rudyard Kipling. Behind the silvery gray foliage of the deodars he found room for more ornamental shrubs, and at the outer edges of the broad parkings he provided somber Monterey pines as a fitting background. Then he rested.
>
> If there is, anywhere, a highway that exceeds Whitley's twenty-two mile boulevard in width, length and in variety and character of its arboreal ornamentation, it has succeeded effectively in hiding its light under a bushel basket.
>
> (Woehlke 1982 [1914]:125)

Further enhancing the effect of this broad highway, Whitley lighted its entire length with "ornamental electroliers", putatively costing $100,000 alone to install. Having established such a standard of elegance for the boulevard, no "pioneer shacks" were allowed to be built anywhere in its vicinity (ibid). And with the initiation of the Pacific Electric Company's "red car" service, running 16 trains a day from Van Nuys to Hill St. down the middle of Sherman Way, the San Fernando Valley was finally opened for residential development.

The route of this twenty-two mile grand boulevard ran from Lankershim west along what is now known as Chandler Blvd. to Van Nuys Blvd. There it headed north to modern Sherman Way, where it again proceeded west, thereby connecting the town sites of Van Nuys, Reseda and Chatsworth with Lankershim. The original design of this roadway is still evident in the divided roadbed found in Chandler and Van Nuys Blvds. and Sherman Way, as well as the retained name of Sherman Way itself. The eastern segment of one alternative route for the current project follows the route of Whitley's boulevard from Lankershim west along Chandler approximately to Coldwater Canyon.

The combination of available water and accessibility finally even if belatedly opened up the San Fernando Valley for occupation. According to the 1910 census the valley had only about 3300 occupants; 65% of these were living in the older and more established town of San Fernando; about 26% resided in Lankershim; and the remaining 9% were residents of Chatsworth. But by 1940 population had exceeded 200,000 (Jorgensen 1982:90, 153), resulting in an average growth rate of almost 7,000 new inhabitants per year during this 30 year period. Much of this growth was precisely in those portions of the valley developed by Whitley.

Van Nuys was the focus of this initial spurt of growth, as it was the first project initiated by the syndicate. Town lots in Van Nuys were put on the market in 1911, while the open areas between this townsite and Reseda and Chatsworth were sold as small ranches and farms. These, in fact, were the primary emphasis of the development, which was marketed as a rare opportunity to obtain farming land within close proximity to Los Angeles. A period account (*Los Angeles Daily Times*, September 24, 1909, page 1) reporting the initial sale of the Lankershim Ranch to the syndicate, for example, made the following announcement:

> CHANCE FOR SMALL RANCHERS
>
> In the last two or three years lands of similar nature in this section of the State have been bringing prices so high as to oblige persons seeking acreage to go up into the fertile San Joaquin or Imperials Valleys...Within a very short time, according to the plans of the new developers, opportunity will be afforded for thousands to obtain at a fair price such lands as they desire, close to Los Angeles - so close that a trolley car could take the run in from thirty-five to forty minutes, the time dependent on the portion of the big tract set upon...The soil is uniformly rich and deep and of an alluvial character. It is declared to be of the best in Southern California for alfalfa, small fruits, and diversified farming. It is the largest single body of fertile, level land in this part of the State, and said to be the largest single body of land lying so near a big city, in the United States.

Chicken ranches were particularly common during this period, with the valley referred to as the "Petaluma of the South", in reference to this northern California town's large poultry industry (Jorgensen 1982:151).

The valley retained its primarily rural flavor through the Depression, serving as a region of small farms and fruit orchards (Robinson 1961:41). The Depression and subsequently World War II then further delayed the

development of the valley. It was not until after the war that the San Fernando Valley was fully transformed into the large area of suburbs that it is today.

Although the early creation of Van Nuys, Reseda and Chatsworth resulted in a series of nodes of early development that were dispersed across the valley, in some respects the overall development of the valley still followed a south to north and east to west trajectory, with the northern and western sides being the last to fully suburbanize. The southern foothills of the Santa Susana Mountains, which include the Chatsworth Ridge Estates study area, is a good example of this fact with this current project area still undeveloped. Because of its location away from the open flats of the valley were all early development occurred, it thus fell outside of the area of historical development and significant use.

1.3 Previous Research and Site Descriptions

The Chatsworth Ridge Estates study area was intensively surveyed on two previous occasions. Initially, eight archaeological sites were recorded on it (Bissell and Becker 1990). Three of these sites were thought to be historical in nature. These are CA-LAN-1740H, -1741H and -1742H. The remaining five sites, designated CA-LAN-209, -649, -1743, -1744, and -1745, are all prehistoric. A subsequent survey (W&S Consultants 2000) resulted in the identification and recording of two additional prehistoric archaeological sites: CA-LAN-2826 (W&S-1) and CA-LAN-2827 (W&S-2.)

Preliminary assessments of these resources suggested that the seven prehistoric archaeological sites were all intact and had the potential to be significant. Two of the three previously recorded historical sites, CA-LAN-1741H and -1742H, were found to consist of the foundations of demolished structures that were associated with contemporary trash and debris. They appeared to be post-World War II in age. While they possibly may have met the minimum age requirement of 50 years for historical resources, as specified by CEQA, they were found to be entirely lacking in integrity and thus to have no significance from an architectural perspective. Moreover, they did not have any recognizable archaeological value. Based on these considerations, they were not considered significant or unique cultural resources. The last historical site, CA-LAN-1740H, on the other hand, is a sandstone and mortar bridge that was thought to be potentially significant

from historical, architectural and/or engineering perspectives.

Thus previous surveys and assessments of the Chatsworth Ridge estates study area identified eight cultural resources warranting evaluation. All but one of them are prehistoric archaeological sites.

The eight relevant sites considered during this Phase II test project, and the previous work on them, are described and summarized in the following discussion.

1.31 CA-LAN-209

CA-LAN-209 was first recorded in 1978 by R. L. Pence and was subsequently rerecorded in 1990 by Kenneth M. Becker of RMW Paleo Associates (Bissell and Becker 1990). At that time, the site was estimated to be approximately 400 by 300 meters in size, and was described as a large habitation locale (camp) with midden soils, three rock shelters and cupule petroglyphs on one large sandstone outcrop.

This site was originally recorded to the south of the study area. During the 1990 rerecording, however, the northern edge of CA-LAN-209 was argued to extend onto the southern end of the study area; specifically involving the three rockshelters and cupule covered outcrop, which were recorded as part of the site area. It was also noted that a large portion of the site had apparently been destroyed by the construction of Highway 118. Hence, only a portion of the site still exists, and a part of this may fall within the study area.

The portions of this site that are presumed to fall within the Chatsworth Ridge Estates study area were relocated and evaluated during the 2000 survey (W&S Consultants 2000). The precise location of the property line at this particular spot was not clear at that time and a only few yards variance one way or the other was recognized as potentially placing a portion of the site inside or outside of the study area.

Those portions of the site thought at that time to potentially fall within the study area consisted of three rockshelters and a boulder containing approximately 15 cupules and incised lines, all found within a small boulder field. Lithic debitage was noted within the rockshelters and intervening between them. A subsurface deposit was also thought to possibly be present in and around these shelters. These site components appeared to be intact

and potentially archaeologically significant.

1.32 CA-LAN-649

CA-LAN-649 was rerecorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site was estimated to measure approximately 240 by 80 meters and was identified as a large stone tool quarry/workshop containing numerous quartzite cores, flakes, hammerstones and scrapers. As recorded, the southwestern margin of CA-LAN-649 extended onto the study area.

The southwestern portion of this site was confirmed to extend into the study area in 2000, as indicated by surface lithic artifacts consisting mostly of quartzite flakes and cores. The function of the site as a quarry/workshop, based on the exploitation of locally available metavolcanic and especially quartzite cobbles, was also confirmed at that time. It appeared to be intact.

1.33 CA-LAN-1740H

CA-LAN-1740H was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site is an Euro-American solid fill bridge made of local sandstone blocks, mortar and concrete. It crosses Devil Canyon and is located within the southern portion of the Chatsworth Ridge Estates study area. Its age was unknown at the time of original recording.

Continued existence of the bridge was confirmed in 2000.

1.34 CA-LAN-1743

CA-LAN-1743 was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site measures approximately 10 by 10 meters and was identified as a small, sparse lithic scatter consisting of four cultural items. CA-LAN-1743 is located within the southern portion of the study area. It was relocated in 2000, but it was unclear whether there were still extant archAeological resources at the site location.

1.35 CA-LAN-1744

CA-LAN-1744 was recorded in 1990 by Kenneth M. Becker of RMW Paleo

Associates. The site was estimated to measure approximately 30 by 5 meters and thought to be another small, sparse lithic scatter, in this case consisting of only three cultural items. CA-LAN-1744 is located within the central portion of the subject property. The groundsurface at this site was found to be intact when relocated during the 2000 survey.

1.36 CA-LAN-1745

CA-LAN-1745 was recorded in 1990 by Kenneth M. Becker of RMW Paleo Associates. The site was estimated as measuring approximately 15 by 10 meters and was identified as a third small, sparse lithic scatter, with a surface assemblage thought to comprise about 15 cultural specimens. CA-LAN-1745 is located within the central portion of the Chatsworth Ridge Estates. This site was relocated and found to be largely intact in 2000.

1.37 CA-LAN-2826

This site (originally given the temporary designation of W&S-1) was recorded on 2 May, 2000, by Joseph M. Simon of W & S Consultants. It was estimated to measure approximately 150 by 75 meters and to be a large stone tool quarry/workshop that contains a low density scatter of quartzite and volcanic cores, flakes, hammerstones and scrapers. It is located within the northern portion of the subject property. It appeared to be intact.

1.37 CA-LAN-2827

The second site (originally given the temporary designation of W&S-2) discovered on the Chatsworth Ridge Estates study area was also recorded on 2 May, 2000. The site was estimated to measure about 60 by 30 meters and consists of a small stone tool quarry/workshop that contains a very low density scatter of quartzite flakes. It too is located within the northern portion of the subject property. It is intact.

CHAPTER 2
FIELD METHODS

2.1 Introduction

Phase II archaeological fieldwork in the Chatsworth Ridge Estates study area was intended to establish the nature and significance of the eight sites, and to thereby provide baseline data from which determinations of the ultimate disposition of these cultural resources could be made. For the seven prehistoric sites this required the collection of a representative sample of artifacts and archaeological indicators, the establishment of the vertical and horizontal boundary of the cultural deposits, and an analysis of the recovered artifact assemblages from the prehistoric localities. For the historical site, CA-LAN-1740H, a bridge, it required an assessment of condition and integrity.

Procedures followed in the collection of data useful for establishing the nature and significance of the prehistoric sites included mapping, surface collecting of artifacts lying on the groundsurface, and test excavation of pits to establish the presence or absence of a subsurface archaeological deposit, as well as to characterize such a deposit if found to be present on the site. We discuss each of these field methods below, concluding with a brief description of our fieldwork at the historical site.

2.2 Surface Collection

In order to determine the maximum areal extent of the sites lying within the study area, the initial field procedure at the site was to locate, map and collect all surface remains present on the groundsurface. In order to locate all such remains, the general area of each site was walked by crewmembers spaced in approximate two meter intervals. Identified artifacts and archaeological indicators were then marked with flagging tape. Remains found within an area of approximately 3 meters square in size (i.e., within a circle with a one meter radius) were to be treated as discrete artifact associations and collected as clusters (however, no such concentrations were found on the site). Transit, stadia and surveyor's chain were subsequently used to map all remains or clusters of remains, which were numbered and collected by these provenience points.

2.3 Test Excavations

Test pits or auger holes were excavated on the sites in order to establish whether a subsurface deposit was present at each locale and, if present, to assess its significance and extent. Each test pit was dug with pick, shovel and trowel in arbitrary ten centimeter spits or levels. Spoils from each of these levels was dry screened through 1/8th inch mesh. All artifacts and archaeological indicators were collected and bagged by unit level. Excavation was continued through two culturally sterile levels (i.e., 20 centimeters), or until decomposing bedrock was encountered.

Auger holes were hand excavated with a 6 inch clamshell bit. These holes were dug in approximate 20 cm levels, with spoils also screened through 1/8th inch mesh.

The intensity of test excavation on each site varied as a function of presumed site size, probability of subsurface deposit, and other observable field conditions, including the presence of exposed bedrock and density of surface remains. In addition, text excavations at two sites, CA-LAN-209 and -649, was intended to determine whether the subsurface deposits at either site extended into the study area. That is, in both cases these are sites that are primarily located outside of the study area. The intention in these cases was determine whether parts of these sites fell within the Chatsworth Ridge Estates area, not to test them in a complete sense.

The amount of test excavation per site is detailed below:

CA-LAN-209 - 4 1X1m pits
CA-LAN-649 - 6 auger holes
CA-LAN-1743 - 2 1X1m pits
CA-LAN-1744 - 2 1X1m pits
CA-LAN-1745 - 3 1X1m pits
CA-LAN-2826 - 6 1X1m pits
CA-LAN-2827 - 2 1X1m pits

2.4 Historical Documentation

Fieldwork at site CA-LAN-1740H, a putative historical bridge, in contrast, was directed towards field documentation through photography, mapping and and analysis to determine whether this feature maintained integrity. This was

combined with a previous study of historical aerial photographs and topographical maps (Geosoils 1999), which provides the only extant documentation of the history of this architectural feature.

CHAPTER 3
FIELD RESULTS

3.1 Introduction

In the next chapter we discuss the recovered archaeological remains from the Chatsworth Ridge Estates sites, including a summary of the laboratory procedures by which the collection was processed and analyzed, and a review of each site's assemblage in typological terms. However, prior to considering the artifact collections specifically, below we present a summary of the field results at each site in a more general sense, particularly with reference to the size of the surface manifestation of the sites, the presence/absence of subsurface remains, the nature of the soils, and what these features imply about these sites. As we shall see, only certain of the recorded site locations contained extant archaeological remains.

3.2 CA-LAN-209

This site was originally recorded to the southeast of the southernmost boundary of the study area; in 1990 the site area was extended into the property boundaries, into an area where a paved road crosses through a series of boulder piles and rockshelters. (Note that this is roughly 100 meters west of the originally recorded site area.) We placed four 1x1 meter test pits within the study area to determine whether CA-LAN-209 extends onto the property (Figure 2) and, if so, to evaluate this component of the site.

Unit #1 was placed two meters west of the paved road. It was excavated to decomposing sandstone bedrock, encountered at 20 cm depth. Soils were a very dark grayish brown (Munsell 10 YR 3/2) silty loam, and were heavily disturbed. One piece of lithic debitage was recovered at 10-20 cm, but this was mixed with an even greater quantity of modern glass fragments.

Unit #2 was located one meter west of the paved road. Soil conditions were identical to those in the previous pit and were, likewise, heavily disturbed. No archaeological remains were encountered.

Unit #3, also placed west of the road, was similar to the first two units. No archaeological remains were encountered.

Unit #4 was placed east of the paved road, just inside the property boundary.

Soils were similar to those found on the other side of the paved road but decomposing sandstone bedrock was 30 cm deep at this location. This unit was culturally sterile.

Surface collection in this portion of the site failed to result in the identification or recovery of any artifacts or archaeological specimens.

In summary, this portion of site CA-LAN-209 was found to be very heavily disturbed. A road is graded through it, removing the large majority of what was once the only flat ground at this location, and we found the few areas of extant soils to contain significant quantities of modern glass at all depths. Only a single archaeological indicator was recovered during the test excavation, a waste flake. This area therefore probably once constituted a very peripheral portion of CA-LAN-209. The Chatsworth Ridge Estates portion of this site, however, clearly no longer maintains integrity or significance.

3.3 CA-LAN-649

This site was originally recorded as primarily located in a small saddle and knoll immediately to the east of the study area, but extending just into the Chatsworth Ridge Estates property. This comprises a zone of relatively steep slope, making it extremely unlikely that a subsurface deposit would be present.

Six 6" auger holes were excavated within the study area and putative site boundary (Figure 3). Soils were found to be uniformly thin, rocky colluvium, dark yellowish brown (Munsell 10 YR 4/4) in color, varying from about 5 to 30 cm in depth. No archaeological remains of any kind were found.

Surface collecting also failed to result in the identification or recovery of any archaeological remains. Based on these findings, it is apparent that site CA-LAN-649 does not extend into the Chatsworth Ridge Estates study area.

3.4 CA-LAN-1740H

Fieldwork at this site, a historical bridge and dam, was directed towards documenting and assessing the integrity of this structure. A history of the study area, based primarily on an analysis of historical aerial photographs and topographical maps, was completed by Geosoils (1999). This provides the primary existing documentation of the history of this dam and thus can

be used in conjunction with the field data to assess the significance of this historical structure.

Based on the map and air photo reconstruction, this bridge and dam were constructed in approximately 1928 and appear to have been part of an early effort to subdivide the property for vacation lots. The study area was referred to as "Twin Lake Park" at that time, with the bridge forming part of the access road network that was fully graded, by 1929, for this subdivision. The dam, furthermore, served to create the upper of the twin lakes on Devil Canyon Creek. The road from the bridge onto the central portions of study area was dirt at that time (Geosoils 1999).

By 1930, approximately 18 residences were present in the general area; however, the lakes were even by that early date apparently drying up, with only a small amount of water visible in the air photos. By 1945 most of the graded roads had become overgrown with natural vegetation, indicating that the majority of the lots had never been sold, and no real population ever moved onto the study area property, per se. In late 1970 a fire destroyed all of the residences, with one exception, which is still standing and was heavily remodeled in the late 1970s.

CA-LAN-1740H, then, is a dam and bridge that were constructed circa 1928 to provide access to and to create a dam and lake for a small residential/vacation development. Little effort appears to have been made towards maintaining the lake that this structure was intended to create, perhaps due to the fact that the development was never particularly successful. Despite the fact that this lake is shown on a series of topographical maps (including the 1969 USGS Oat Mountain quad), the air photos indicate that the dam was largely ineffective in creating a lake of any permanence. However, the bridge across the dam top has served to provide access across Devil Canyon to the scattering of houses that are present in this general area.

The dam and bridge were found to consist of a solid structure that is 75 feet long, 12 feet wide and 36 feet high above the canyon bottom at its downstream (eastern) face. Examination of it reveals that it has experienced multiple episodes of repair and modification in order to keep it in operation as a dam and, primarily, single lane bridge (Figures 4 - 8). The downstream face shows a minimum of five and perhaps six episodes of construction and repair. The foundation of the dam, sitting on top of exposed bedrock in the canyon bottom, is mortared brick (Figure 5). The bridge may therefore have originally been an all brick structure crossing the canyon. This brick,

however, is currently overlain with random coarses of large but unmodified boulders that rise up, in some areas, to the current road bed. In the middle of the span, above what is presumably the original spill gate, a wash-out at some point apparently removed the central portion of this boulder construction. This was replaced by coarses of newer but much smaller unmodified field cobbles, mortared with a different cement (Figure 6). Above this solid dam structure, the road consists of a poured concrete bed. This too has experienced at least one episode of repair, the last of which appears to have resulted in the construction of a new wing dam and spill on the southern side of the canyon (Figure 7). This appears to be relatively recent, perhaps less than 30 years old.

Some of these repairs are also evident on the upstream (west) face of the structure. This is concrete faced, and at least two (and probably three) distinct poured facings are apparent (Figure 8). In addition, two episodes of wing dam construction can also be observed, the second of which is the one evident from the other bridge face.

It is then apparent that, in its roughly 70 year life span, this structure has experienced a regular cycle of storm damage and then repairs to keep the road in use; repairs which called upon whatever constructional resources were available at that moment. As a result, it is our opinion that, from the perspective solely of cultural resources issues and concerns, this heavily and repeatedly modified bridge and dam no longer maintains architectural or engineering integrity, and is therefore not a significant cultural resource. Note that this is not a comment on the engineering integrity of this structure from the perspective of safety, construction code, or usability (which we are not qualified to assess) but, instead, solely an evaluation of its integrity as a historical resource.

3.5 CA-LAN-1743

Two pits were placed on this small site (Figure 9). It was found to have been graded down to sandstone bedrock with only a small remnant -- about 3 cm -- of soil left on the groundsurface. This soil was silty loam that was dark yellowish brown (Munsell 10 YR 4/4) in color. Both of the test pits were, accordingly, culturally sterile. Similarly, surface collection failed to result in the identification or recovery of any archaeological remains.

Site CA-LAN-1743 either was never an archaeological site, or was destroyed sometime subsequent to its original recording in 1990. In either case, there

are no extant cultural resources at this location.

3.6 CA-LAN-1744

Site CA-LAN-1744 was found to lie within an area of very shallow topsoil; in fact, essentially in an area where bedrock was exposed at the groundsurface. The two pits excavated at this location (Figure 10) encountered decomposing sandstone bedrock at about 2-3 cm. The small amount of topsoil present consisted of silty loam that was dark yellowish brown (Munsell 10 YR 4/4) in color. No archaeological remains were encountered.

Surface collecting also failed to result in the identification or recovery or archaeological remains at this location.

There are no extant archaeological remains at the location of CA-LAN-1744.

3.7 CA-LAN-1745

Three 1x1 m pits were excavated at this large but low density archaeological site (Figure 11). Soils at this location proved to be an oxidized silt that is dark yellowish brown (Munsell 10 YR 4/4) in color. These thin soils overlay decomposing sandstone bedrock, which was encountered between 2 and 5 cm in depth.

Three archaeological specimens were recovered at this site. One of these was found during surface collection, per se; the other two were found in the 0-10 cm level of Unit #1. Given that this unit only went 2 cm deep, it is clear that these examples too are effectively surface remains that had gotten slightly intruded into or covered by soil.

The archaeological evidence at CA-LAN-1745 demonstrates that this is a small, low density surface lithic scatter, measuring only about 40 feet (12 m) in diameter. No additional archaeological remains are still present at this site location.

3.8 CA-LAN-2826

Six 1x1m test pits were excavated at this site, which is located on the open slopes towards the northern side of the property (Figure 12). Soils in these

units were in some respects similar to those found at the other sites within the study area; specifically, they were quite thin, with decomposing bedrock a short distance below groundsurface. However, these soils consist of a residual oxidized B horizon that is dark yellowish brown (Munsell 10 YR 4/4) in color. Depth of decomposing bedrock was approximately 10 cm in all six units.

No subsurface deposit was found at this site. Surface collecting resulted in the identification and recovery of six prehistoric tools; another eight specimens were found on the groundsurface of the test pits during excavation. The overall distribution of these finds falls within a 200 feet (62 m) diameter area, or about 3000 meters square.

CA-LAN-2826, in other words, is a relatively small and low density surface lithic scatter, with approximately one specimen per 215 meters square. All of these artifacts that were once present on it have now been collected.

3.9 CA-LAN-2827

Two 1x1m test pits were excavated on this small site (Figure 13). Soils and field conditions were fully equivalent to those encountered at CA-LAN-2826, reflecting the fact that both sites are located on similar slope positions towards the northern side of the property. Soil at CA-LAN-2827, in other words, was likewise a residual oxidized B horizon that was dark yellowish brown (Munsell 10 YR 4/4) in color. Decomposing bedrock was also encountered about 10 cm below groundsurface in both pits.

No subsurface artifacts were found at this site. Two specimens were, however, recovered during surface collection. These were found in an area approximately 20 feet (6m) in diameter.

CA-LAN-2827 is clearly a very small, sparse lithic scatter. No additional artifacts are still present at this location.

CHAPTER 4
ARTIFACT ASSEMBLAGE AND ANALYTICAL CONCERNS

4.1 Introduction

Although the general patterns of artifact distribution, enumerated in the previous chapter, provide important information relative to the size and nature of the sites in the Chatsworth Ridge Estates study area, proper determination of the significance and scientific importance of these sites requires a more intensive analysis of the recovered artifact assemblages. Accordingly, in this chapter we consider these assemblages in analytical detail. We begin by detailing the laboratory procedures followed in the processing and curation of the recovered remains. Subsequently we outline the taxonomic system employed to categorize and classify the site collections. This is followed by a typological summary of the artifacts and archaeological indicators recovered from each the sites. Note, in this regard, that recovered artifact collections were limited to four of the eight sites: CA-LAN-209, -1745, -2826 and -2827.

4.2 Laboratory Procedures

Following the completion of the Phase II fieldwork at the Chatsworth Ridge Estates study area sites, the recovered artifact assemblages were taken to the W & S Consultants' laboratory for washing, processing and analysis. After each specimen was washed and labeled, metrical and typological analyses were performed. We provide measurements and weights for the various artifacts and archaeological indicators in the site catalogs (Tables 1, 3, 5 and 9) included in this report. In order to facilitate typological comparisons between this site and other similar sites from this same region, we have employed a standardized taxonomic system. We start by describing this classificatory system in some detail below.

4.21 Taxonomic Considerations

In considering the artifacts recovered from the the Chatsworth Ridge Estates study area sites, we employ a morphological stone tool typology first published by Whitley et al (1979) and now widely used in the region. This affords a number of advantages. First, because of its widespread use (e.g., Johnson 1979; W & S Consultants 1984, 1989a, 1989b) it permits easy

comparability between existing studies. Second, because it is morphologically rather than functionally based, it provides greater objectivity in taxonomic assignments. Specifically, it avoids the dangers inherent in inferring dubious functional purposes for stone tools that may have had multiple uses, and that often exhibit little in the way of formal attributes. In the Canaliño region, in particular, it is increasingly clear that most sites are characterized by expedient or casual tool assemblages, probably reflecting the fact that the sites resulted from dispersal phase activities that little emphasized formal patterns of behavior (W & S Consultants 1989b). Thus, a typology based on the elucidation of tool manufacturing stages, rather than one assuming final function of the implements, stands less chance of leading interpretations astray. However, this is not to imply that functional interpretations are unwarranted or undesired. Such is not the case; instead, it is simply to emphasize that functional interpretations must be made somewhat independent of - and therefore including other lines of evidence from - the typological assignments alone.

The morphological typology employed here is based on four major categories of stone artifacts (cf. Whitley et al 1979). These are: (i) groundstone implements; (ii) core/cobble tools; (iii) flaked stone tools; and (iv) tool manufacturing waste, or debitage. Groundstone implements are tools that have been pecked and/or ground into shape. They include manos (or mullers) and metates (or basal grinding slabs), along with mortars, pestles, stone bowls and comals (or griddles). Although there is a general association between groundstone artifacts and plant grinding, pulping and processing, as in the case of manos, metates, mortars and pestles, this is not invariably so: stone bowls and comals, for example, had other uses, with certain kinds of bowls, in particular, sometimes reserved for ceremonial purposes.

Groundstone artifacts are usually (but not invariably) made of softer lithic materials. Metates, for example, are often made from sandstone or some other sedimentary material; bowls and comals are typically manufactured from steatite (soapstone or talc schist). Manos, however, were often derived directly from river cobbles of appropriate size, so that quartzite is a common material source.

Core/cobble tools are generally large, bulky implements made by the re-use and/or modification of a river cobbles and lithic cores. They include 'hammerstones', 'choppers' and 'scraper planes'. Hammerstones are usually unshaped or minimally shaped, roughly fist sized, stones that exhibit characteristic battering and pounding scars, but often otherwise lack modification. Choppers are cobbles or cores that have been unifacially or

bifacially flaked to create a relatively sharp edge. Scraper planes are high-backed, unifacially flaked tools that are usually 'biscuit-shaped' in plan, with edge angles near perpendicular, and with heavy use scars along their convex face.

All of these tools were apparently employed for heavy pounding, scraping and/or battering tasks. There is a frequent association of core/cobble tools with groundstone artifacts (specifically manos and metates) in the inland region (Whitley 1979b), suggesting that the two categories may have been functionally related; that is, that core/cobble tools may have served as part of a plant acquisition and processing toolkit. This is supported in reference to the scraper planes, in particular, which are argued to represent special yucca processing tools (Kowta 1969; Salls 1985). Further, this suggests in turn that the core/cobble tools were part of a woman's plant gathering toolkit (W & S Consultants 1989b).

Flaked or chipped stone tools are secondary reductions from cores and cobbles. That is, they represent tools manufactured from flakes struck the primary sources of lithic materials. These flakes may be used without modification as 'utilized flakes'; they may be bifacially flaked; or they may be unifacially flaked. It is apparent that the majority of the flaked or chipped stone tools in inland southern California are either utilized flakes with no modification, or have edges that have been flaked unifacially or bifacially, but exhibit little or no effort for further edge modification or shape regularization (W & S Consultants 1989b). Again, this further emphasizes the casual or expedient nature of these tools, and also implies that they may have been used for a variety of tasks with little functional specialization.

Correspondingly, the majority of the chipped stone tools from this region are what we have defined as biface or uniface 'edges', and they may have been used for any number of general cutting, scraping and abrading tasks. Of course, occasional projectile points and drills represent special types of bifaces with specific and known functions, whereas biface 'knives' (large leaf or knife shaped tools) are presumed to have been used for cutting and piercing/stabbing tasks.

Generally, chipped stone tools were made from material with particular flaking characteristics; specifically, those subject to conchoidal fracture. Crypto-crystallates such as chert and chalcedony, therefore, are common raw materials, but fused shale, quartzite, cherty-siltstone, rhyolite, andesite, basalt and occasionally obsidian may also be present in a collection. Because small hand specimens of rhyolite, andesite and basalt are, in fact, only

distinguishable with petrographic analysis, we treat them all as "fine-grained volcanics". And, as we have recently discovered (W & S Consultants 1991b), "fused sandstone", resulting from contact metamorphism between Miocene Conejo Volcanics and sedimentary beds, was also a lithic material of common use in the inland region. Because of its similarities to fused shale (based, of course, on similar metamorphic origins), it has often been mistaken for this latter material. This would be inconsequential, save for the assumption that the putative fused shale has its sole origins in Grimes and Happy Camp Canyons, north of Moorpark. Instead, it is apparent that a number of fused sandstone quarries are present in the inland region (particularly eastern Ventura County); that their respective lithic materials are widely misrecognized as fused shale; and that, therefore, lithic exploitation was probably much more widely ranging than the often inferred simple exploitation of major quarries at Grimes Canyon might suggest (W & S Consultants 1991b).

The final category of stone artifacts is what can be considered lithic waste or debitage. It includes spent cores, waste flakes, and angular shatter. There are a number of different kinds of cores and flakes, and the presence of these varieties at a site tends to signify different types of tool reduction or manufacturing techniques. For example, the presence of large numbers of secondary and tertiary flakes usually indicates that chipped stone tool manufacture occurred at a locale, whereas primary flakes alone might be associated with the making of the cruder chipped stone tools, or might be expected at quarries where only the preliminary stages of tool manufacturing were conducted. Similarly, relatively large proportions of tertiary flakes correlate with habitation/campsites, in that tool maintenance and finishing occurred at these locales. Furthermore, because different lithic materials tend to correlate with different categories of tools, the material present in the debitage collection can also be a clue to a site's function. Quartzite and other 'crude' lithic materials, for example, are often found where core/cobble tools are manufactured, whereas crypto-crystallates tend to occur where chipped stone tools are manufactured. And, in a general way, there is an association between these last materials, chipped stone artifacts, and habitation sites (W & S Consultants 1989c).

In addition to the lithic tool typology, other classes of artifacts may be present at inland southern California sites. Dietary remains, in the form of shellfish and faunal bones, are sometimes present, as are ornaments, usually in the form of shell beads. Where appropriate, based on the specifics of a recovered artifact assemblage, we consider these categories of remains below, as well.

4.3 Artifact Assemblage: CA-LAN-209

The artifact assemblage recovered from that portion of site CA-LAN-209 tested during this project is summarized in Tables 1 and 2. Table 1 is the catalog for the site; Table 2 provides details concerning lithic debitage.

As Table 1 shows, the large majority of the recovered remains found during the test excavation are shards of broken but modern glass. These have no archaeological value beyond the fact that they provide evidence of the degree of disturbance that the soils at this location have experienced. As this catalog makes clear, the soils in this area have been thoroughly mixed. The implication of this finding, in terms of archaeological remains, is that this area lacks integrity.

As seen in Tables 1 and 2, only a single archaeological specimen was recovered during the fieldwork at this site. This consists of a piece of lithic debitage or tool manufacturing waste. In this case this is a primary quartzite flake weighing 8.7 grams. Quartzite is a common and locally available lithic resource, with quartzite cobbles eroding out local conglomerates and gravels.

4.31 CA-LAN-209 Summary

The nature of the archaeological remains recovered from CA-LAN-209 are too limited to allow any assessment or even speculation concerning the nature of this site as a whole. However, the recovered assemblage is quite valuable for management purposes. It indicates that the study area is, at best, on the very periphery of this site. It further indicates that this portion of the study area is very highly disturbed. Any portion of CA-LAN-209 that once fell within the boundaries of the Chatsworth Ridge Estates property no longer maintains integrity, and is therefore not significant.

4.4 Artifact Assemblage: CA-LAN-1745

As in the previous site, the artifact assemblage recovered from CA-LAN-1745 was quite limited in both size and diversity. Tables 3 and 4 summarize the recovered remains from the site, which are limited to three specimens. All are pieces of lithic debitage or stone tool manufacturing waste.

Two of these specimens are quartzite. One of these is a primary flake; the second is a piece of angular shatter. The third specimen is metavolcanic. it too is a piece of angular shatter.

Quartzite and various types of metavolcanic (basalt, rhyolite, etc.) are common constituents of local gravels and conglomerates. The fact that two of the three specimens recovered at the site are angular shatter while the third is a primary flake suggests that this site is a minor location where the assaying of locally available materials occurred.

4.41 CA-LAN-1745 Summary

Judging from the recovered artifact assemblage, CA-LAN-1745 can be categorized as a very small and sparse lithic scatter. Most likely it was related to the assaying, directed towards the eventual quarrying, of locally available cobbles. Given the nature of the recovered assemblage, it is impossible to make any estimate of site age. Logically, however, this site was probably created when village sites in the nearby region may have been occupied. Fieldwork at the site has resulted in the collection of all archaeological specimens that were once present at this location.

4.5 Artifact Assemblage: CA-LAN-2826

A total of 14 worked artifacts and archaeological specimens were recovered from CA-LAN-2826 (Table 5). These include groundstone (Table 6) and core/cobble complex (Table 7) tools, as well as lithic debitage (Table 8).

The groundstone is limited to a single example. This is a Type 4C, shaped bifacial mano (see Whitley et al 1979). It is relatively small in size, circular in outline, and made of sandstone. It provides straightforward evidence for plant processing at the site.

The core/cobble complex tools, with five examples, are the most common worked artifact class at CA-LAN-2826 (Table 7). They include a Type 1 core scraper plane, made of cherty siltstone; two Type 3 core hammerstones, one andesite and the other quartzite; and one Type 1 cobble hammerstone that is also quartzite. Core/cobble complex tools were suited for heavy processing tasks and they are commonly found in association with groundstone. They appear to have been related to plant processing, possibly to the pulping and

extraction of plant foods such as roots, bulbs and tubers. Scraper planes specifically may have been used to pulp agave, a plant which is present on the site and the dry south facing slope where it sits.

Eight pieces of lithic debitage were also recovered from this site (Table 8). Locally available quartzite is the most common debitage material (5 specimens or 62.5% of the total), but quartz, chert and andesite are also represented, each contributing one specimen (12.5% apiece). Angular shatter is the most common debitage class, again at 62.5% of the total. Two (25%) of the debitage pieces are primary flakes; the last is a tertiary flake.

4.51 CA-LAN-2826 Summary

CA-LAN-2826 is by far the largest site in the study area, but it still qualifies as a small and low density surface lithic scatter. Although no chronological evidence was recovered from it, the function of this location is reasonably clear. It apparently served as a plant gathering and processing station, presumably oriented towards hard seeds, bulbs, roots and tubers (as opposed to acorns). As such, it was presumably ancillary to a large habitation site that would have been located somewhere in the general vicinity; in this case clearly outside of the Chatsworth Ridge Estates study area.

As is common at such sites, a small amount of lithic reduction also occurred at CA-LAN-2826. As in other instances on the property, this appears to have been oriented primarily towards the assaying of locally available cobbles, rather than towards intensive lithic quarrying, per se. In either case this was a casual as opposed to systematic activity, reflecting the general expedient nature of the tool kit.

As a result of the fieldwork at CA-LAN-2826, no additional archaeological remains are present on this site.

4.6 Artifact Assemblage: CA-LAN-2827

The final site with a recovered artifact assemblage is CA-LAN-2827 (Table 9). This assemblage was limited to two specimens. One of these is a Type 1 irregular (or multiplatform) core. It is quartzite. The second specimen is also quartzite. It is a primary flake.

These two specimens indicate that a very small amount of lithic reduction

occurred at this location. Again, this emphasized locally available quartzite.

4.51 CA-LAN-2827 Summary

The small artifact assemblage recovered from CA-LAN-2827 indicates that it is a sparse surface lithic scatter of unknown age, oriented towards a very minor amount of lithic reduction. As a result of the fieldwork at this site, there are no additional archaeological remains present at this location.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Test excavations and determinations of significance were conducted at eight archaeological sites in the Chatsworth Ridge Estates study area, Chatsworth, Los Angeles County, California. This Phase II fieldwork involved mapping, the surface collecting of groundsurface artifacts and archaeological indicators, and the hand excavation of test pits or augers on each site, along with laboratory processing, cataloging and analyses of the recovered artifact collections. Seven of these sites are prehistoric (aboriginal) in nature; the eighth is a dam and bridge dating to about 1928.

A number of the prehistoric sites were found to no longer be extant at the time of our fieldwork. Those that still contained archaeological remains were found, in each case, to comprise sparse surface lithic scatters; no subsurface deposits were found. Fieldwork at these surface lithic scatters resulted in the recovery of all extant artifacts and archaeological specimens at them.

In the following, we summarize the findings at each of these sites, as well as our final recommendations for their management and disposition.

5.2 CA-LAN-209

A small corner of site CA-LAN-209 was thought to potentially extend onto the southernmost edge of the Chatsworth Ridge Estates property. Testing resulted in the recovery of only a single waste flake, found in a very disturbed context. This indicates both that this portion of the study area is on the very periphery of this larger site, and that this peripheral area is entirely disturbed and lacks integrity. Development of the project therefore does not have the potential to result in direct adverse impacts to CA-LAN-209.

5.3 CA-LAN-649

A portion of a relatively steep slope on the eastern side of the Chatsworth Ridge Estates property abuts a portion of this archaeological site, which primarily is located outside of the study area. Fieldwork demonstrated that

this site does not extend into the project area. Development of the project therefore does not have the potential to result in direct adverse impacts to CA-LAN-649.

5.4 CA-LAN-1740H

This is a historical bridge and dam built circa 1928 as part of the original Twin Lake Park development. It apparently has been ineffective as a dam but, instead, has primarily served to provide access to the scattering of houses on the north side of Devil Canyon. Examination of the structure shows that it has been extensively altered over the years, through repairs presumably to fix storm damage, with as many as six major reconstructions having occurred. None of these repairs was faithful to the original construction materials or techniques, but instead employed whatever was at hand and convenient. The structure therefore lacks historical integrity and is accordingly determined not significant.

5.5 CA-LAN-1743

No archaeological remains of any kind could be identified at the location of this previously recorded site, which was found to have been bulldozed sometime after the site was first recorded in 1990. Development of the project therefore does not have the potential to result in adverse impacts to CA-LAN-1743.

5.6 CA-LAN-1744

As in the previous case, Phase II testing failed to result in the identification or recovery of archaeological specimens or artifacts of any kind at this site, and it is apparently no longer in existence. Development of the Chatsworth Ridge Estates therefore has no potential to result in adverse impacts to this cultural resource.

5.7 CA-LAN-1745

The artifact assemblage present at CA-LAN-1745 was found to consist solely of three pieces of lithic debitage. These indicate that this site served as a sparse surface lithic scatter. Phase II testing resulted in the recovery of all of

these specimens, thereby completely and adequately mitigating any potential for adverse impacts that might accrue to this site as a result of the development of the project.

5.8 CA-LAN-2826

Prehistoric archaeological site CA-LAN-2826 proved to be a sparse surface lithic scatter containing a total of 14 artifacts and archeological indicators. These indicate that it served as a prehistoric plant processing station. The Phase II fieldwork at this location resulted in the recovery of all extant artifacts at this location, thereby providing scientifically consequential information from and about it. This has served to completely and adequately mitigate any adverse impacts that this cultural resource might have the potential to suffer as a result of the development of the Chatsworth Ridge Estates project.

5.9 CA-LAN-2827

Archaeological remains at this site were limited to just two pieces of lithic debitage, demonstrating that this site is a very small and sparse surface lithic scatter oriented towards lithic quarrying. Both of these specimens have been collected. This has served to completely and adequately mitigate any adverse impacts that potentially could accrue at this location as a result of the proposed project. Development of the Chatsworth Ridge Estates project, therefore, does not have the potential to result in adverse impacts to this site.

5.10 Final Conclusions and Recommendations

Based on the current status of and the completed Phase II fieldwork on the archaeological sites within the Chatsworth Ridge Estates study area, it is apparent that the development of this project does not have the potential to result in adverse impacts to significant cultural resources. We therefore recommend no additional archaeological work for this property. However, following the suggestions of CEQA, we recommend that an archaeological monitor be present during topsoil grading in the areas of the previously recorded and examined archaeological sites.

6.0
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7.0 TABLES

TABLE 1: ARTIFACT CATALOG, CA-LAN-209

Cat.#	Unit/level	Material	L x W x T	#/wt.(gms.)	Description	
1	1/0-10	glass		2/6.1	modern bottle	
2	1/10-20	lithic		1/8.7	debitage	
3	1/10-20	glass		5/16.4	modern bottle	
4	2/0-10	glass		5/25.8	modern bottle	
5	2/10-20	glass		5/3.1	modern bottle	
6	3/0-10	glass		2/28.7	modern bottle	
7	4/0-10	glass		3/10.4	modern bottle	
8	4/10-20	glass		2/45.0	modern bottle	
9	4/20-30	glass		3/7.0	modern bottle	

TABLE 2: Debitage, CA-LAN-209

Cat.#	Unit/level	Material	#/wt.(gms.)	Description		
2	1/10-20	quartzite	1/8.7	primary flake-1		

TABLE 3: ARTIFACT CATALOG, CA-LAN-1745

Cat.#	Unit/level	Material	L x W x T	#/wt.(gms.)	Description
1	surface	lithic		1/47.0	debitage
2	1/0-10	lithic		2/75.1	debitage

TABLE 4: Debitage, CA-LAN-1745

Cat.#	Unit/level	Material	#/wt.(gms.)	Description		
1	surface	metavolcanic	1/47.0	angular shatter- 1		
2	1/0-10	quartzite	2/75.1	primary flake- 1, angular shatter- 1		

TABLE 5: ARTIFACT CATALOG, LAN-2826

Cat.#2826	Unit/level	Material	L x W x T	#/wt.(gms.)	Description
1 (surface A)	surface	sandstone	7.77x7.74x3.52	1/340.5	mano
2 (surface B)	surface	chertysiltstone	5.01x5.51x2.83	1/81.0	scraper
3 (surface C)	surface	andesite	7.14x7.26x4.45	1/225.8	hammerstone
4 (surface D-1)	surface	metavolcanic	6.19x4.98x3.01	1/118.7	scraper
5 (surface D-2)	surface	quartzite	6.31x5.17x5.57	1/200.7	hammerstone
6	deleted				
7	deleted				
8	1/0-10	lithic		3/10.0	debitage
9	3/surface	lithic		1/50.6	debitage
10	3/0-10	lithic		1/6.4	debitage
11	4/0-10	lithic		3/24.1	debitage
12	5/0-10	quartzite	9.04x5.95x6.18	1/334.5	hammerstone

TABLE 6: GROUNDSTONE, LAN-2826

Cat.#2826	Unit/level	Material	L x W x T	#/wt.(gms.)	Description	
1 (surface A)	surface	sandstone	7.77x7.74x3.52	1/340.5	mano; type 4C	

TABLE 7: COBBLE/CORE COMPLEX, LAN-2826

Cat.#2826	Unit/level	Material	L x W x T	#/wt.(gms.)	Description
2 (surface B)	surface	cherty sltstne	5.01x5.51x2.83	1/81.0	core scraper; type 1
3 (surface C)	surface	andesite	7.14x7.26x4.45	1/225.8	core hammerstone; type 3
4 (surface D-1)	surface	metavolcanic	6.19x4.98x3.01	1/118.7	core scraper; type 1
5 (surface D-2)	surface	quartzite	6.31x5.17x5.57	1/200.7	core hammerstone; type 3
12	5/0-10	quartzite	9.04x5.95x6.18	1/334.5	cobble hammerstone; type 1

TABLE 8: Debitage, LAN-2826

Cat.#2826	Unit/level	Material	#/wt.(gms.)	Description
8	1/0-10	quartz	1/.6	angular shatter- 1
		chert	1/1.9	angular shatter- 1
		quartzite	1/7.5	angular shatter- 1
9	3/surface	quartzite	1/50.6	primary flake- 1
10	3/0-10	quartzite	1/6.4	primary flake- 1
11	4/0-10	quartzite	2/10.1	angular shatter- 1; tertiary flake- 1
		andesite	1/14.0	angular shatter- 1

TABLE 9: ARTIFACT CATALOG, LAN-2827

Cat.#2827	Unit/level	Material	L x W x T	#/wt.(gms.)	Description
1	surface	lithic		1/50.2	debitage
2	surface	quartzite	6.25x5.53x3.54	1/118.5	irregular core

8.0 FIGURES

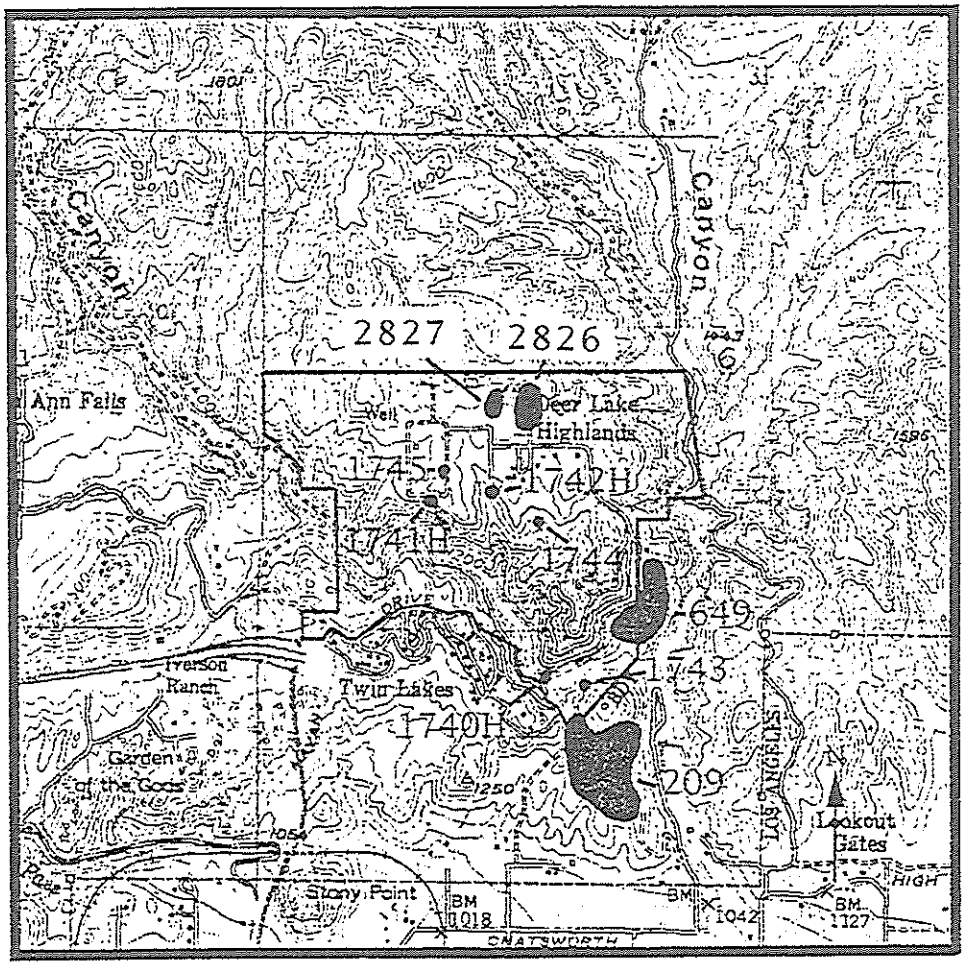

FIGURE 1: Archaeological site locations, Chatsworth Ridge Estates study area, Los Angeles County, California. Base map: USGS Oat Mountain 7.5' quad; scale - 1 : 2000.

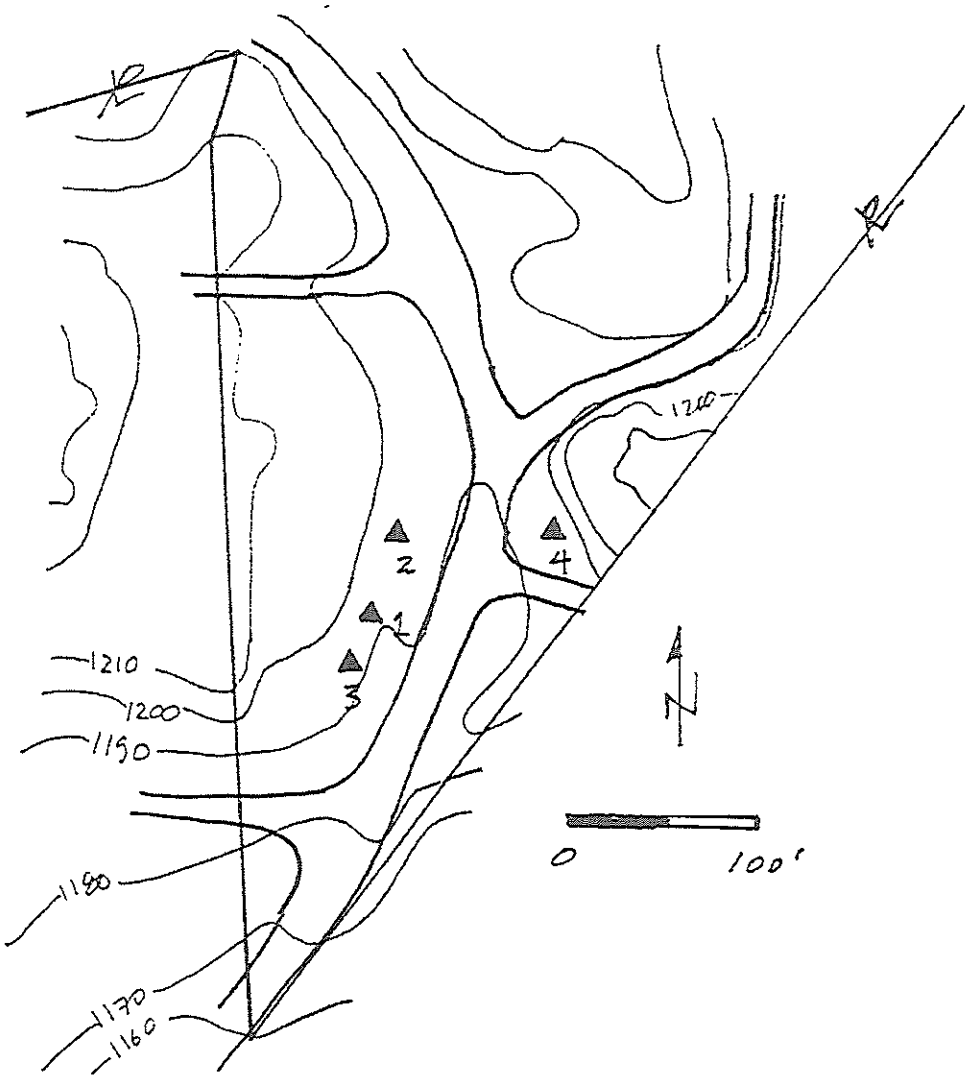

FIGURE 2: Archaeological site CA-LAN-209, showing location of test pits within Chatsworth Ridge Estates study area, Los Angeles County, California.

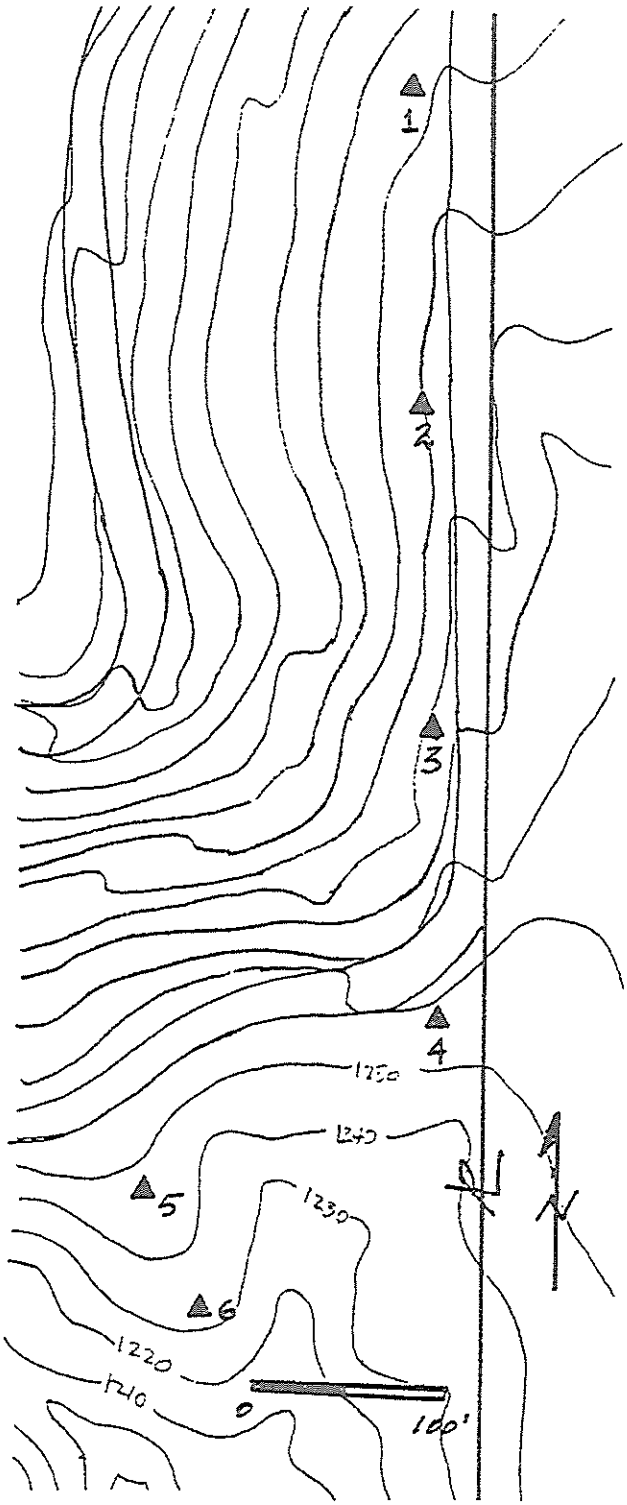

FIGURE 3: Archaeological site CA-LAN-649, showing location of test pits within Chatsworth Ridge Estates study area, Los Angeles County, California.

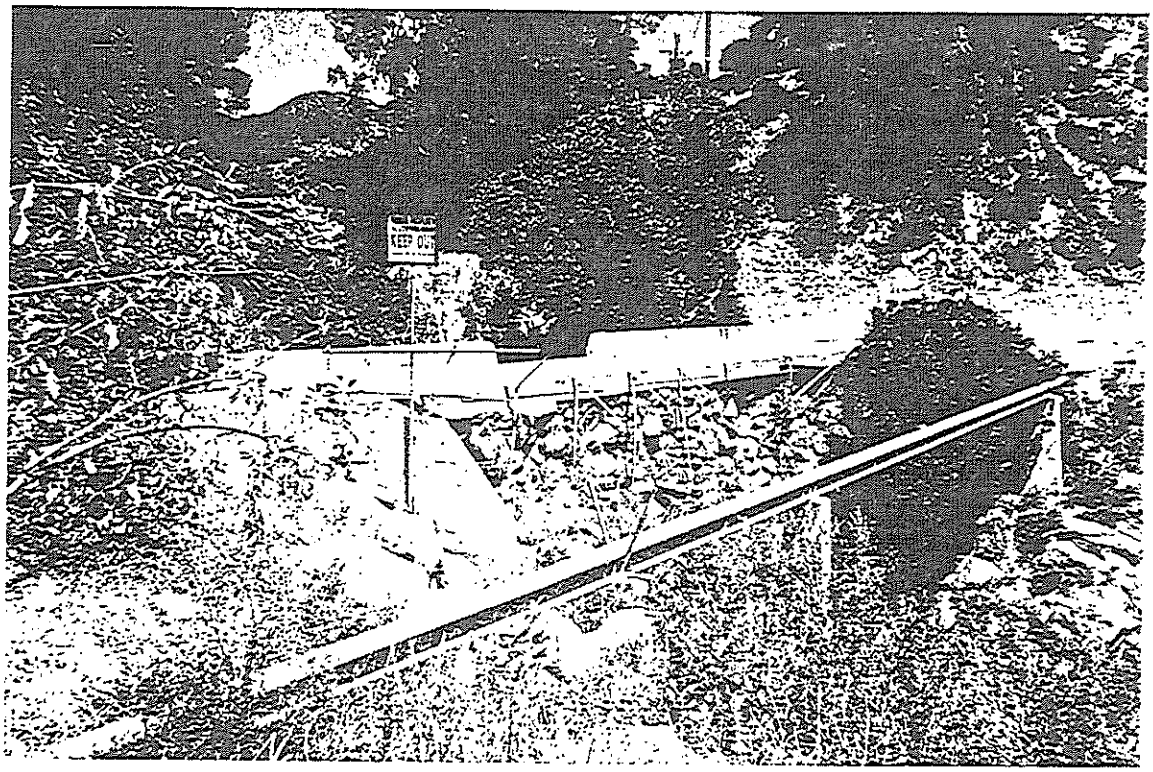

FIGURE 4: Historical site CA-LAN-1740H from the southeast, showing downstream face of dam and bridge; Chatsworth Ridge Estates study area, Los Angeles County, California. Note recent construction of concrete wing dam (center left).

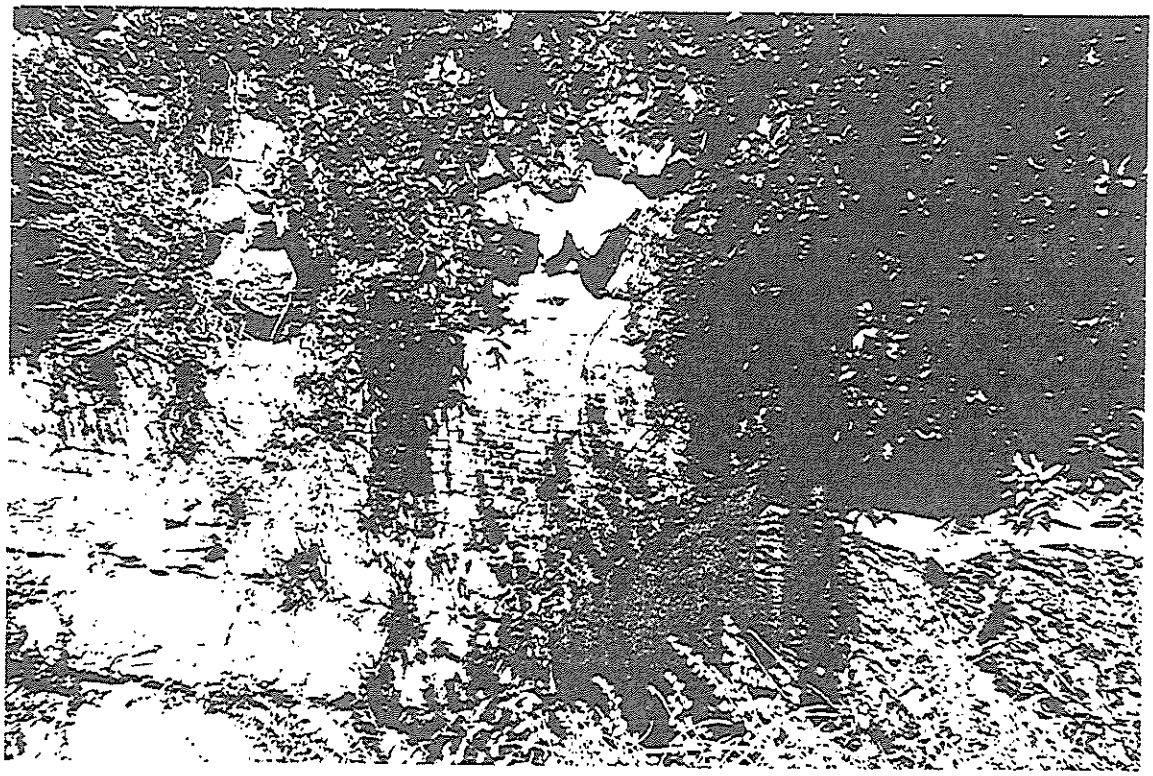

FIGURE 5: Historical site CA-LAN-1740H from the northeast, showing base of downstream face of dam and bridge; Chatsworth Ridge Estates study area, Los Angeles County, California. Note mortared brick over bedrock, with field boulders above.

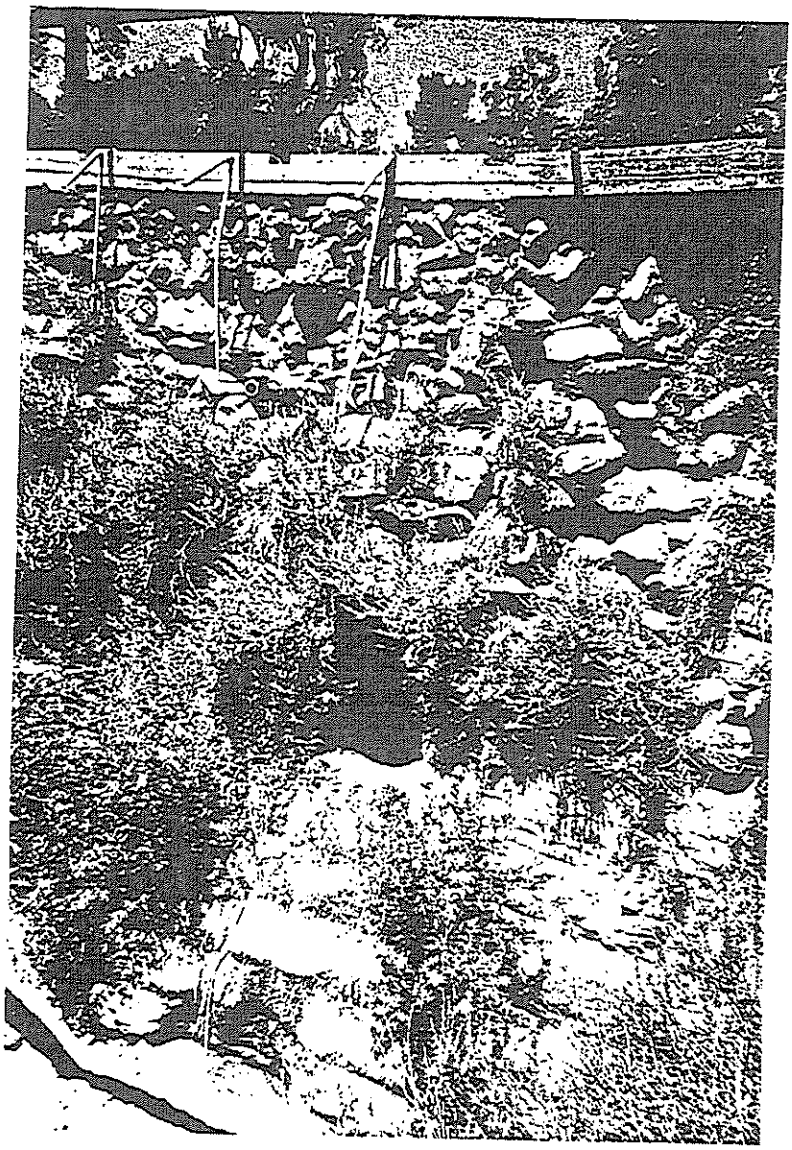

FIGURE 6: Historical site CA-LAN-1740H from the northeast, showing downstream face of dam and bridge; Chatsworth Ridge Estates study area, Los Angeles County, California. Note original spillway (center), coarses of mortared field boulders, and more recent coarses of field cobbles, overlain by concrete road bed.

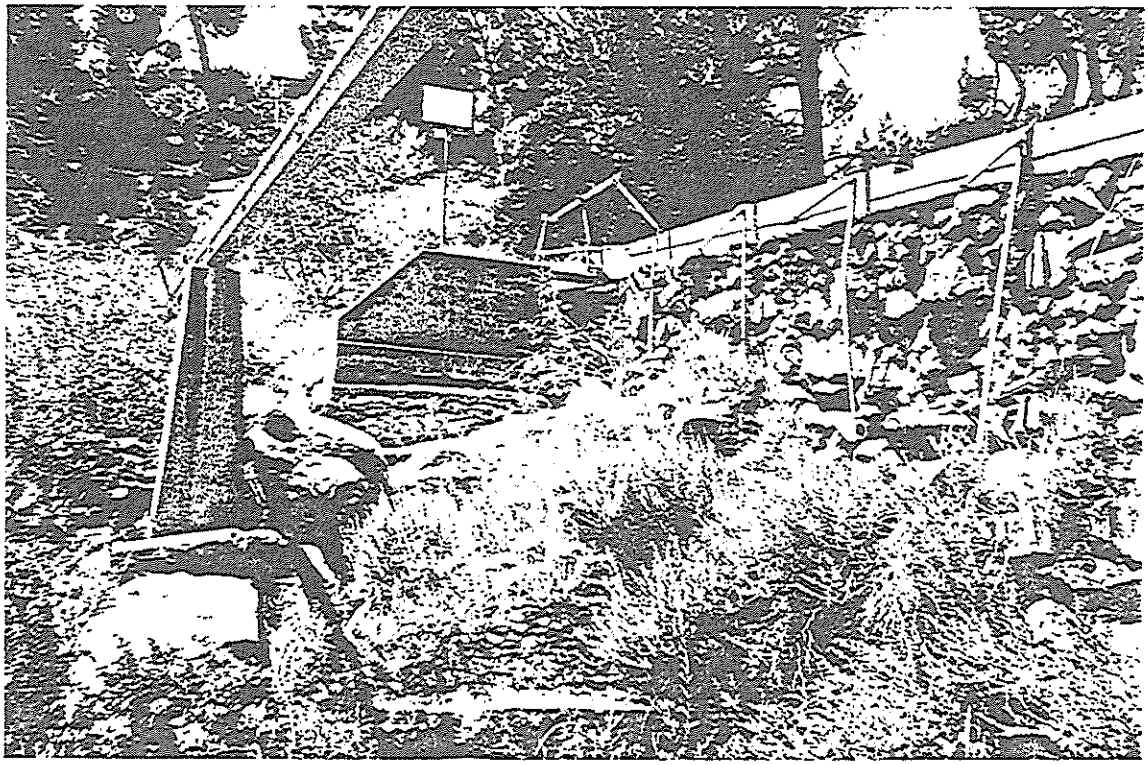

FIGURE 7: Historical site CA-LAN-1740H from the northeast, showing downstream face of dam and bridge; Chatsworth Ridge Estates study area, Los Angeles County, California. Note recent poured concrete wing dam (center) on top of concrete foundation.

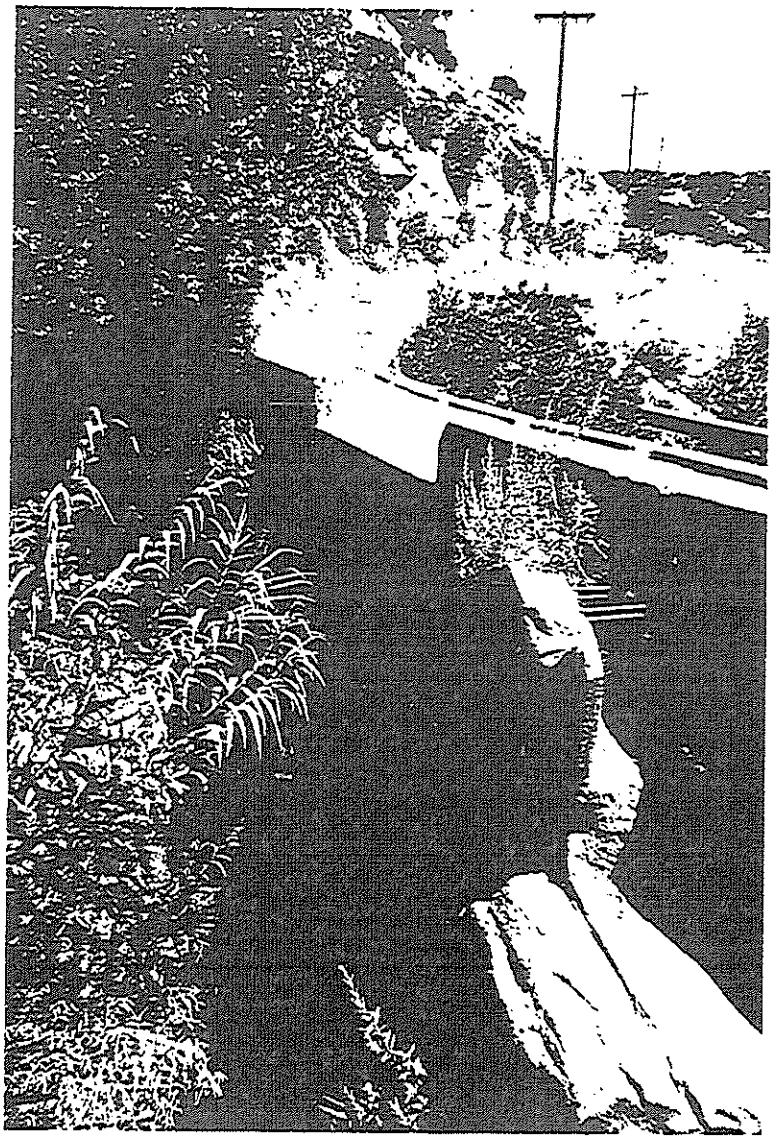

FIGURE 8: Historical site CA-LAN-1740H from the southwest, showing upstream face of dam and bridge; Chatsworth Ridge Estates study area, Los Angeles County, California. Note poured concrete facing and older wing dam (center right).

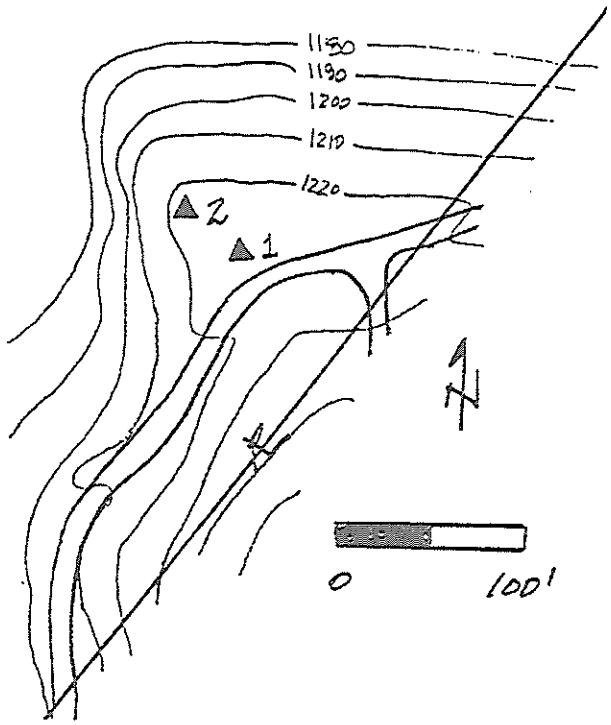

FIGURE 9: Archaeological site CA-LAN-1743, showing location of test pits; Chatsworth Ridge Estates study area, Los Angeles County, California.

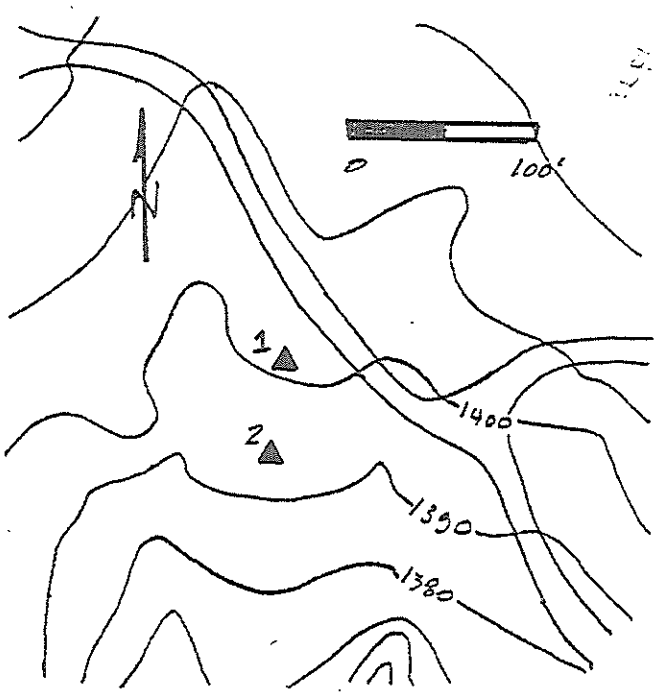

FIGURE 10: Archaeological site CA-LAN-1744, showing location of test pits; Chatsworth Ridge Estates study area, Los Angeles County, California.

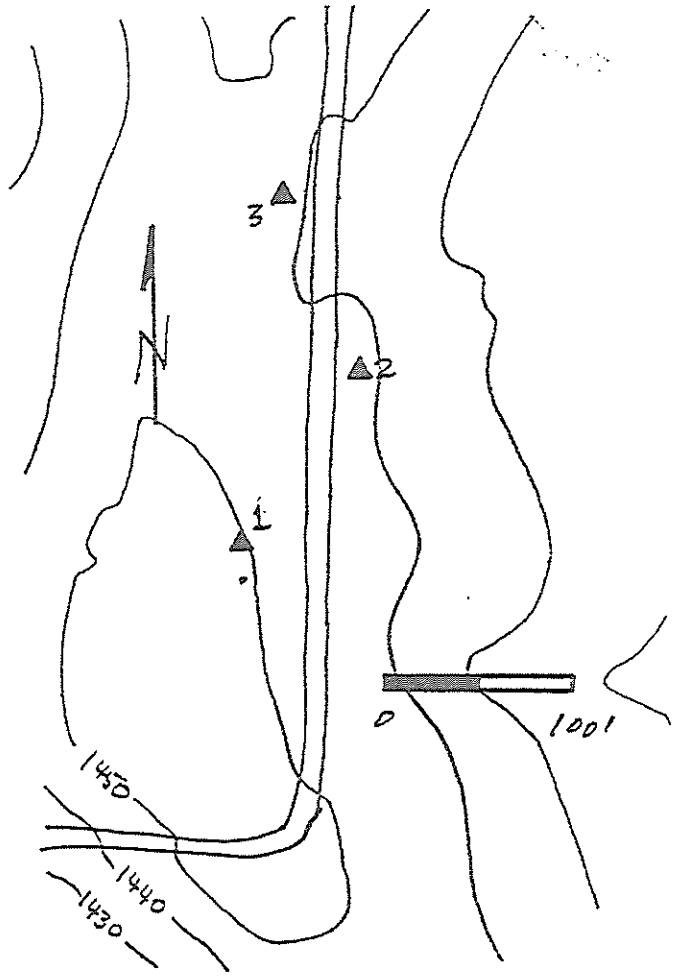

FIGURE 11: Archaeological site CA-LAN-1745, showing location of test pits and surface artifact (dot); Chatsworth Ridge Estates study area, Los Angeles County, California.

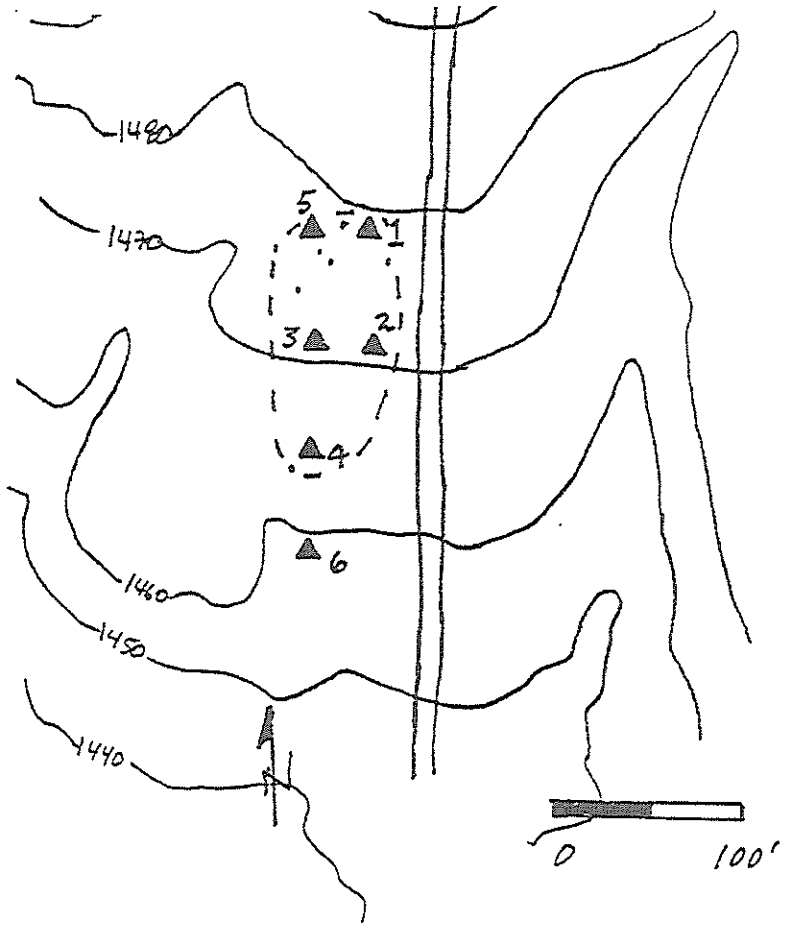

FIGURE 12: Archaeological site CA-LAN-2826, showing location of test pits, surface artifacts (dots), and site boundary; Chatsworth Ridge Estates study area, Los Angeles County, California.

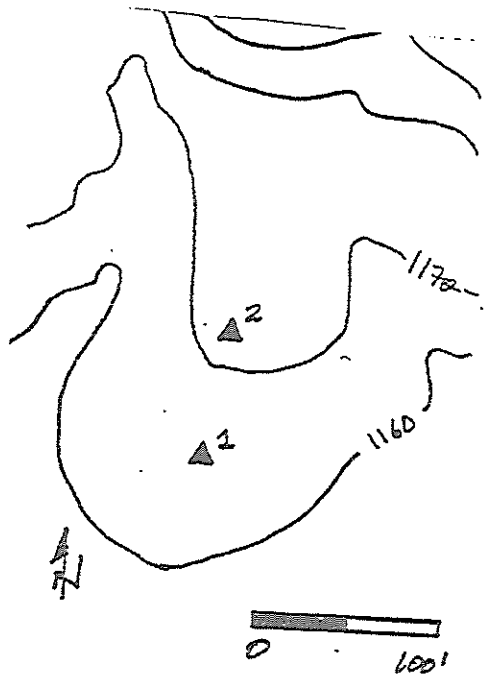

FIGURE 13: Archaeological site CA-LAN-2827, showing location of test pits; Chatsworth Ridge Estates study area, Los Angeles County, California.

W and S CONSULTANTS / cultural resources management studies

19 December 2000

Mr. Hans Giraud
Hans Giraud and Associates
23480 Park Sorrento, Suite #211A
Calabasas, CA 91302

RE: Addendum to *Phase I Archaeological Survey of the Chatsworth Ridge Estates Study Area, Los Angeles County, California*

Dear Hans:

Earlier this year, W&S Consultants conducted a Phase I archaeological survey of the Chatsworth Ridge Estates study area. At your request, we have completed a Phase I study of an immediately adjacent 13 acres parcel (Figure 1). This additional property is located on the western side of the previous study area, near its southwestern boundary. This letter provides a report on this addendum to the first study.

Methods

The phase I archaeological survey of the 13 acres parcel involved an archival records search at the California State University, Fullerton, Archaeological Information Center (AIC), and an intensive, on foot survey of the property. The archival records search is included as Attachment #1 to this addendum report.

The maps and records housed at the CSUF AIC indicate that the 13 acres study area had never been systematically surveyed by archaeologists. No archaeological sites had been recorded on it. However, as documented in our previous Phase I report for the project area, archaeological sites are known in the vicinity and, hence, this parcel was considered archaeologically sensitive.

2242 stinson street • simi valley, california 93065 • (805) 581-3577

The phase I survey consisted of an intensive and systematic examination of the property on foot. This involved walking the property in transects spaced approximately 20 meters apart, following the approach we had utilized on the adjacent property. The survey was conducted by David S. Whitley, Ph.D., and Joseph M. Simon.

Survey results and recommendations

The 13 acres parcel consists of a knolltop and slope and portions of the sides of Devil's Canyon. An abandoned dirt road and fire-break (across the knoll at the south) transect the property, most of which is covered with natural vegetation (chaparral and sage scrub, depending upon aspect).

No cultural resources of any kind were identified within this 13 acres parcel. Development of this parcel therefore does not have the potential to result in adverse impacts to cultural resources. However, in the unlikely event that such resources are identified during grading or construction, we recommend that an archaeologist be contacted to evaluate the remains.

Please call if there are any questions.

Sincerely,

David S. Whitley, Ph.D.
Principal

Attachments:
- Figure 1
- Archival records search

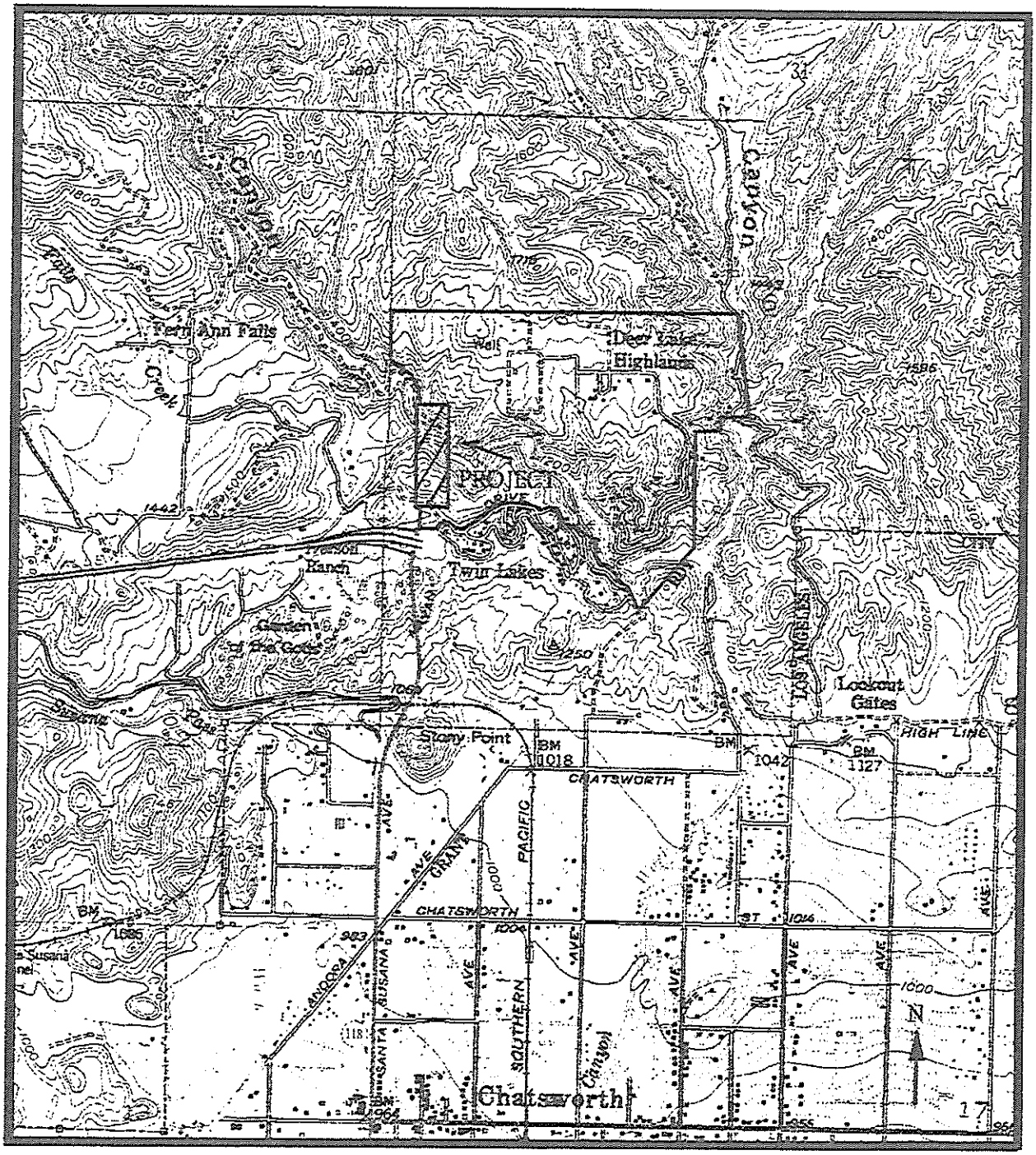

Figure 1: Project Location

Scale: 1 in. = 2000 ft.

Source: Oat Mountain, CA. 7.5' USGS QUAD.

South Central Coastal Information Center
California Historical Resources Information System
California State University, Fullerton
Department of Anthropology
800 North State College Boulevard
Fullerton, CA 92834-6846
(714) 278-5395 / FAX (714) 278-5542
anthro.fullerton.edu / sccic.html

Los Angeles
Orange
Ventura

December 13, 2000

Joseph Simon
W and S Consultants
2242 Stinson St.
Simi Valley, CA 93065

RE: Records Search for the Chatsworth Ridge Estates Project

Dear Mr. Simon,

As per your request received on December 6, we have conducted a records search for the above referenced project. This search includes a review of all recorded historic and prehistoric archaeological sites within a half-mile radius of the project area as well as a review of all known cultural resource reports. In addition, we have checked our file of historic maps, the National Register of Historic Places, the California State Historic Resources Inventory, the California Points of Historical Interest, and the listing of California Historical Landmarks in the region. The following is a discussion of our findings.

PREHISTORIC RESOURCES:

Twenty-seven prehistoric sites (see enclosed list) have been identified within a half-mile radius of the project area (see enclosed map).

HISTORIC RESOURCES:

No historic archaeological sites have been identified within a half-mile radius of the project area.

Inspection of our historic maps – Santa Susana (1903, 1941) 15' series – indicated that in 1903, there were some unimproved and improved roads, and few structures in place. Devil Creek, the Santa Susana Tunnel, the Southern Pacific Railroad, and the Santa Susana Pass were in place. In 1941, there was a loose network of unimproved and improved roads, and structures in place. Twin Lakes Park, Brandies Ranch, Iverson Ranch, Devil Canyon, Ybarra Canyon, Blind Canyon, the Santa Susana Pass, Stony Point, Highway 27, and Highway 118 were in place. Also, the Southern Pacific Railroad was in place.

The California State Historic Resources Inventory may list properties that have been evaluated for historical significance within a half-mile radius of the project area (see enclosed list).

The National Register of Historic Places lists no properties within a half-mile radius of the project area.

The California Historical Landmarks (1990) of the Office of Historic Preservation, California Department of Parks and Recreation, lists no landmarks within a half-mile radius of the project area.

The California Points of Historical Interest (1992), of the Office of Historic Preservation California Department of Parks and Recreation, lists no properties within a half-mile radius of the project area.

The listings of the City of Los Angeles Historic-Cultural Monuments indicated that there is one landmark within a half-mile radius of the project area.

No. 132 Stony Point Outcroppings
A natural site east of Topanga Canyon Blvd. considered one of the most picturesque areas in Los Angeles. Located in North Chatsworth. Declared: 11/20/74

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS:

Twenty-six studies have been conducted within a half-mile radius of the project area. There are nine additional investigations located on the Oat Mountain 7.5' USGS quadrangle and are potentially within a half-mile radius of the project area. These reports are not mapped due to insufficient locational information.

Please forward a copy of any reports resulting from this project to our office as soon as possible. Due to the sensitive nature of site location data, we ask that you do not include record search maps in your report. If you have any questions regarding the results presented herein, please feel free to contact our office at (714) 278-5395.

Invoices are mailed approximately two weeks after records searches are completed. This enables your firm to request further information under the same invoice number. **Please reference the invoice number listed below when making inquires.** Requests made after invoicing will result in the preparation of a separate invoice with a $15.00 handling fee.

Sincerely,

Esther Won
Staff Archaeologist

Enclosures:

(X) Primary Number Explanation
(X) Map – Oat Mountain 7.5' USGS Quadrangle
(X) Bibliography - 8 pages
(X) Site list - 1 page
(X) HRI - 1 page
(X) National Register Status Codes - 4 pages
( ) Site records -
( ) Survey reports -
(X) Confidentiality Form
( ) Invoice # 9068

ITEMID: LA1584 DATE: 1986 PAGES: 60
AUTHOR: LOVE, BRUCE
FIRM:
TITLE: Archaeological Investigations AT Tentative TRACT 42353, INDIAN FALLS ESTATES, LOS ANGELES COUNTY, CA (SITES LAN-809, LAN-810, LAN-811, LAN-814, LAN-879)
AREA: 1 ac
SITES: CA-LAN-809, LAN-811, LAN-814, LAN-879

QUADNAME: OAT MOUNTAIN
MEMO:

ITEMID: LA160 DATE: 1988 PAGES: 120
AUTHOR: Dames and Moore
FIRM: DAMES & MOORE
TITLE: Phase 1 Cultural ResourceS Survey FIBER OPTIC CABLE PROJECT BURBANK TO SANTA BARBARA, CALIFORNIA FOR US SPRINT COMMUNICATIONS COMPANY
AREA: 82 ac
SITES: CA-VEN-27, VEN-196, VEN-202, VEN-240, VEN-241, VEN-341, VEN-342, VEN-343, VEN-550, VEN-643, VEN-644, VEN-655, VEN-729, VEN-789, VEN-895H, VEN-916, VEN-917, VEN-918
QUADNAME: Burbank
Van Nuys
MEMO:

ITEMID: LA1734 DATE: 1988 PAGES: 25
AUTHOR: WHITNEY-DESAUTELS, NANCY
FIRM: Scientific Resource Survey, Inc.
TITLE: Archeological, HISTORICAL, and PALEONTOLOGICAL Assessment TT 35714 AND TT 44362, CALIFORNIA WEST DEVELOPMENT CHATSWORTH, CALIFORNIA
AREA: 75 ac
SITES: CA-LAN-870, LAN-1097

QUADNAME: Oat Mtn.
MEMO:

ITEMID: LA2034 DATE: 1990 PAGES: 50
AUTHOR: Bissell, Ronald M., and Kenneth Becker
FIRM: RMW
TITLE: Cultural ResourceS RECONNAISSANCE of THE DEVIL CANYON PROJECT AREA, 44 ACRES IN CHATSWORTH, LOS ANGELES COUNTY, CALIFORNIA
AREA: 44 ac
SITES: CA-LAN-209, LAN-649, LAN-1740H, LAN-1741H, LAN-1742H CA-LAN-1743, LAN-1744, LAN-1745
QUADNAME: OAT MOUNTAIN
MEMO:

ITEMID: LA2096 DATE: 1990 PAGES: 25
AUTHOR: Salls, Roy A.
FIRM: Northridge Center For Public Archaeology
TITLE: REPORT of Archaeological RECONNAISSANCE Survey of: A NINE ACRE PARCEL (A-1 ZONE) 21521 RINALDI STREET CHATSWORTH, CA 91311
AREA: 9 ac
SITES: none

QUADNAME: OAT MOUNTAIN
MEMO:

ITEMID: LA2153 DATE: 1978 PAGES: 25
AUTHOR: Sanburg, Delmer, Jr., Dana Bleitz Sanburg, Frank Bleitz and Edith Bleitz
FIRM: Institute of Archaeology
TITLE: TWO ROCK ART SITES IN THE SAN FERNandO VALLEY: VEN-149 and LAN-357
AREA:
SITES: CA-LAN-357, VEN-149

QUADNAME: OAT MOUNTAIN
CALABASAS
MEMO: Same as VN901. This report is an article published in the Journal of New World Archaeology, V II, No.4

ITEMID: LA2204 DATE: 1990 PAGES: 32
AUTHOR: Evans, Stuart A., and Ronald M. Bissell
FIRM: RMW PALEO Associates, INCORPORATED
TITLE: Cultural ResourceS RECONNAISSANCE of THE CONTINENTAL COMMUNITY PROJECT AREA, 55 ACRES IN CHATSWORTH, LOS ANGELES COUNTY, CALIFORNIA
AREA:
SITES: CA-LAN-209, LAN-649, LAN-1740

QUADNAME: OAT MOUNTAIN
MEMO:

ITEMID: LA2230 DATE: 1990 PAGES: 10
AUTHOR: Romani, John
FIRM: Greenwood and Associates
TITLE: Cultural Resource Survey FOR THE PROPOSED RESIDENTIAL DEVELOPMENT OF TENTATIVE TRACT NO. 49567 LOCATED IN LOS ANGELES COUNTY, CALIFORNIA
AREA:
SITES: CA-LAN-881

QUADNAME: OAT MOUNTAIN
MEMO:

ITEMID: LA2390 DATE: 1988 PAGES: 29
AUTHOR: ROMANI, JOHN, DAN LARSON, GWEN ROMANI, AND ARLENE BENSON
FIRM: COYOTE PRESS
TITLE: ASTRONOMY, MYTH, and RITUAL IN THE WEST SAN FERNandO VALLEY.
AREA:
SITES: CA-VEN-151, VEN-161, LAN-357

QUADNAME: CALABASAS
OAT MTN.
MEMO:

ITEMID: LA2623 DATE: 1977 PAGES: 84

AUTHOR: LOWE, P. J.
FIRM:
TITLE: PICTOGRAPHS of THE SANTA MONICA MOUNTAINS STATUS REPORT AS of MAY 15, 1977 (SAME AS V-1134)
AREA:
SITES: CA-LAN-188, LAN-354, LAN-357, LAN-403, LAN-448, LAN-640, LAN-717, LAN-743, LAN-748
CA-VEN-35, VEN-37, VEN-51, VEN-57, VEN-119, VEN-149, VEN-195, VEN-203, VEN-242, VEN-314
QUADNAME: THOUSAND OAKS
POINT DUME
MEMO:

ITEMID: LA267 DATE: 1981 PAGES: 15

AUTHOR: Foster, John M. and Roberta S. Greenwood
FIRM: Greenwood and Associates
TITLE: Cultural Resource MANAGEMENT PLAN FOR Tentative TRACT NO. 34494
AREA:
SITES: CA-LAN-879, LAN-809, LAN-810, LAN-811, LAN-814H

QUADNAME: Oat Mtn.
MEMO:

ITEMID: LA2892 DATE: 1993 PAGES: 17

AUTHOR: Stone, David and Robert Sheets
FIRM: SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
TITLE: Phase I Archaeological Survey REPORT PACIFIC PIPELINE PROJECT SANTA BARBARA COASTAL REROUTES ETHNOHISTORIC VILLAGE PLACENAME LOCATIONS
AREA:
SITES:

QUADNAME: LONG BEACH
SOUTH GATE
MEMO:

ITEMID: LA2950 DATE: 1992 PAGES: 356
AUTHOR: Anonymous
FIRM: PEAK AND Associates
TITLE: CONSOLIDATED REPORT: Cultural Resource STUDIES FOR THE PROPOSED PACIFIC PIPELINE PROJECT
AREA: 172 ac
SITES: SEE REPORT

QUADNAME: SEE REPORT
MEMO:

ITEMID: LA306 DATE: 1978 PAGES: 20
AUTHOR: D'Altroy, Terence N.
FIRM: TERENCE N. D'ALTROY
TITLE: REPORT of THE POTENTIAL NEGATIVE Impact ON Archaeological RESOURCES OF THE PROPOSED DEVELOPMENT OF TENTATIVE TRACT NO. 34494, NORTH OF CHATSWORTH CALIFORNIA.
AREA:
SITES: CA-LAN-809, LAN-810, LAN-811, LAN-812, LAN-813, LAN-814, LAN-815, LAN-816, LAN-817, LAN-879, LAN-880, LAN-881, LAN-882, LAN-779, LAN-780
QUADNAME: OAT MOUNTAIN
MEMO:

ITEMID: LA3301 DATE: 1989 PAGES: 4
AUTHOR: Scientific Resource Survey
FIRM: Scientific Resource Surveys
TITLE: Archaeological Assessment Santa Susana Pass Road Realignment California West Development Chatsworth, California
AREA: 150 ac
SITES: none

QUADNAME: Oat Mountain
MEMO:

ITEMID: LA3405
AUTHOR: OTTE, JIM
FIRM:
DATE: 1971
PAGES: 15
TITLE: FIELD ARCHAEOLOGY 1971 CA-LAN-357
AREA: 0
SITES: 19-000357
QUADNAME: OAT MTN.
MEMO:

ITEMID: LA3545
AUTHOR: Sanburg, Delmer, Jr., Sanburg, Dana Bleitz, Bleitz, Frank and Edith Bleitz
FIRM: Unknown
DATE: 1978
PAGES: 12
TITLE: Two Rock Art Sites in the San Fernando Valley: Ven-149 and LAn-357
AREA: unknown
SITES: 56-000149,19-000357
QUADNAME: Oat Mountain
Calabasas
MEMO: Same as VN1442.

ITEMID: LA3639
AUTHOR: King, Tom
FIRM: UCLA AS
DATE: 1970
PAGES: 7
TITLE: Santa Monica Mountains State Park (Undeveloped)
AREA: unknown
SITES: 19-000001,19-000357,19-000350,19-000002
QUADNAME: Point Dume,Topanga,Oat Mountain
MEMO: No specific map locations provided. Sites mapped.

ITEMID: LA3847 DATE: 1992 PAGES: 13
AUTHOR: Whitley, David S.
FIRM:
TITLE: Shamanism and Rock Art in Far Western North America
AREA: none
SITES: 19-000357

QUADNAME: Oat Mountain
MEMO:

ITEMID: LA4124 DATE: 1972 PAGES: 52
AUTHOR: Barajas, Luisa
FIRM: Unknown
TITLE: Semester Report For Anthropology 7
AREA: Unknown
SITES: 19-000357

QUADNAME: Out Mountain
MEMO:

ITEMID: LA468 DATE: 1978 PAGES: 24
AUTHOR: Murray, John R.
FIRM:
TITLE: Archaeological Survey REPORT: A 17+/- ACRE PARCEL of PROPERTY LOCATED BETWEEN THE SIMI VALLEY FREEWAY AND TOPANGA CANYON BOULEVARD IN CHATSWORTH, CA.
AREA: 17 ac
SITES: ?

QUADNAME: Oat Mtn.
MEMO:

ITEMID: LA71 DATE: 1974 PAGES: 13

AUTHOR: Leonard, N. Nelson, III

FIRM: N. NELSON LEONARD, III

TITLE: AN Archaeological Evaluation of PROPOSED CHANGES IN THE USE OF LAN-357

AREA:

SITES: CA-LAN-357. LAN-209, LAN-89

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA762 DATE: 1979 PAGES: 8

AUTHOR: D'ALTROY, TERRANCE

FIRM: NARC

TITLE: Assessment of THE HISTORIC ResourceS PRESENT WITHIN Tentative TRACT NUMBER 34494, CHATSSWORTH, CALIFORNIA

AREA: 850 ac

SITES: none

QUADNAME: OAT MOUNTAIN
OAT MOUNTAIN

MEMO:

ITEMID: LA807 DATE: 1980 PAGES: 5

AUTHOR: Rosen, Martin D.

FIRM: UCLA AS

TITLE: Archaeological Assessment of Tentative TRACT 39482, NORTH of CHATSWORTH, CALIFORNIA [JENNINGS FILE NO. 3619]

AREA: 850 ac

SITES: CA-LAN-813

QUADNAME: OAT MOUNTAIN

MEMO:

ITEMID: LA81 DATE: 1975 PAGES: 28

AUTHOR: Rosen, Martin Dean
FIRM: UCLA AS

TITLE: Evaluation of THE Archaeological ResourceS FOR THE AREAWIDE FACILITIES PLAN FOR THE LAS VIRGENES MUNICIPAL DISTRICT, (MALIBU COAST, WESTERN SANTA MONICA MOUNTAINS, SOUTHERN SIMI HILLS), LOS ANGELES and VENTURA COUNTIES.

AREA:

SITES: CA-LAN-133, LAN-268, LAN-190, LAN-450, LAN-195, LAN-517, LAN-215, LAN-707, LAN-265, LAN-19, LAN-331, LAN-187, LAN-31, LAN-28, LAN-269, LAN-29, LAN-352, LAN-246, LAN-93, LAN-129, LAN-32, LAN-314, LAN-189, LAN-18, CA-VEN-8, VEN-12, VEN-123, VEN-176, VEN-177, VEN-180, VEN-181, VEN267, VEN-270, VEN-270

QUADNAME: TOPANGA, MALIBU BEACH, TRIUNFO PASS, NEWBURY PARK, POINT DUME, Santa Susana, Canoga Park, Oat Mountain, Calabasas, Thousand O

MEMO: Same as VN1457.

ITEMID: LA883 DATE: 1980 PAGES: 28

AUTHOR: Greenwood, Roberta S.
FIRM: Greenwood and Associates

TITLE: Cultural Resource RECONNAISSANCE of THE CADILLAC-FAIRVIEW PROPERTY IN CHATSWORTH, CALIFORNIA

AREA: 235 ac

SITES: CA-LAN-870, LAN-1097

QUADNAME: Oat Mtn.

MEMO:

PERTY-NUMBER	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	C	MPR	OTHREG	CHLW	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	HRS	CRIT
										PROJ.REVW.	FHWA940929A	10/27/94	6Y2	
077046	2616 E WASHINGTON ST		CARSON	U	1924	B			0	PROJ.REVW.	HUD920507C	06/01/92	6Y2	
076853	2617 JACKSON ST		CARSON	U	1929	B			0	PROJ.REVW.	HUD920417B	05/19/92	6Y2	
084981	768 PACIFIC ST		CARSON	P	1930	B				PROJ.REVW.	HUD931104A	12/15/93	6Y2	
084182	815 REALTY ST		CARSON	P	1930	B				PROJ.REVW.	HUD9308120	09/16/93	6Y2	
092472	21608 S ALAMEDA ST	L. J. TURNER MARKET	CARSON	P	1944	B				HIST.RES.	DOE-19-94-0742-0000	10/27/94	6Y2	
										PROJ.REVW.	FHWA940929A	10/27/94	6Y2	
084091	21305 S FIGUEROA AVE		CARSON	P	1938	B				PROJ.REVW.	HUD930729A	09/02/93	6Y2	
090661	18501 S WILMINGTON AVE	SITE OF THE INITIAL UNITED STATES	CARSON	C		C		S		HIST.RES.	SHL-0718-0000	12/02/59	7L	
077044	423 W GARDENA BLVD		CARSON	U	1931	B			0	PROJ.REVW.	HUD9205078	06/01/92	6Y2	
124533	20310 WILMINGTON AVE	PACIFIC BELL MOBILE SERVICES FACIL	CARSON	P		B				PROJ.REVW.	FCC991028A	11/04/99		
100357	31616 N RIDGE ROUTE RD	CASTAIC UNION SCHOOL DIST-COMMUNIT	CASTAIC	D	1910	B				HIST.RES.	DOE-19-95-0110-0000	07/13/95	6Y4	
										PROJ.REVW.	HRG9402022	07/13/95	6Y4	
100358	31616 N RIDGE ROUTE RD	CASTAIC UNION SCHOOL DIST-ORIGINAL	CASTAIC	D	1928	B				HIST.RES.	DOE-19-95-0111-0000	07/13/95	6Y4	
										PROJ.REVW.	HRG940202Z	07/13/95	6Y4	
089529		CHATSWORTH CALERA SITE	CHATSWORTH	H		C		S	1	HIST.RES.	SHL-0911-0000	06/27/77	7C	
075182	CHATSWORTH PARK S	MINNIE HILL PALMER HOUSE	CHATSWORTH	H	1911	B	0		0	HIST.SURV.	1311-0002-0000	09/04/79	1S	AC
										HIST.SURV.	0053-4508-0000	01/01/79	1S	
021173	CHATSWORTH PARK S	PALMER, MINNIE HILL, HOUSE	CHATSWORTH	H	1911	B		L		HIST.RES.	DOE-19-94-0352-0000	08/08/94	2S2	
										PROJ.REVW.	HRG940202Z	09/30/94	2S2	
										HIST.RES.	NPS-79000480-0000	09/04/79	1S	
124522	21601 DEVONSHIRE ST	PACIFIC BELL MOBILE SERVICES FACIL	CHATSWORTH	P		B				PROJ.REVW.	FCC9909168	09/23/99	6Y2	
075161	STAGECOACH TRAIL	OLD SANTA SUSANA STAGECOACH ROAD / (VIC)	CHATSWORTH	P	1859	C	0		0	HIST.SURV.	1311-0001-0000	01/10/74	1S	A
										HIST.SURV.	3063-0001-0000	01/01/74	1S	
090787	15415 E DON JULIAN RD	TEMPLE HALL	CITY OF INDUSTRY	H	1923	B		C		HIST.RES.	SPHI-LAN-019	07/12/74	7L	
034627	10TH ST	BALCH HALL	CLAREMONT	P	1929	B				HIST.SURV.	1711-0172-0006	09/20/84	10	AC
										HIST.SURV.	1711-0169-0095		3D	
034626	12TH ST	GRACE SCRIPPS HALL/ELEANOR TOLL HA	CLAREMONT	P	1928	B				HIST.SURV.	1711-0172-0001	09/20/84	10	AC
										HIST.SURV.	1711-0169-0094		4D	
034631	12TH ST	ROSE GARDEN	CLAREMONT	P	1940	C				HIST.SURV.	1711-0172-0011	09/20/84	10	AC
										HIST.SURV.	1711-0169-0099		5D	
034628	12TH ST	BROWNING/DORSEY HALL	CLAREMONT	P	1929	B				HIST.SURV.	1711-0172-0003	09/20/84	10	AC
										HIST.SURV.	1711-0169-0096		3D	
034698	12TH ST	SUSAN MILLER DORSEY HALL	CLAREMONT	P	1930	B	0		0	HIST.SURV.	1711-0172-0004	09/20/84	10	AC
076498	12TH ST	GRACE SCRIPPS HALL	CLAREMONT	P	1928	B	0		0	HIST.SURV.	1711-0172-0002	09/20/84	10	AC
034668	1ST ST	CRAFT DESIGNS	CLAREMONT	P	1912	B				HIST.SURV.	1711-0170-0036		5D	
034677	135 1ST ST		CLAREMONT	P	1951	B				HIST.SURV.	1711-0170-0045		5D	
034681	211 1ST ST	THE VILLAGE IDIOT	CLAREMONT	P	1887	B				HIST.SURV.	1711-0170-0049		5D	
034682	217 1ST ST	MEADS GROCERY, BUDS BIKE SHOP	CLAREMONT	P	1909	B				HIST.SURV.	1711-0170-0050		4D	
034678	319 1ST ST		CLAREMONT	P	1929	B				HIST.SURV.	1711-0170-0046		5D	
034679	321 1ST ST		CLAREMONT	P	0	B				HIST.SURV.	1711-0170-0047		5D	
034680	375 1ST ST		CLAREMONT	P	1920	B				HIST.SURV.	1711-0170-0048		5D	
034611	4TH ST	REPLICA HOUSE	CLAREMONT	P	1937	B				HIST.SURV.	1711-0169-0079		5D	
034612	4TH ST	BRACKET OBSERVITORY	CLAREMONT	P	1908	B				HIST.SURV.	1711-0169-0080		3D	
034610	4TH ST	RENWICK GYMNASIUM	CLAREMONT	P	1899	B				HIST.SURV.	1711-0169-0078		3D	
034613	6TH ST	CLARK HALL	CLAREMONT	P	1929	B				HIST.SURV.	1711-0169-0081		4D	
034603	6TH ST	CROOKSHANK HALL	CLAREMONT	P	1922	B				HIST.SURV.	1711-0169-0071		3D	
034533	190 6TH ST	ALBERT THILLE BOTANY CENTER	CLAREMONT	P	1973	B				HIST.SURV.	1711-0169-0001		5D	
034607	300 6TH ST	SMITH TOWER	CLAREMONT	P	1961	B				HIST.SURV.	1711-0169-0075		5D	
034608	302 6TH ST	FRARY HALL	CLAREMONT	P	1929	B				HIST.SURV.	1711-0169-0076		4S	
034609	304 6TH ST	NORTON HALL	CLAREMONT	P	1956	B				HIST.SURV.	1711-0169-0077		5D	

1714127B-5542

APPENDIX J

GEOTECHNICAL REPORT

KLEINFELDER
An employee owned company

November 6, 2001
Project No. 58-9194-02/003

Mr. Richard Garlinghouse
Presidio Chatsworth Partners, LLC
595 Market Street
San Francisco, California 94105

Subject: Response to County of Los Angeles Review Comments Dated October 23, 2001 and November 2, 2001, Chatsworth Ridge Estates Project, Tentative Tract No. 53138, Chatsworth Area, Los Angeles County, California.

References: Supplement to "Response to County of Los Angeles Review Comments", Dated October 9, 2001, by Kleinfelder, Inc., Chatsworth Ridge Estates Project, Tentative Tract No. 53138, Chatsworth Area, Los Angeles County, California, dated October 22, 2001, by Kleinfelder, Inc.

"Response to County of Los Angeles Review Comments Dated September 10 and 25, 2001, for Preliminary Geotechnical Investigation Report Dated August 8, 2001, Chatsworth Ridge Estates Project, Tentative Tract No. 53138, Chatsworth Area, Los Angeles County, California", dated October 9, 2001, by Kleinfelder, Inc.

"Preliminary Geotechnical Investigation, Chatsworth Ridge Estates Project, Tentative Tract 53138. Chatsworth Area, Los Angeles County, California", Project No. 58-9194-02/001, dated August 8, 2001, by Kleinfelder, Inc.

Dear Mr. Garlinghouse:

This letter presents our Response to Los Angeles County Department of Public Works Land Development Section Review Comments; dated October 23, 2001 and November 2, 2001 for the October 9 and 22, 2001 response submittals. The current review sheets were received via FAX by this office on November 5, 2001. As requested by the reviewer, copies of both the Geologic and Soils Engineering Review Sheets are attached to this response letter. The County's review comments are presented below in italics and are followed by our response to each comment.

GEOLOGIC REVIEW SHEET COMMENTS DATED 10/23/01 AND RESPONSES

Comment #1

Provide volume calculations for Qls-3 to verify the enlarged debris basin capacity on Lot 512 will accommodate the total amount of anticipated material from the landslide in addition to the design volume for debris control. Revise all related geologic and geotechnical cross-sections accordingly.

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KLEINFELDER 1370 Valley Vista Drive, Suite 150, Diamond Bar, CA 91765-3910 (909) 396-0335 (909) 396-1324 fax

Response #1

The requested volume calculations by B&E Engineers are attached as requested. The calculations are based upon field verified and surveyed limits of the Qls-3 area and estimated depths of slide debris, as indicated in our Supplemental to Response dated October 22, 2001. These calculations indicate that the basin has been sized by the design civil engineer to contain the debris from the slide in addition to the other drainage and debris requirements. Additionally, access is provided into the basin bottom area for maintenance and to remove any debris as necessary.

Comment #2

Comply with remarks/conditions on the attached Soils Engineering Review Sheet dated 11/02/01.

Response #2

Comment noted. Responses to the Soils Engineering Review Sheet dated 11/02/01 are provided in following section of this letter.

SOILS ENGINEERING REVIEW SHEET COMMENTS DATED 11/02/01, AND RESPONSES

Comment #1

The slope stability analysis (translational failure surface) for Cross Section U-U' yields a static factor of safety below County minimum standards. Recommend mitigation as necessary.

Response #1

The revised analysis for Cross Section U-U' indicating the County minimum calculated Factor of Safety (FOS) of 1.5 is attached. This revised analysis indicates that the proposed horse trail and development of the numbered lots have a FOS >1.5. Whereas the natural slope below the daylight cut has a calculated FOS <1.5. Hence, no mitigation is required.

Comment #2

The failure plane shown on Cross Section V-V' does not coincide with the information provided in the "Slope Stability Analysis Table" for the same cross section. Also, the calculated setback distance is not shown on Cross Section V-V' or the geotechnical map. Verify and make revisions as necessary.

Response #2

The information previously provided in the analysis for Cross Section V-V' for calculated factor of safety (FOS) of 1.586 was indicated as >1.5 in the Table and rounded up to 1.6 for depiction on Plate 21R of the October 22, 2001 submittal. Both the Table and Section (Plate 1) have been revised to indicate a FOS >1.5. Structural setbacks and restricted use areas are not required as the area having a FOS<1.5 is a natural slope below the proposed development, and will remain as a natural green space area, located outside the proposed development.

Comment #3

Provide volume calculations for Qls-3 to verify the dimensions of the proposed debris basin. The basin must be designed to contain the total volume of the failed slide material in addition to the calculated drainage requirements.

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KLEINFELDER 370 Valley Vista Drive, Suite 150, Diamond Bar, CA 91765-3910 (909) 396-0335 (909) 396-1324 fax

Response #3

The requested volume calculations by B&E Engineers are attached as requested. The calculations are based upon field verified and surveyed limits of the Qls-3 area and estimated depths of slide debris, as indicated in our Supplemental to Response dated October 22, 2001. These calculations indicate that the basin has been sized by the design civil engineer to contain the debris from the slide in addition to the other drainage and debris requirements. Additionally, access is provided into the basin bottom area for maintenance and to remove any debris as necessary.

Comment #4

Requirements of the Geology Section are attached.

Response #4

Comment noted. The Geology Section Review responses are provided in previous section of this letter.

Comment #5

Include a copy of this review sheet with your response.

Response #5

A copy of the review sheet is attached.

We trust that our Engineering Geologic and Soils Engineering responses are consistent with our previous (referenced) submittals. If you require any further information, please do not hesitate to contact either of the undersigned, at your convenience.

Respectfully submitted,

KLEINFELDER, INC.

REGISTERED GEOLOGIST K. DOUGLAS COOK Exp 11/01 No. EG 1391 CERTIFIED ENGINEERING GEOLOGIST 11-6-01 STATE OF CALIFORNIA

K. Douglas Cook, R.G., C.E.G. 1391
Senior Engineering Geologist

Eric W. Noel, P.E., G.E. 2506
Senior Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER ERIC W. NOEL No. 2506 Exp. 6/30/03 GEOTECHNICAL STATE OF CALIFORNIA

Attachments: Review Comment Sheets dated 10/23/01 and 11/02/01
Landslide Quantity Memo dated November 5, 2001, by B&E Engineers
Table 1(Revised) - Slope Stability Analyses
Revised Stability Analysis for Sections U-U'
Plate 1 – Slope Stability Analysis Sections U-U' and V-V'

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B & E ENGINEERS

CIVIL ENGINEERING SURVEYING LAND PLANNING

24 W. ST. JOSEPH STREET
ARCADIA, CA 91007

TEL 626-446-4449
FAX 626-446-6566

MEMORANDUM

To: File -- TR 53138 **Job No:** 99610-G

From: Ramy Awad

Date: November 5, 2001

Subject: Landslide Quantity / Debris Basin Capacity vicinity of lots 180 & 181

Limits and depth of above landslide area were determined on 10/16/01 in the field by our Geotechnical Consultant, Mr. Doug Cook of Kleinfelder and surveyed by B & E Engineers surveyor.

Based on above data, B & E Engineers generated a landslide bottom map and calculated the landslide volume to be 2,800 CY

Debris volume generated from the upstream drainage watershed area is estimated to be 1,081 CY based on the drainage concept of the project.

Total debris volume generated from upstream drainage area (1,081 CY) and potential landslide area (2,800 CY) for a total of 3,881 CY.

The basin is designed to have a capacity of 5,568 CY at elevation 1475, which provides 5' freeboard below building pads of lots 180 & 181.

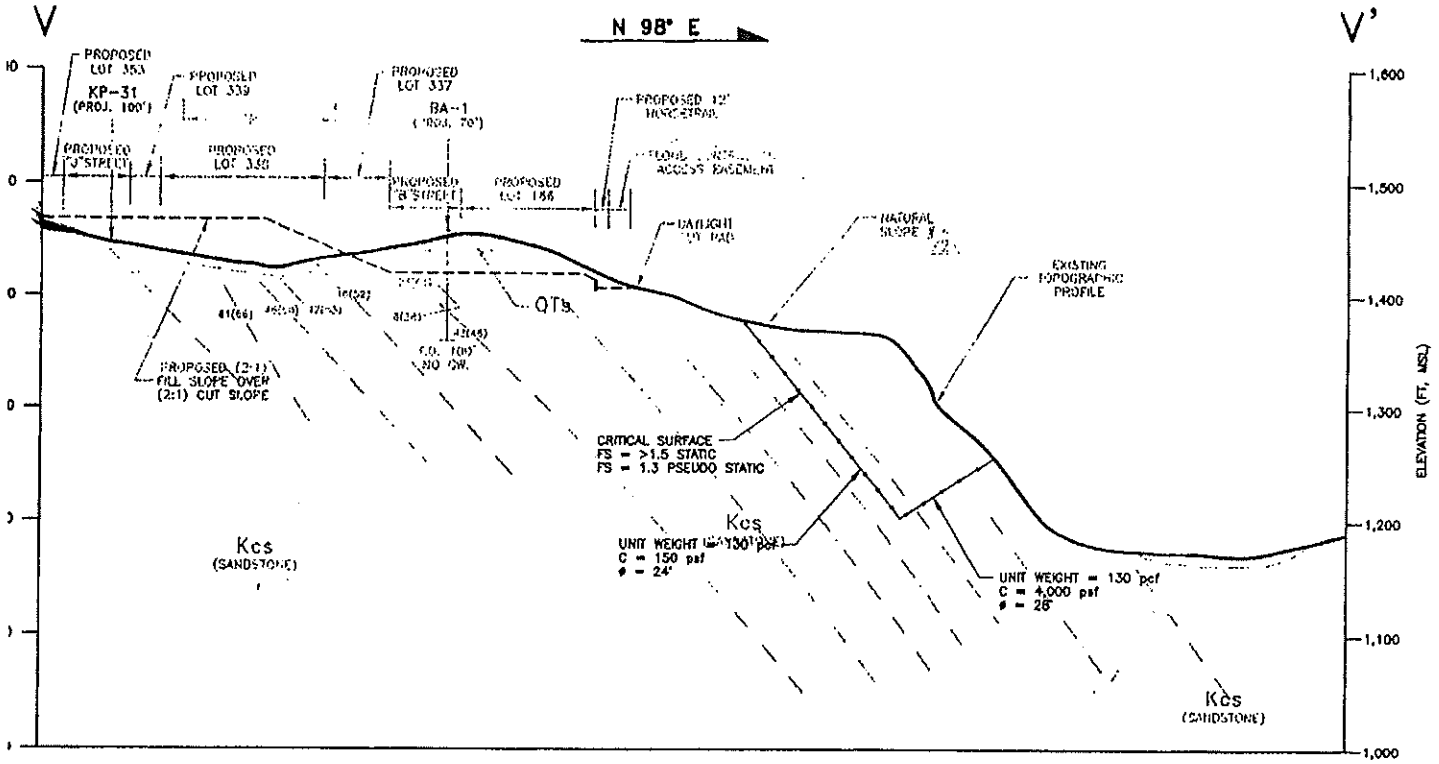
It is estimated that all debris will be contained within the debris basin, below elevation 1472, and therefore, no impact from the debris on the offsite property owners

Post-It™ Fax Note 7671	Date 11/5/01	# of pages ▶ 5
To Doug Cook	From Ramy Awad	
Co./Dept. Kleinfelder	Co. B&E	
Phone #	Phone #	
Fax # 909-396-1324	Fax #	

cc: Hans Giraud

REGISTERED PROFESSIONAL ENGINEER
RAMY F AWAD
No. 41729
CIVIL
CALIFORNIA

Ramy F Awad
11/5/01

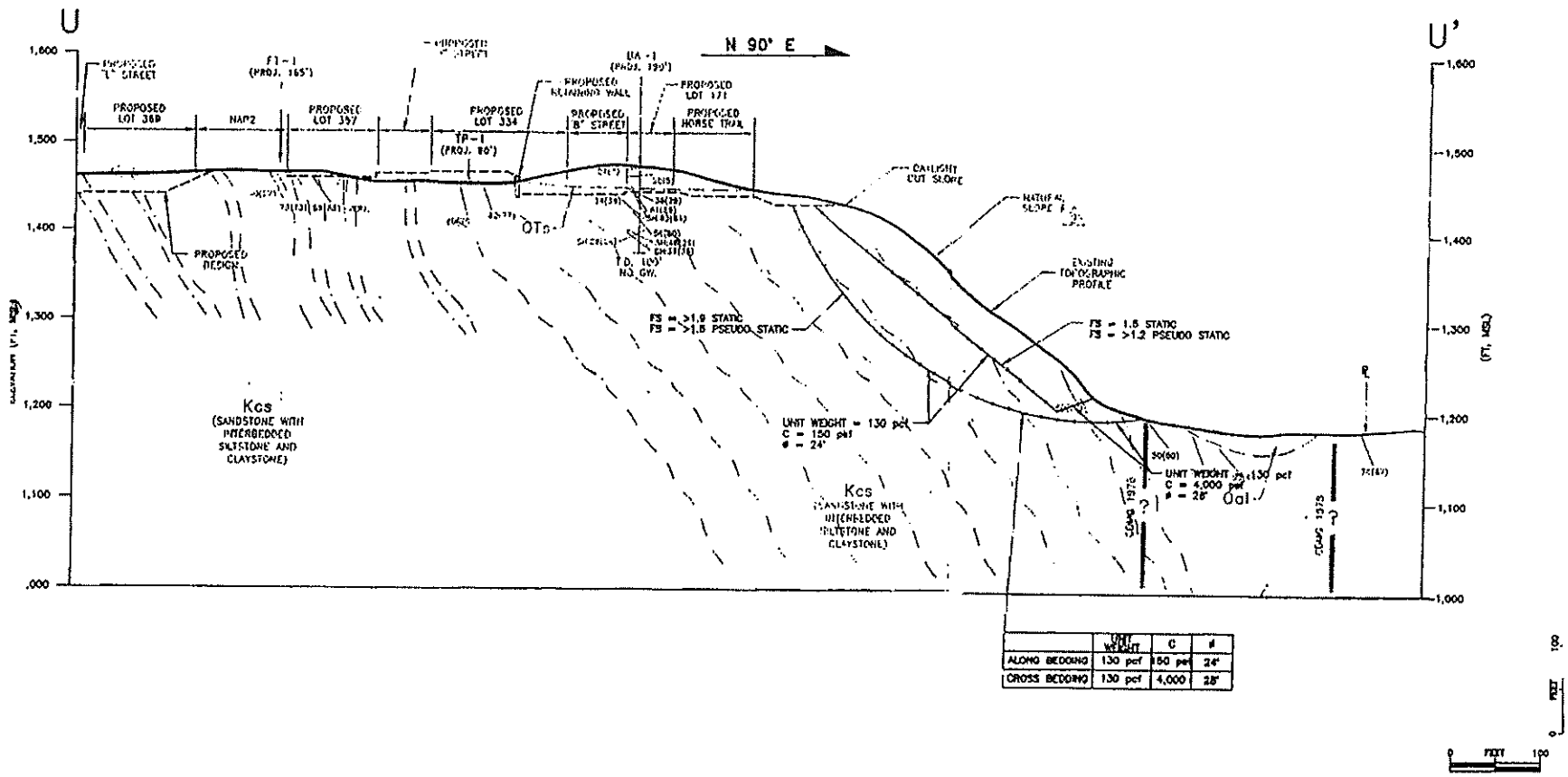


KLEINFELDER

CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT No. 53138
Chatsworth Area, Los Angeles County, California
Project: 58-0194-07 November 08, 2001

SLOPE STABILITY ANALYSIS
SECTIONS U – U' AND V – V'

PLATE
1



	UNIT WEIGHT	C	φ
ALONG BEDDING	130 pcf	150 psf	24°
CROSS BEDDING	130 pcf	4,000	28°

B & E ENGINEERS
24 W. St. Joseph Street
Arcadia, California 91007
(626) 446-4449
FAX (626) 446-6566

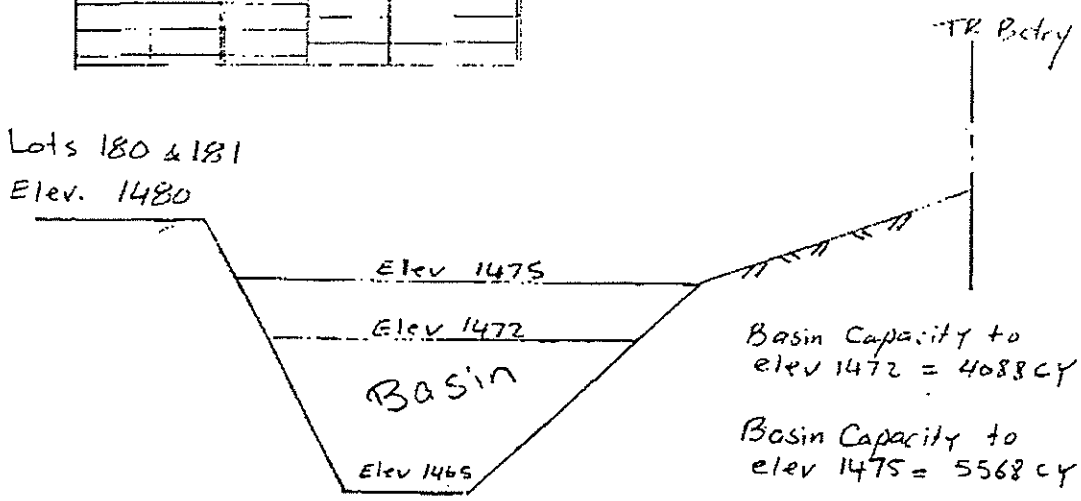
JOB NO. 99610 DATE 11-5-01
PROJECT TR 53138
ENG'R FL CHECK BY RA

Debris Basin Capacity

PLAN SCALE: 1" = 10' PLAN DATE AS: 1.3

ELEVATION CUT	ELEV	AREA	INTERVAL	VOLUME
	1460	0	2	59
	1462	1.00	2	252
	1464	3.25	2	818.5
	1465	3.80	5	3028.5
	1470	5.42	2	1060
	1472	8.10	3	1480
	1475	10.80		

} Debris basin Capacity bottom 1465 Cone 1472 > 4088 CY
Top of basin 1475 with 5' free board for a total capacity of 5568 CY



Basin Capacity to elev 1472 = 4088 CY

Basin Capacity to elev 1475 = 5568 CY

Landslide Debris Volume = 2800 CY
Drainage Debris Volume = 1081 CY
Total = 3881 CY

Therefore proposed debris basin will be adequate for all debris without affecting offsite properties

SHT ... OF

B & E ENGINEERS
24 W. St. Joseph Street
Arcadia, California 91007
(626) 446-4449
FAX (626) 446-6566

JOB NO. 99610 DATE Oct 01
PROJECT TR 53138
ENG'R J. Tutt CHECK BY RA

Land Slide Calculations

1570	0		
60	.74	.37	219
50	.76	.75	444
40	.74	.75	444
30	.72	.73	433
20	.64	.68	403
10	.50	.57	302
1500	.30	.34	201
90	.40	.35	207
80	.04	.22	130
75	0	.02	6

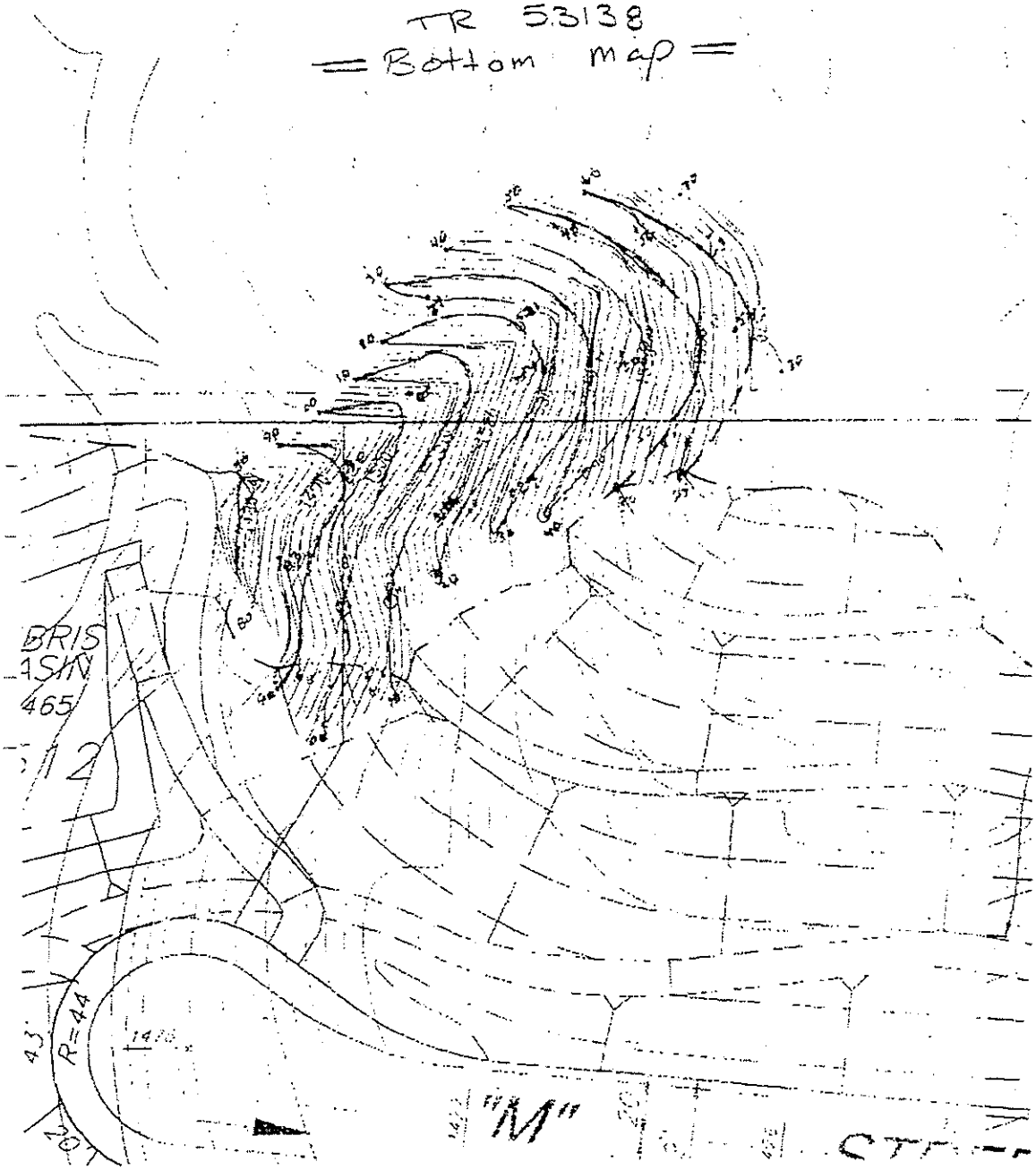
∴ 2789 cy. say 2800 cy.

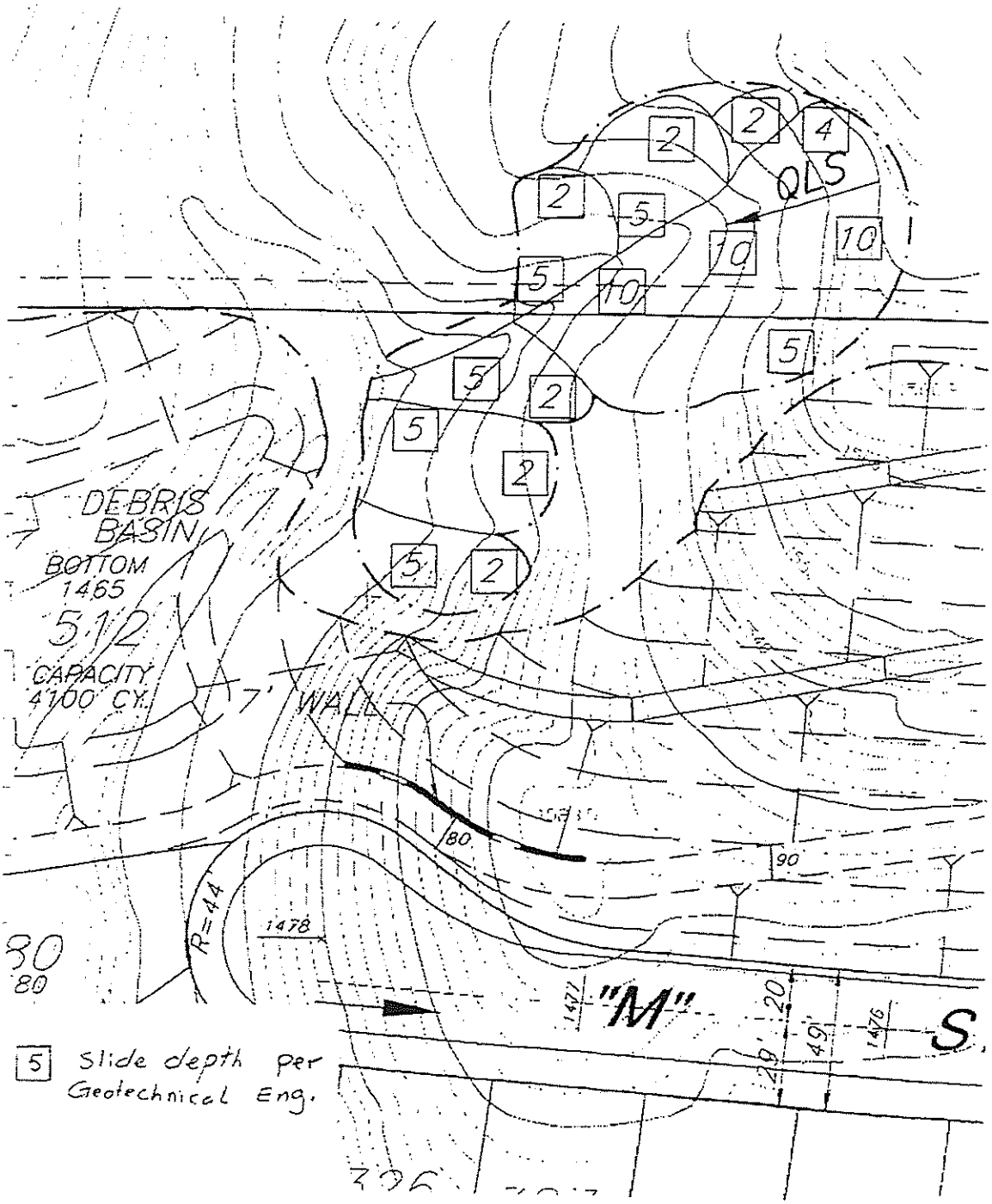
SHT ___ OF .

Landslide Calculations 10/01

TR 53138

= Bottom map =




DEBRIS BASIN
BOTTOM 1465
5.12
CAPACITY 4100 CY.
7' WALL
QLS
"M"
S
R=44
1478
80
90
20
49'
29'
1475
1471
5 Slide depth per Geotechnical Eng.

Sheet 1 of 1

REVIEWER CALLING HOURS
8-8 a.m. & 3-4 p.m. Mon.-Thurs.

County of Los Angeles Department of Public Works
MATERIALS ENGINEERING DIVISION
GEOLOGIC AND SOILS ENGINEERING REVIEW SHEET
900 S. Fremont Ave., Alhambra, CA 91803
TEL. (626).458-4925

DISTRIBUTION
1 Geologist
_ Soils Engineer
1 LDMA/Proc. Center
1 Section File
1 Subdivision

TENTATIVE TRACT 53138
SUBDIVIDER Presidio Chatsworth Partners LLC
ENGINEER B & E Engineers
GEOLOGIST Kleinfelder (58-919401-008)
SOILS ENGINEER Same as above

TENTATIVE MAP DATED 10/4/01
ADDRESS north end of Canoga Ave. at 118 Freeway
LOCATION Chatsworth
REPORT DATES 10/9/01, 8/8/01, 4/24/00
REPORT DATES 10/9/01, 8/8/01, 4/24/00

The Regional Planning Commission, developer and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF TENTATIVE TRACT OR MINOR LAND SUBDIVISION MAP:

1. Provide volume calculations for Qls-3 to verify the enlarged debris basin capacity on Lot 512 will accommodate the total amount of anticipated material from the landslide in addition to the design volume for debris control. Revise all related geologic and geotechnical cross sections accordingly.

2. Comply with remarks/conditions on the attached Soils Engineering Review Sheet dated 11/2/01.

Post-it® Fax Note 7571	Date 11/5/01	# of pages ▶ 2
To JOVA COOK	From GREG JOHNSON	
Co./Dept. KLEINFELDER	Co. LACDPW GEOLOGY	
Phone # TR. 57138	Phone # 626/458-4923	
Fax # 909/396-1324	Fax #	

Prepared by Greg K. Johnson RG 5987, CEG 2050

Date 10/23/01

NOTICE: Public Safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction and Safety Orders.

The "Manual for Preparation of Geotechnical Reports" prepared by County of Los Angeles, Department of Public Works is available on the Internet at the following address: http://dpw.co.la.ca.us/med/manual.pdf

p:\mepub\geology review\greg\tr53138tmr8
11/23/99

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

SOILS ENGINEERING REVIEW SHEET

District Office 9.1

Address: 900 S. Fremont Ave.
Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913
Calling hours - Monday through Thursday 8-9 a.m. & 3-4 p.m.

Tentative Tract 53138
Location Chatsworth
Developer/Owner Presidio Chatsworth Partners L.L.C.
Engineer/Architect B & E Engineers
Soils Engineer Kleinfelder (58-919401-008)
Geologist Same as above

Review of:

Tentative Tract Dated By Regional Planning 10/4/01
Soils Engineering Addenda Dated 10/9/01&10/22/01 Geologic Addenda Dated 10/9/01&10/22/01

Previous review sheet dated 9/25/01

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

1. The slope stability analysis (translational failure surface) for Cross Section U-U' yields a static factor of safety below County minimum standards. Recommend mitigation as necessary.

2. The failure plane shown on Cross Section V-V' does not coincide with the information provided in the "Slope Stability Analysis Summary Table" for the same cross section. Also, the calculated setback distance is not shown on Cross Section V-V' or the geotechnical map. Verify and make revisions as necessary.

3. Provide volume calculations for Qls-3 to verify the dimensions of the proposed debris basin. The basin must be designed to contain the total volume of failed slide material in addition to the calculated drainage requirements.

4. Requirements of the Geology Section are attached.

5. Include a copy of this review sheet with your response.

Prepared by _____ Date 11/2/01

REGISTERED PROFESSIONAL ENGINEER MARK ANDREW STEUER No. C053672 Exp. 6-30-03 Mark A. Steuer CIVIL STATE OF CALIFORNIA

NOTICE: Public safety, relative to geotechnical subdivision, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.

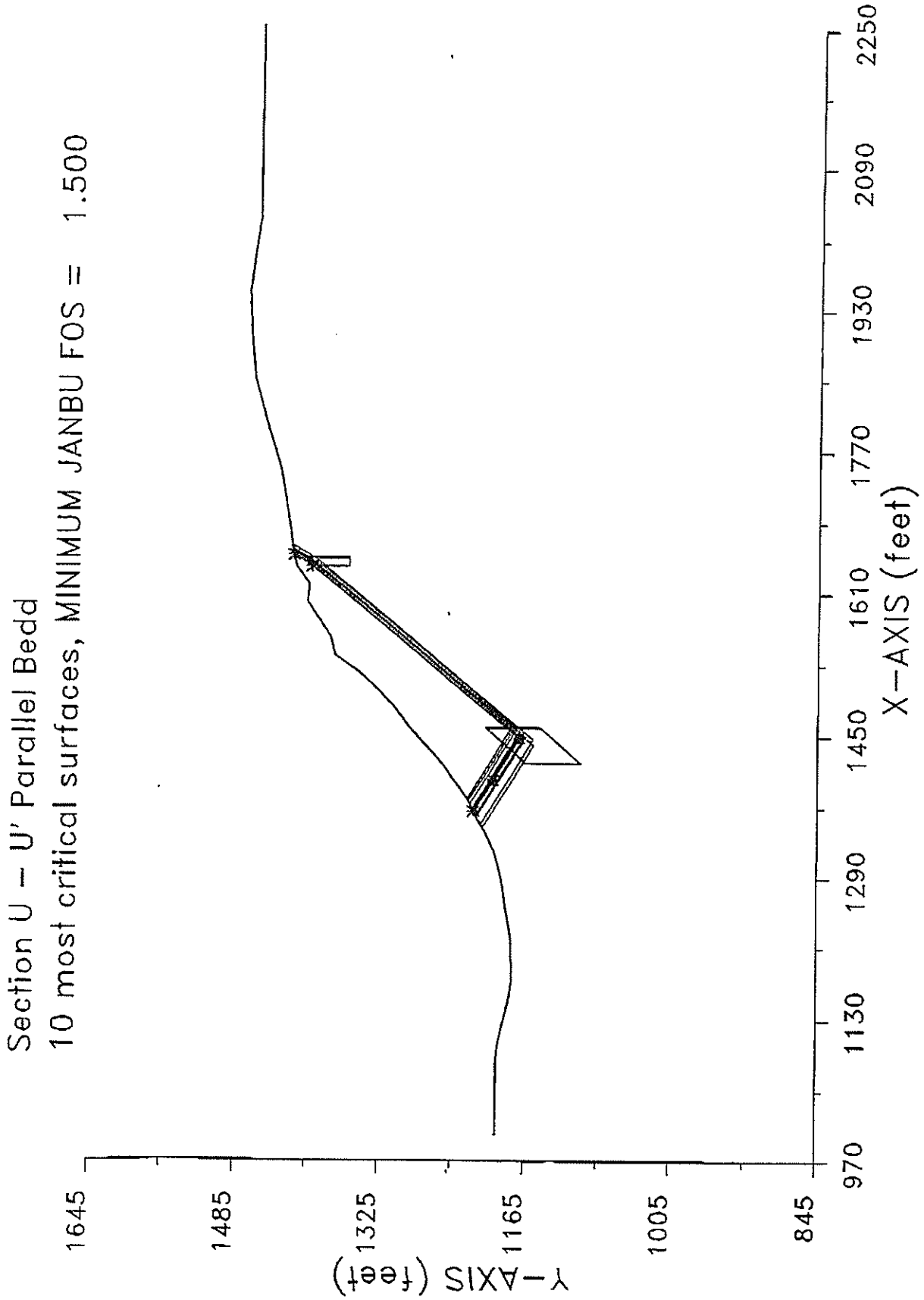
Mark:53138b

Analyses Number	File Name	Profile Name	Analyses Type	Condition	FS (Static)	FS (Pseudo-Static)	Description/Comments
1		A-A'	Parallel	South Slope Bridge Abutment	3.1	2.2	Existing condition stable, no improvements recommended
2		B-B'	Parallel	Southwest Slope Bridge Abutment	2.1	1.5	Existing condition stable, no improvements recommended
2		B-B'	Parallel	Southwest Slope Bridge Abutment (CDMG Tension crack)	2.3	1.6	Tension crack at the toe stability evaluation
3		C-C'	Qls Back Calc.	Existing landslide -Back Calculation of Slide Plane	1.0	N/A	Evaluation of existing conditions
3		C-C'	Parallel	Proposed Grades with Landslide Removed	1.0	<1.1	Evaluation of slope assuming failure of Qls-1 (removal of Slide Debris)
3		C-C'	Parallel	Proposed Grades with Landslide Removed	1.6	1.2	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed
3		C-C'	Parallel	Proposed Grades with Landslide In-Place	1.6	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
4		C2-D'	Parallel	Proposed Grades with Landslide Removed	<1.5	<1.1	Evaluation of existing conditions, FS<1.5; Slope mitigation (RUA) required
4		C2-D'	Parallel	Proposed Grades with Landslide Removed	1.7	1.3	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed (With Landslide In Place = Critical Case)
4		C2-D'	Parallel	Proposed Grades with Landslide In-Place	1.5	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
5		D-D'	Cross	South Facing Cut Slope 3	>1.5	>1.1	Stable by observation Cross Bedding no remediation required
6		D-D"	Parallel	Proposed Grades with Landslide Removed	<1.5	<1.1	Evaluation of existing conditions, FS<1.5; Slope mitigation (RUA) required
6		D-D"	Parallel	Proposed Grades with Landslide Removed	1.7	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed
6		D-D"	Parallel	Proposed Grades with Landslide In-Place	1.7	1.2	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
7		E-E'	Parallel	Daylight cut at top of slope	1.8	1.2	Block analysis of entire slope
7		E-E'	Parallel	Daylight cut at top of slope	1.9	1.4	Initiation at mid slope
7		E-E'	Parallel	Daylight cut at top of slope	2.5	1.5	Top of slope with 13 degree bedding plane analysis
8		F-F'	Cross	Daylight cut at top of slope	2.4	2.0	Circular Analyses with 5' tension crack
9		G-G'	Parallel	Daylight cut at top of slope/Qls-2	1.4	---	Evaluation of existing conditions, FS<1.5; Slope mitigation required
9		G-G'	Circular	Daylight cut shear key / Geogrid Reinforced Slope	1.5	1.1	Circular failure through geogrid slope (With Qls-2 Removed)
9		G-G'	Parallel	Daylight cut shear key / Geogrid Reinforced Slope	1.9	1.5	Along bedding failure at heel of reinforced shear key
10		H-H'	Cross	Fill Slope	>1.5	>1.1	Stable by observation and I-I' Analysis
11		I-I'	Cross	Fill Slope	1.7	1.2	Assumed rotational failure below B' Street
11		I-I'	Cross	Fill Slope	1.8	1.3	Assumed midslope rotational failure above B' Street
12		J-J'	Cross	Fill over cut slope	>1.5		Stable by observation, cross bedded slope
13		K-K'	Circular	Fill Slope	1.9		Bottom of fill slope
13		K-K'	Circular	Fill Slope	1.9	1.4	Middle of fill slope
13		K-K'	Circular	Fill Slope	2.0	1.4	Top of fill slope
13		K-K'	Parallel	Fill Slope	1.7	1.1	Sandstone Block Failure
14		L-L'	Cross	Fill over Natural Slope	1.8	1.5	Sandstone Circular failure
15		M-M'	Circular	Proposed Fill slope with Retaining Walls	<1.5	<1.1	Circular failure through engineered fill with retaining walls FS<1.5 and <1.1
15		M-M'	Circular	Proposed Fill slope with geogrid reinforcement	1.5	1.1	Circular failure through geogrid reinforced engineered fill
16		M2-M2'	Circular	Proposed Fill slope with geogrid reinforcement	2.3	>1.1	Block failure along backcut and bedding planes
17		N-N'	Syncline Parallel	Proposed Cut Slope	>1.5	>1.1	Stable by observation; Steeply dipping bedding
18		O-O'	Folded	Qls over Kcs Cut Slope	1.7	1.2	Folded bedrock circular analysis through toe of slope

18	O-O'	Parallel	Qls over Kcs Cut Slope	1.6	1.1	Folded bedrock block analysis
18	O-O'	Circular	Qls over Kcs Cut Slope	1.7	1.3	Circular failure through Qls at top of slope
19	P-P'	Qls Back Calc.	Existing Landslide - Back Calculation	1.0	---	Specified Surface Spencers Method
19	P-P'	Qls Back Calc.	Existing Landslide - Back Calculation	0.9	---	Circular Failure Surface Bishops method
19	P-P'	Folded	2:1 layback in Qls over steepened slope	1.7	1.2	Circular failure in Qls after removal of Qls 3 , FS>1.5; Slope mitigation required
19	P-P'	Circular	Replacement fill at Toe of Slope and 2:1 (H:V) lay back in Qls	1.7	1.2	Circular failure through Qls
20	U-U'	Circular	Daylight Cut at Natural Slope 2	1.9	>1.5	Circular analysis through toe of slope
20	U-U'	Parallel	Daylight Cut at Natural Slope 2	1.5	>1.2	Along bedding analysis through toe of slope
21	Q-Q'	Qls Back Calc.	Existing Landslide(Qls-3) - Back Calculation	1.0	-	Evaluation of existing conditions
21	Q-Q'	Folded	Qls over steepened slope	--	---	See Analyses for P-P'
22	R-R'	Cross	Cut Slope No. 2	>1.5	>1.1	Stable by Observation
23	S-S'	Cross	Cut Slope	>1.5	>1.1	Stable by Observation
24	T-T'	Parallel	Sandstone monument on slope with Retaining Wall at Toe of Slope	1.0	<1.1	Along Bedding Failure plane, FS< 1.5, Mitigation Recommended
24	T-T'	Parallel	Sandstone monument on slope with Retaining Wall at Toe of Slope	1.5	1.1	Load that the wall is required to carry to achieve a FS=1.5: 13 kips / ft
24	T-T'	Parallel	Retaining Wall at Toe of Slope without Sandstone Monument	1.5	1.1	Load that the wall is required to carry to achieve a FS=1.5: 0.9 kips / ft
25	V-V'	Parallel	Existing Slope (Natural Slope 2, proposed development above daylight cut)	>1.5	1.3	Calculated distance for FS>1.5 and >1.1 (pseudo static)
25	V-V'	Parallel	Existing Natural Slope 2 (below mid slope, undeveloped)	<1.5	<1.1	Existing Slope FS<1.5 by Observation and evaluation of failure plane with FS< 1.5
25	V-V'	Parallel	Existing Natural Slope 2 (above mid slope)	>1.5	>1.1	Assumed failure plane at Daylight Cut Shear Key; FS >1.5 and >1.1 by Observation and evaluation of failure plane with FS>1.5 and >1.1
26	W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.9	1.6	Existing condition after Surficial Failure/Removal; assumed failure through top of slope
26	W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.6	1.3	Assumed failure plane through toe of slope after Surficial Failure/Removal
26	W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.5	1.1	Calculated Setback Distance; Assumed failure plane for FS >1.5 after Surficial Removal / Failure
27	X-X'	Circular	Fill Slope 3 over Natural Slope 1	2.8	2.2	Assumed circular failure near toe of slope
28	Y-Y'	Circular	Cut Slope No. 2	2.0	1.4	Circular failure through Qls;cut slope

Notes: See Geologic Cross Section for left or right reference do not look at slope stability analysis sheets This average value represents the entire slope ht. See geologic profiles for details
For the Pseudo Static cases a horizontal coefficient Kh=0.15 and Kv=0.0 was used in the analysis

SECUU1S 11-05-** 14:17



XSTABL File: SECUU1S 11-05-** 14:17

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Â 1437  *
*****************************************
```

Problem Description : Section U - U' Parallel Bedd

SEGMENT BOUNDARY COORDINATES
---

40 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1196.0	1080.0	1196.0	1
2	1080.0	1196.0	1100.0	1194.0	1
3	1100.0	1194.0	1120.0	1190.0	1
4	1120.0	1190.0	1140.0	1185.0	1
5	1140.0	1185.0	1160.0	1181.0	1
6	1160.0	1181.0	1180.0	1179.0	1
7	1180.0	1179.0	1200.0	1180.0	1
8	1200.0	1180.0	1220.0	1181.0	1
9	1220.0	1181.0	1240.0	1184.0	1
10	1240.0	1184.0	1260.0	1187.0	1
11	1260.0	1187.0	1280.0	1190.0	1
12	1280.0	1190.0	1300.0	1194.0	1
13	1300.0	1194.0	1320.0	1200.0	1
14	1320.0	1200.0	1340.0	1209.0	1
15	1340.0	1209.0	1360.0	1220.0	1
16	1360.0	1220.0	1380.0	1229.0	1
17	1380.0	1229.0	1400.0	1244.0	1
18	1400.0	1244.0	1420.0	1258.0	1
19	1420.0	1258.0	1440.0	1277.0	1
20	1440.0	1277.0	1460.0	1295.0	1
21	1460.0	1295.0	1480.0	1310.0	1
22	1480.0	1310.0	1500.0	1328.0	1
23	1500.0	1328.0	1520.0	1350.0	1
24	1520.0	1350.0	1540.0	1378.0	1
25	1540.0	1378.0	1560.0	1383.0	1
26	1560.0	1383.0	1580.0	1396.0	1
27	1580.0	1396.0	1600.0	1409.0	1
28	1600.0	1409.0	1620.0	1407.0	1
29	1620.0	1407.0	1640.0	1422.0	1
30	1640.0	1422.0	1660.0	1426.0	1
31	1660.0	1426.0	1680.0	1429.0	1
32	1680.0	1429.0	1700.0	1432.0	1
33	1700.0	1432.0	1750.0	1441.0	1
34	1750.0	1441.0	1800.0	1457.0	1
35	1800.0	1457.0	1850.0	1471.0	1
36	1850.0	1471.0	1900.0	1476.0	1
37	1900.0	1476.0	1950.0	1478.0	1
38	1950.0	1478.0	2000.0	1472.0	1

39	2000.0	1472.0	2030.0	1468.0	1
40	2030.0	1468.0	2250.0	1468.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	i-value (degrees)
1	50.00	4000.0	28.00
2	60.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 55.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1420.0	1135.0	1460.0	1180.0	60.0
2	1640.0	1385.0	1650.0	1385.0	45.0

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1365.91	1222.66
2	1400.93	1201.62
3	1448.07	1173.30
4	1640.51	1404.05
5	1652.85	1424.57

** Corrected JANBU FOS = 1.500 ** (Fo factor = 1.081)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1361.17	1220.53
2	1399.99	1197.21
3	1447.13	1168.88
4	1645.74	1406.11
5	1657.38	1425.48

** Corrected JANBU FOS = 1.504 ** (Fo factor = 1.082)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1378.00	1228.10
2	1411.31	1208.09
3	1458.45	1179.76
4	1640.63	1398.97
5	1656.44	1425.29

** Corrected JANBU FOS = 1.507 ** (Fo factor = 1.082)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1368.06	1223.63
2	1406.43	1200.58
3	1453.58	1172.25
4	1641.72	1397.86
5	1658.44	1425.69

** Corrected JANBU FOS = 1.509 ** (Fo factor = 1.082)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1380.30	1229.23
2	1412.58	1209.83
3	1459.73	1181.50
4	1643.19	1404.28

5	1655.72	1425.14

** Corrected JANBU FOS = 1.513 ** (Fo factor = 1.081)

Failure surface No. 6 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1374.67	1226.60
2	1411.96	1204.20
3	1459.11	1175.87
4	1641.70	1394.58
5	1660.63	1426.09

** Corrected JANBU FOS = 1.513 ** (Fo factor = 1.082)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1346.98	1212.84
2	1392.72	1185.36
3	1439.86	1157.03
4	1640.78	1399.19
5	1656.46	1425.29

** Corrected JANBU FOS = 1.520 ** (Fo factor = 1.083)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1359.44	1219.69
2	1402.16	1194.02
3	1449.30	1165.70
4	1645.55	1403.56
5	1658.90	1425.78

** Corrected JANBU FOS = 1.522 ** (Fo factor = 1.083)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1369.45	1224.25
2	1409.95	1199.92
3	1457.09	1171.59
4	1641.53	1394.57
5	1660.46	1426.07

** Corrected JANBU FOS = 1.522 ** (Fo factor = 1.083)

Failure surface No.10 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1351.06	1215.08
2	1352.13	1214.44
3	1399.27	1186.12
4	1446.42	1157.79
5	1648.05	1399.56

6 1664.32 1426.65

** Corrected JANBU FOS = 1.522 ** (Fo factor = 1.084)

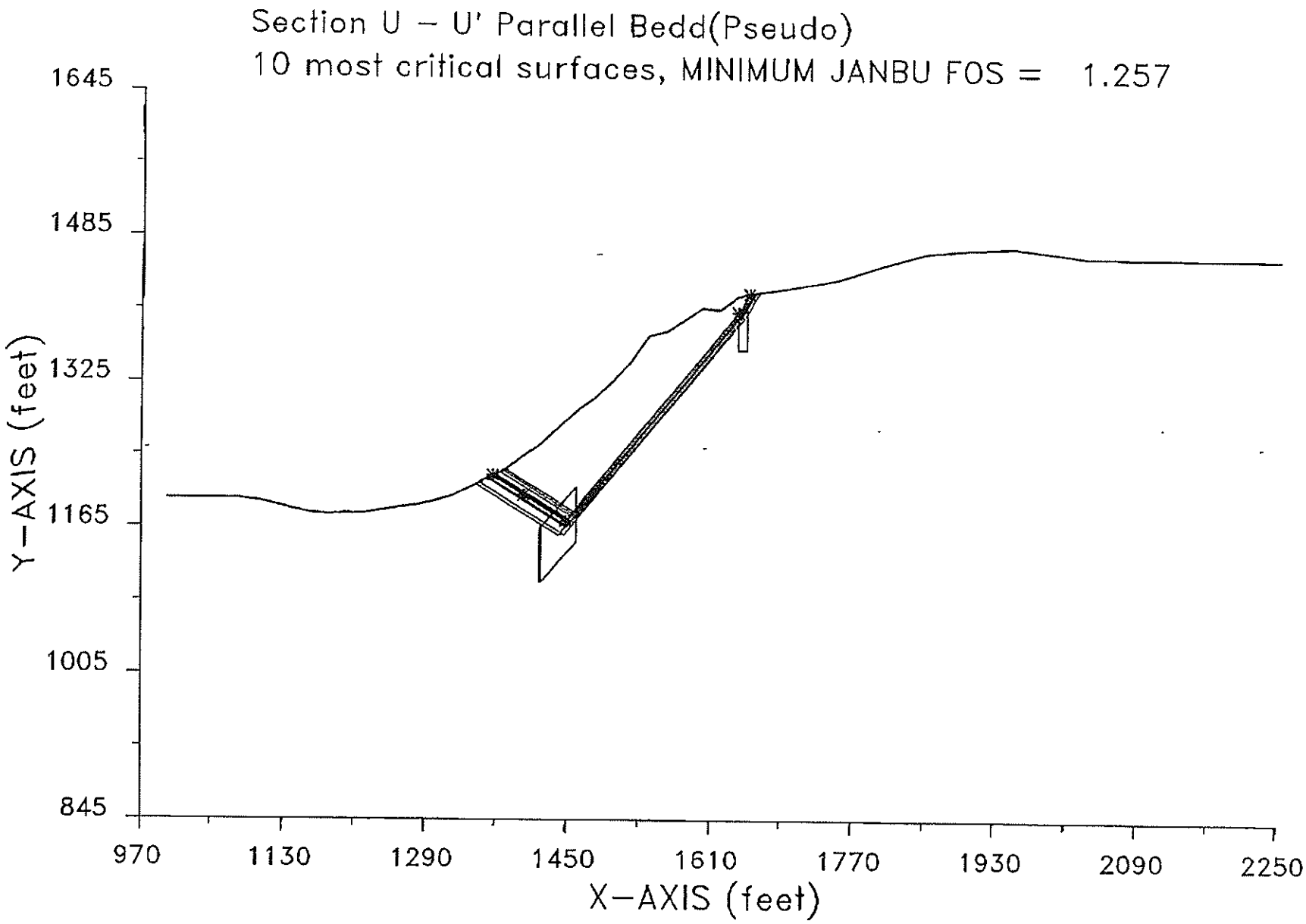
The following is a summary of the TEN most critical surfaces

Problem Description : Section U - U' Parallel Bedd

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.500	1.081	1365.91	1652.85	1.829E+06
2.	1.504	1.082	1361.17	1657.38	1.937E+06
3.	1.507	1.082	1378.00	1656.44	1.829E+06
4.	1.509	1.082	1368.06	1658.44	1.949E+06
5.	1.513	1.081	1380.30	1655.72	1.796E+06
6.	1.513	1.082	1374.67	1660.63	1.947E+06
7.	1.520	1.083	1346.98	1656.46	2.116E+06
8.	1.522	1.083	1359.44	1658.90	2.040E+06
9.	1.522	1.083	1369.45	1660.46	2.015E+06
10.	1.522	1.084	1351.06	1664.32	2.221E+06

* * * END OF FILE * * *

SECUU1SE 11-05-** 14:18



XSTABL File: SECUU1SE 11-05-** 14:18

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Â 95        *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Â 1437  *
*****************************************
```

Problem Description : Section U - U' Parallel Bedd(Pseudo)

SEGMENT BOUNDARY COORDINATES
---

40 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1196.0	1080.0	1196.0	1
2	1080.0	1196.0	1100.0	1194.0	1
3	1100.0	1194.0	1120.0	1190.0	1
4	1120.0	1190.0	1140.0	1185.0	1
5	1140.0	1185.0	1160.0	1181.0	1
6	1160.0	1181.0	1180.0	1179.0	1
7	1180.0	1179.0	1200.0	1180.0	1
8	1200.0	1180.0	1220.0	1181.0	1
9	1220.0	1181.0	1240.0	1184.0	1
10	1240.0	1184.0	1260.0	1187.0	1
11	1260.0	1187.0	1280.0	1190.0	1
12	1280.0	1190.0	1300.0	1194.0	1
13	1300.0	1194.0	1320.0	1200.0	1
14	1320.0	1200.0	1340.0	1209.0	1
15	1340.0	1209.0	1360.0	1220.0	1
16	1360.0	1220.0	1380.0	1229.0	1
17	1380.0	1229.0	1400.0	1244.0	1
18	1400.0	1244.0	1420.0	1258.0	1
19	1420.0	1258.0	1440.0	1277.0	1
20	1440.0	1277.0	1460.0	1295.0	1
21	1460.0	1295.0	1480.0	1310.0	1
22	1480.0	1310.0	1500.0	1328.0	1
23	1500.0	1328.0	1520.0	1350.0	1
24	1520.0	1350.0	1540.0	1378.0	1
25	1540.0	1378.0	1560.0	1383.0	1
26	1560.0	1383.0	1580.0	1396.0	1
27	1580.0	1396.0	1600.0	1409.0	1
28	1600.0	1409.0	1620.0	1407.0	1
29	1620.0	1407.0	1640.0	1422.0	1
30	1640.0	1422.0	1660.0	1426.0	1
31	1660.0	1426.0	1680.0	1429.0	1
32	1680.0	1429.0	1700.0	1432.0	1
33	1700.0	1432.0	1750.0	1441.0	1
34	1750.0	1441.0	1800.0	1457.0	1
35	1800.0	1457.0	1850.0	1471.0	1
36	1850.0	1471.0	1900.0	1476.0	1
37	1900.0	1476.0	1950.0	1478.0	1
38	1950.0	1478.0	2000.0	1472.0	1

39	2000.0	1472.0	2030.0	1468.0	1
40	2030.0	1468.0	2250.0	1468.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	f-value (degrees)
1	50.00	4000.0	28.00
2	60.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 55.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)

1	1420.0	1135.0	1460.0	1180.0	60.0
2	1640.0	1385.0	1650.0	1385.0	45.0

```
*************************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
*************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*************************************************************************
```

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1365.91	1222.66
2	1400.93	1201.62
3	1448.07	1173.30
4	1640.51	1404.05
5	1652.85	1424.57

** Corrected JANBU FOS = 1.257 ** (Fo factor = 1.081)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1361.17	1220.53
2	1399.99	1197.21
3	1447.13	1168.88
4	1645.74	1406.11
5	1657.38	1425.48

** Corrected JANBU FOS = 1.259 ** (Fo factor = 1.082)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1378.00	1228.10
2	1411.31	1208.09
3	1458.45	1179.76
4	1640.63	1398.97
5	1656.44	1425.29

** Corrected JANBU FOS = 1.262 ** (Fo factor = 1.082)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1368.06	1223.63
2	1406.43	1200.58
3	1453.58	1172.25
4	1641.72	1397.86
5	1658.44	1425.69

** Corrected JANBU FOS = 1.263 ** (Fo factor = 1.082)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1374.67	1226.60
2	1411.96	1204.20
3	1459.11	1175.87
4	1641.70	1394.58
5	1660.63	1426.09

** Corrected JANBU FOS = 1.265 ** (Fo factor = 1.082)

Failure surface No. 6 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1380.30	1229.23
2	1412.58	1209.83
3	1459.73	1181.50
4	1643.19	1404.28
5	1655.72	1425.14

** Corrected JANBU FOS = 1.267 ** (Fo factor = 1.081)

Failure surface No. 7 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1351.06	1215.08
2	1352.13	1214.44
3	1399.27	1186.12
4	1446.42	1157.79
5	1648.05	1399.56
6	1664.32	1426.65

** Corrected JANBU FOS = 1.271 ** (Fo factor = 1.084)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1346.98	1212.84
2	1392.72	1185.36
3	1439.86	1157.03
4	1640.78	1399.19
5	1656.46	1425.29

** Corrected JANBU FOS = 1.272 ** (Fo factor = 1.083)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1369.45	1224.25
2	1409.95	1199.92
3	1457.09	1171.59
4	1641.53	1394.57
5	1660.46	1426.07

** Corrected JANBU FOS = 1.273 ** (Fo factor = 1.083)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1359.44	1219.69
2	1402.16	1194.02
3	1449.30	1165.70
4	1645.55	1403.56
5	1658.90	1425.78

** Corrected JANBU FOS = 1.273 ** (Fo factor = 1.083)

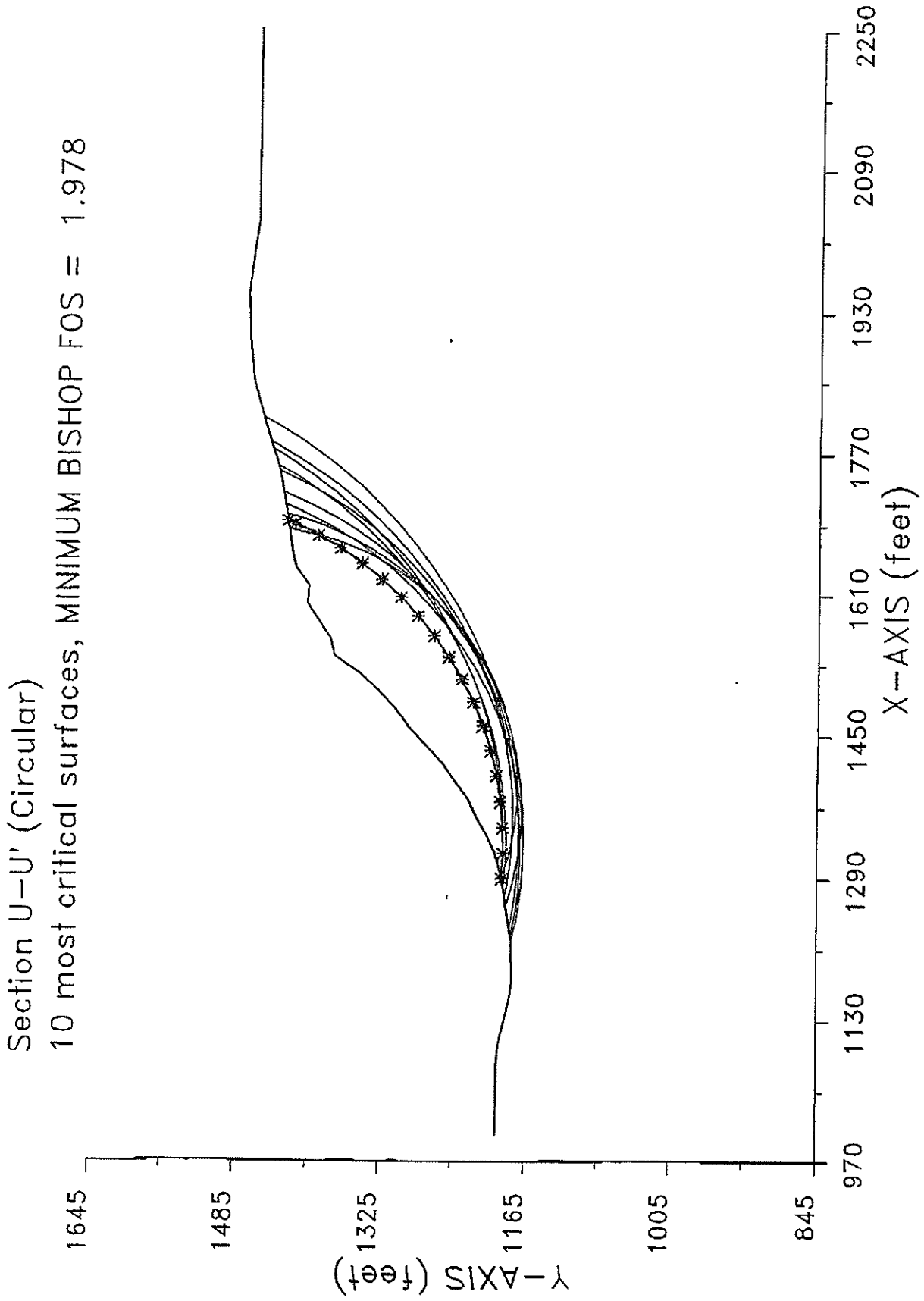
The following is a summary of the TEN most critical surfaces

Problem Description : Section U - U' Parallel Bedd(Pseudo)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.257	1.081	1365.91	1652.85	1.838E+06
2.	1.259	1.082	1361.17	1657.38	1.946E+06
3.	1.262	1.082	1378.00	1656.44	1.838E+06
4.	1.263	1.082	1368.06	1658.44	1.959E+06
5.	1.265	1.082	1374.67	1660.63	1.957E+06
6.	1.267	1.081	1380.30	1655.72	1.805E+06
7.	1.271	1.084	1351.06	1664.32	2.232E+06
8.	1.272	1.083	1346.98	1656.46	2.126E+06
9.	1.273	1.083	1369.45	1660.46	2.025E+06
10.	1.273	1.083	1359.44	1658.90	2.050E+06

* * * END OF FILE * * *

SECUUC 11-05-** 14:36



XSTABL File: SECUUC 11-05-** 14:36

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Â 95        *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Â 1437  *
*****************************************
```

Problem Description : Section U-U' (Circular)

SEGMENT BOUNDARY COORDINATES
---

40 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1196.0	1080.0	1196.0	1
2	1080.0	1196.0	1100.0	1194.0	1
3	1100.0	1194.0	1120.0	1190.0	1
4	1120.0	1190.0	1140.0	1185.0	1
5	1140.0	1185.0	1160.0	1181.0	1
6	1160.0	1181.0	1180.0	1179.0	1
7	1180.0	1179.0	1200.0	1180.0	1
8	1200.0	1180.0	1220.0	1181.0	1
9	1220.0	1181.0	1240.0	1184.0	1
10	1240.0	1184.0	1260.0	1187.0	1
11	1260.0	1187.0	1280.0	1190.0	1
12	1280.0	1190.0	1300.0	1194.0	1
13	1300.0	1194.0	1320.0	1200.0	1
14	1320.0	1200.0	1340.0	1209.0	1
15	1340.0	1209.0	1360.0	1220.0	1
16	1360.0	1220.0	1380.0	1229.0	1
17	1380.0	1229.0	1400.0	1244.0	1
18	1400.0	1244.0	1420.0	1258.0	1
19	1420.0	1258.0	1440.0	1277.0	1
20	1440.0	1277.0	1460.0	1295.0	1
21	1460.0	1295.0	1480.0	1310.0	1
22	1480.0	1310.0	1500.0	1328.0	1
23	1500.0	1328.0	1520.0	1350.0	1
24	1520.0	1350.0	1540.0	1378.0	1
25	1540.0	1378.0	1560.0	1383.0	1
26	1560.0	1383.0	1580.0	1396.0	1
27	1580.0	1396.0	1600.0	1409.0	1
28	1600.0	1409.0	1620.0	1407.0	1
29	1620.0	1407.0	1640.0	1422.0	1
30	1640.0	1422.0	1660.0	1426.0	1
31	1660.0	1426.0	1680.0	1429.0	1
32	1680.0	1429.0	1700.0	1432.0	1
33	1700.0	1432.0	1750.0	1441.0	1
34	1750.0	1441.0	1800.0	1457.0	1
35	1800.0	1457.0	1850.0	1471.0	1
36	1850.0	1471.0	1900.0	1476.0	1
37	1900.0	1476.0	1950.0	1478.0	1
38	1950.0	1478.0	2000.0	1472.0	1

39	2000.0	1472.0	2030.0	1468.0	1
40	2030.0	1468.0	2250.0	1468.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	f-value (degrees)
1	50.00	4000.0	28.00
2	60.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1200.0 ft
and x = 1300.0 ft

Each surface terminates between x = 1350.0 ft
and x = 2200.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1000.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

29.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees

Upper angular limit := (slope angle - 5.0) degrees

```
*********************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
*********************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*********************************************************************

   ---------------------------------------------------------
   USER SELECTED option to maintain strength greater than zero
   ---------------------------------------------------------

*********************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 50)
*********************************************************************
This warning is usually reported for cases where slices near the toe
of the slide mass have steep, negative base angles.  Generally, this
error condition can be avoided by "raising" the lower angular limit
boundary to prevent generation of such deep failure surfaces.
*********************************************************************

   Surface No:    15        Slice No:  1        m_alpha =  -.195294
   Alpha =   -6.04 deg      Phi =  28.00 deg        FOS =   .047

   ************************************************************
   **     Factor of safety calculation for surface #    15    **
   **     failed to converge within FIFTY iterations          **
   **                                                         **
   **    The last calculated value of the FOS was  20.6470    **
   **    This will be ignored for final summary of results    **
   ************************************************************

Circular surface (FOS= 20.6470) is defined by: xcenter =   1237.33
ycenter =   1394.82   Init. Pt. =   1200.00   Seg. Length =  29.00
-------------------------------------------------------------------

*********************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 50)
*********************************************************************
This warning is usually reported for cases where slices near the toe
of the slide mass have steep, negative base angles.  Generally, this
error condition can be avoided by "raising" the lower angular limit
boundary to prevent generation of such deep failure surfaces.
*********************************************************************

   Surface No:    54        Slice No:  1        m_alpha =  -.418716
   Alpha =   -3.37 deg      Phi =  28.00 deg        FOS =   .022

   ************************************************************
   **     Factor of safety calculation for surface #    54    **
   **     failed to converge within FIFTY iterations          **
   **                                                         **
   **    The last calculated value of the FOS was  37.6267    **
   **    This will be ignored for final summary of results    **
   ************************************************************
```

```
Circular surface (FOS= 37.6267) is defined by: xcenter =   1236.77
ycenter =   1379.68   Init. Pt. =   1210.53   Seg. Length =  29.00
-----------------------------------------------------------------

*********************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 50)
*********************************************************************
This warning is usually reported for cases where slices near the toe
of the slide mass have steep, negative base angles.  Generally, this
error condition can be avoided by "raising" the lower angular limit
boundary to prevent generation of such deep failure surfaces.
*********************************************************************

    Surface No:    76        Slice No:  1        m_alpha =  -.178842
    Alpha =    -6.50 deg     Phi =  28.00 deg        FOS =   .051

    ************************************************************
    **     Factor of safety calculation for surface #    76    **
    **     failed to converge within FIFTY iterations          **
    **                                                         **
    **    The last calculated value of the FOS was  21.0586    **
    **    This will be ignored for final summary of results    **
    ************************************************************

Circular surface (FOS= 21.0586) is defined by: xcenter =   1249.44
ycenter =   1348.00   Init. Pt. =   1215.79   Seg. Length =  29.00
-----------------------------------------------------------------

*********************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 50)
*********************************************************************
This warning is usually reported for cases where slices near the toe
of the slide mass have steep, negative base angles.  Generally, this
error condition can be avoided by "raising" the lower angular limit
boundary to prevent generation of such deep failure surfaces.
*********************************************************************

    Surface No:    82        Slice No:  1        m_alpha =  -.375937
    Alpha =    -3.64 deg     Phi =  28.00 deg        FOS =   .025

    ************************************************************
    **     Factor of safety calculation for surface #    82    **
    **     failed to converge within FIFTY iterations          **
    **                                                         **
    **    The last calculated value of the FOS was  24.9319    **
    **    This will be ignored for final summary of results    **
    ************************************************************

Circular surface (FOS= 24.9319) is defined by: xcenter =   1247.06
ycenter =   1361.83   Init. Pt. =   1221.05   Seg. Length =  29.00
-----------------------------------------------------------------

    ************************************************************
    **     Factor of safety calculation for surface #   183    **
    **     failed to converge within FIFTY iterations          **
    **                                                         **
    **    The last calculated value of the FOS was  24.1053    **
    **    This will be ignored for final summary of results    **
    ************************************************************
```

Circular surface (FOS= 24.1053) is defined by: xcenter = 1255.81
ycenter = 1390.85 Init. Pt. = 1247.37 Seg. Length = 29.00

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 50)
****
This warning is usually reported for cases where slices near the toe of the slide mass have steep, negative base angles. Generally, this error condition can be avoided by "raising" the lower angular limit boundary to prevent generation of such deep failure surfaces.
****

Surface No: 251 Slice No: 1 m_alpha = -.877579
Alpha = -2.13 deg Phi = 28.00 deg FOS = .011

****
** Factor of safety calculation for surface # 251 **
** failed to converge within FIFTY iterations **
**
** The last calculated value of the FOS was 16.3597 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 16.3597) is defined by: xcenter = 1282.05
ycenter = 1305.43 Init. Pt. = 1263.16 Seg. Length = 29.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1289.47	1191.89
2	1318.43	1190.25
3	1347.42	1190.71
4	1376.31	1193.26
5	1404.94	1197.91
6	1433.15	1204.62
7	1460.80	1213.35
8	1487.75	1224.07
9	1513.85	1236.71
10	1538.96	1251.21
11	1562.96	1267.49
12	1585.71	1285.47
13	1607.10	1305.06
14	1627.02	1326.14
15	1645.35	1348.61
16	1662.01	1372.34
17	1676.90	1397.23
18	1689.95	1423.13
19	1693.22	1430.98

**** Simplified BISHOP FOS = 1.978 ****

```
*****************************************************************
**                                                             **
** Out of the    400 surfaces generated and analyzed by XSTABL, **
**        6 surfaces were found to have MISLEADING FOS values.  **
**                                                             **
*****************************************************************
```

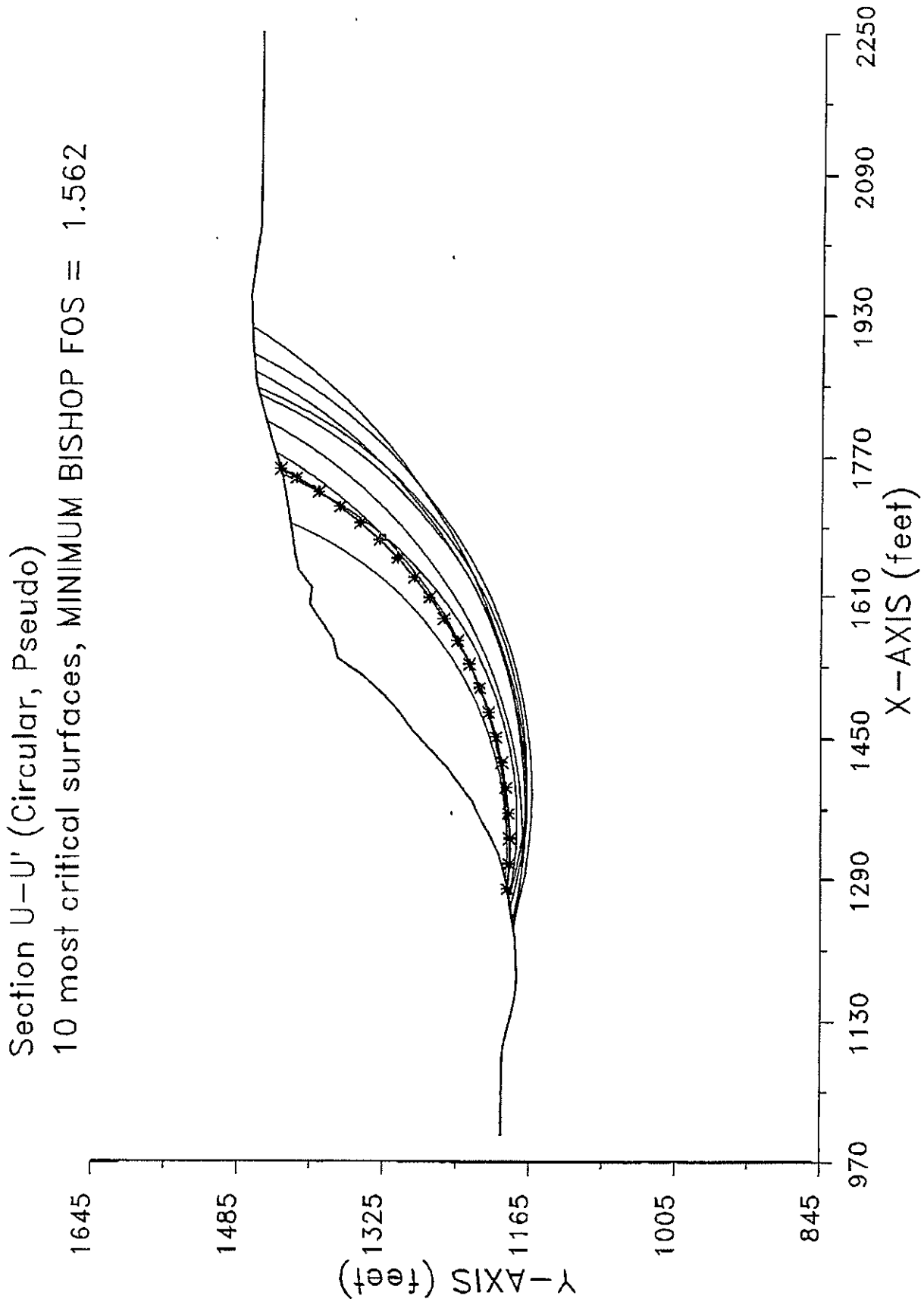
The following is a summary of the TEN most critical surfaces

Problem Description : Section U-U' (Circular)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.978	1326.63	1589.97	399.80	1289.47	1693.22	1.302E+09
2.	2.002	1328.67	1671.20	483.92	1278.95	1754.96	2.010E+09
3.	2.020	1330.96	1697.37	507.17	1289.47	1772.75	2.171E+09
4.	2.033	1334.52	1584.99	417.31	1226.32	1724.40	1.922E+09
5.	2.037	1354.77	1606.70	427.25	1268.42	1748.23	1.974E+09
6.	2.044	1386.69	1472.84	297.95	1289.47	1683.32	1.213E+09
7.	2.049	1363.69	1518.09	347.88	1257.90	1700.48	1.527E+09
8.	2.060	1318.23	1592.43	424.19	1215.79	1711.69	1.848E+09
9.	2.067	1321.23	1689.20	517.83	1221.05	1780.94	2.673E+09
10.	2.069	1333.62	1710.35	537.39	1231.58	1808.67	2.970E+09

* * * END OF FILE * * *

SECUUCE 11-05-** 14:38



XSTABL File: SECUUCE 11-05-** 14:38

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section U-U' (Circular, Pseudo)

SEGMENT BOUNDARY COORDINATES

40 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1196.0	1080.0	1196.0	1
2	1080.0	1196.0	1100.0	1194.0	1
3	1100.0	1194.0	1120.0	1190.0	1
4	1120.0	1190.0	1140.0	1185.0	1
5	1140.0	1185.0	1160.0	1181.0	1
6	1160.0	1181.0	1180.0	1179.0	1
7	1180.0	1179.0	1200.0	1180.0	1
8	1200.0	1180.0	1220.0	1181.0	1
9	1220.0	1181.0	1240.0	1184.0	1
10	1240.0	1184.0	1260.0	1187.0	1
11	1260.0	1187.0	1280.0	1190.0	1
12	1280.0	1190.0	1300.0	1194.0	1
13	1300.0	1194.0	1320.0	1200.0	1
14	1320.0	1200.0	1340.0	1209.0	1
15	1340.0	1209.0	1360.0	1220.0	1
16	1360.0	1220.0	1380.0	1229.0	1
17	1380.0	1229.0	1400.0	1244.0	1
18	1400.0	1244.0	1420.0	1258.0	1
19	1420.0	1258.0	1440.0	1277.0	1
20	1440.0	1277.0	1460.0	1295.0	1
21	1460.0	1295.0	1480.0	1310.0	1
22	1480.0	1310.0	1500.0	1328.0	1
23	1500.0	1328.0	1520.0	1350.0	1
24	1520.0	1350.0	1540.0	1378.0	1
25	1540.0	1378.0	1560.0	1383.0	1
26	1560.0	1383.0	1580.0	1396.0	1
27	1580.0	1396.0	1600.0	1409.0	1
28	1600.0	1409.0	1620.0	1407.0	1
29	1620.0	1407.0	1640.0	1422.0	1
30	1640.0	1422.0	1660.0	1426.0	1
31	1660.0	1426.0	1680.0	1429.0	1
32	1680.0	1429.0	1700.0	1432.0	1
33	1700.0	1432.0	1750.0	1441.0	1
34	1750.0	1441.0	1800.0	1457.0	1
35	1800.0	1457.0	1850.0	1471.0	1
36	1850.0	1471.0	1900.0	1476.0	1
37	1900.0	1476.0	1950.0	1478.0	1
38	1950.0	1478.0	2000.0	1472.0	1

39	2000.0	1472.0	2030.0	1468.0	1
40	2030.0	1468.0	2250.0	1468.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	f-value (degrees)
1	50.00	4000.0	28.00
2	60.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1200.0 ft
and x = 1300.0 ft

Each surface terminates between x = 1350.0 ft
and x = 2200.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1000.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

29.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 50)
****
This warning is usually reported for cases where slices near the toe of the slide mass have steep, negative base angles. Generally, this error condition can be avoided by "raising" the lower angular limit boundary to prevent generation of such deep failure surfaces.
****

Surface No: 54 Slice No: 1 m_alpha = -.418716
Alpha = -3.37 deg Phi = 28.00 deg FOS = .022

****
** Factor of safety calculation for surface # 54 **
** failed to converge within FIFTY iterations **
**
** The last calculated value of the FOS was 21.8322 **
** This will be ignored for final summary of results **
****

Circular surface (FOS= 21.8322) is defined by: xcenter = 1236.77
ycenter = 1379.68 Init. Pt. = 1210.53 Seg. Length = 29.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1278.95	1169.84
2	1307.87	1187.73

3	1336.87	1187.35
4	1365.84	1188.71
5	1394.67	1191.80
6	1423.27	1196.62
7	1451.53	1203.14
8	1479.34	1211.34
9	1506.62	1221.19
10	1533.25	1232.66
11	1559.16	1245.70
12	1584.23	1260.27
13	1608.38	1276.32
14	1631.54	1293.78
15	1653.60	1312.60
16	1674.49	1332.71
17	1694.15	1354.04
18	1712.49	1376.50
19	1729.45	1400.02
20	1744.97	1424.52
21	1754.96	1442.59

**** Simplified BISHOP FOS = 1.562 ****

```
*****************************************************************
**                                                             **
**  Out of the    400 surfaces generated and analyzed by XSTABL,  **
**        1 surfaces were found to have MISLEADING FOS values.   **
**                                                             **
*****************************************************************
```

The following is a summary of the TEN most critical surfaces

Problem Description : Section U-U' (Circular, Pseudo)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.562	1328.67	1671.20	483.92	1278.95	1754.96	1.946E+09
2.	1.567	1330.96	1697.37	507.17	1289.47	1772.75	2.102E+09
3.	1.578	1326.63	1589.97	399.60	1289.47	1693.22	1.261E+09
4.	1.580	1371.42	1720.05	551.12	1242.11	1863.51	3.562E+09
5.	1.582	1388.30	1656.17	487.26	1257.90	1837.38	3.000E+09
6.	1.584	1365.71	1815.71	645.18	1236.84	1914.48	4.598E+09
7.	1.589	1386.09	1716.01	553.00	1236.84	1883.30	3.933E+09
8.	1.589	1333.62	1710.35	537.39	1231.58	1808.67	2.879E+09
9.	1.591	1403.46	1643.67	475.00	1268.42	1845.24	3.017E+09
10.	1.595	1354.77	1606.70	427.25	1268.42	1748.23	1.912E+09

* * * END OF FILE * * *

KLEINFELDER
An employee owned company

October 22, 2001
Project No. 58-9194-02/003

Mr. Richard Garlinghouse
Presidio Chatsworth Partners, LLC
595 Market Street
San Francisco, California 94105

Subject: Supplement to "Response to County of Los Angeles Review Comments", Dated October 9, 2001, by Kleinfelder, Inc., Chatsworth Ridge Estates Project, Tentative Tract No. 53138, Chatsworth Area, Los Angeles County, California

References: "Response to County of Los Angeles Review Comments Dated September 10 and 25, 2001, for Preliminary Geotechnical Investigation Report Dated August 8, 2001, Chatsworth Ridge Estates Project, Tentative Tract No. 53138, Chatsworth Area, Los Angeles County, California", dated October 9, 2001, by Kleinfelder, Inc.

"Preliminary Geotechnical Investigation, Chatsworth Ridge Estates Project, Tentative Tract 53138. Chatsworth Area, Los Angeles County, California", Project No. 58-9194-02/001, dated August 8, 2001, by Kleinfelder, Inc.

Dear Mr. Garlinghouse:

This letter presents our supplement to Kleinfelder, Inc. Response to Comments; dated October 9, 2001 to review comments made by the County of Los Angeles Department of Public Works Land Development Section. It is based upon discussions at the meeting held on October 9, 2001 at the County Offices between the reviewers and representatives of Kleinfelder, Inc. at which time the findings of our "Response" were verbally summarized.

The most recent revision of the 100-scale map for Tentative Tract 53138, dated October 19, 2001, by B&E Engineers is used as the map base for this supplemental submittal. Revisions made to the tract map since the October 3, 2001 map which was utilized as the map base for the referenced October 9, 2001 response include: reconfiguration of the limits for landslide Qls-3, relocation and enlargement of the debris basin located on Lot 512, revision of the grading on the proposed cut slope to avoid any grading of the landslide Qls-3 or previously recommended removal of the slide debris inclusive of offsite grading, and renumbering of the lots within the Tract above Lot 180 to accommodate the loss of one lot due to relocation of the basin on Lot 512.

The reconfiguration of landslide Qls-3 limits is based on a field survey of the area conducted on October 16, 2001 by B&E Engineers, Inc. and Kleinfelder, Inc. The new configuration of the Qls-3 area delineates six surficial slumps, each between two and five feet thick, and one larger slide mass that is estimated at ten feet thick.

The debris basin on Lot 512 was moved to the west to avoid grading at or near the toe of the landslide Qls-3 debris, and enlarged to accommodate 100% of the calculated volume of debris from the slide and adjacent slumps. A lot was lost as a result of the enlargement and relocation

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of the basin. Therefore, all the single-family residential lots within the tract above lot number 180 have been reduced by one number to reflect this change.

The Site Plan and Geologic Maps (Plates 13R and 14R) along with the Geologic Cross Sections (Plates 15R, 16R and 18R) and Slope Stability Analysis Sections (Plates 19R, 20R and 21R), have been updated to reflect the changes in the grading as depicted on the revised map base and lot renumbering.

The slope stability analysis for Sections P-P' and Q-Q' has been revised to reflect the recently surveyed limits of the landslide Qls-3 area, and are attached to this submittal. The stability analysis for Section O-O' was evaluated for possible revision due to potential changes in grading of the slope and no significant changes that would affect the stability of the slope were found. Hence the prior analysis remains valid for Section O-O'.

We trust that this supplement to our Engineering Geologic and Soils Engineering responses are consistent with discussions during our meetings of October 1 and 9, 2001, and that they fully document any outstanding issues required for approval of the Tentative Tract Map. If you require any further information, please do not hesitate to contact either of the undersigned, at your convenience.

Respectfully submitted,

KLEINFELDER, INC.

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Attachments: Table 1(Revised) - Slope Stability Analyses
Revised Stability Analysis for Sections P-P' and Q-Q'
Plate 13R – Site Plan and Geologic Map, South Half
Plate 14R – Site Plan and Geologic Map, North Half
Plate 15R – Geologic Cross Sections A-A' to K-K'
Plate 16R – Geologic Cross Sections L-L' to U-U'
Plate 18R – Geologic Cross Sections V-V' to X-X'
Plate 19R – Slope Stability Analyses Sections A-A' to K-K'
Plate 20R – Slope Stability Analyses Sections L-L' to U-U'
Plate 21R – Slope Stability Analyses Sections V-V' to X-X'

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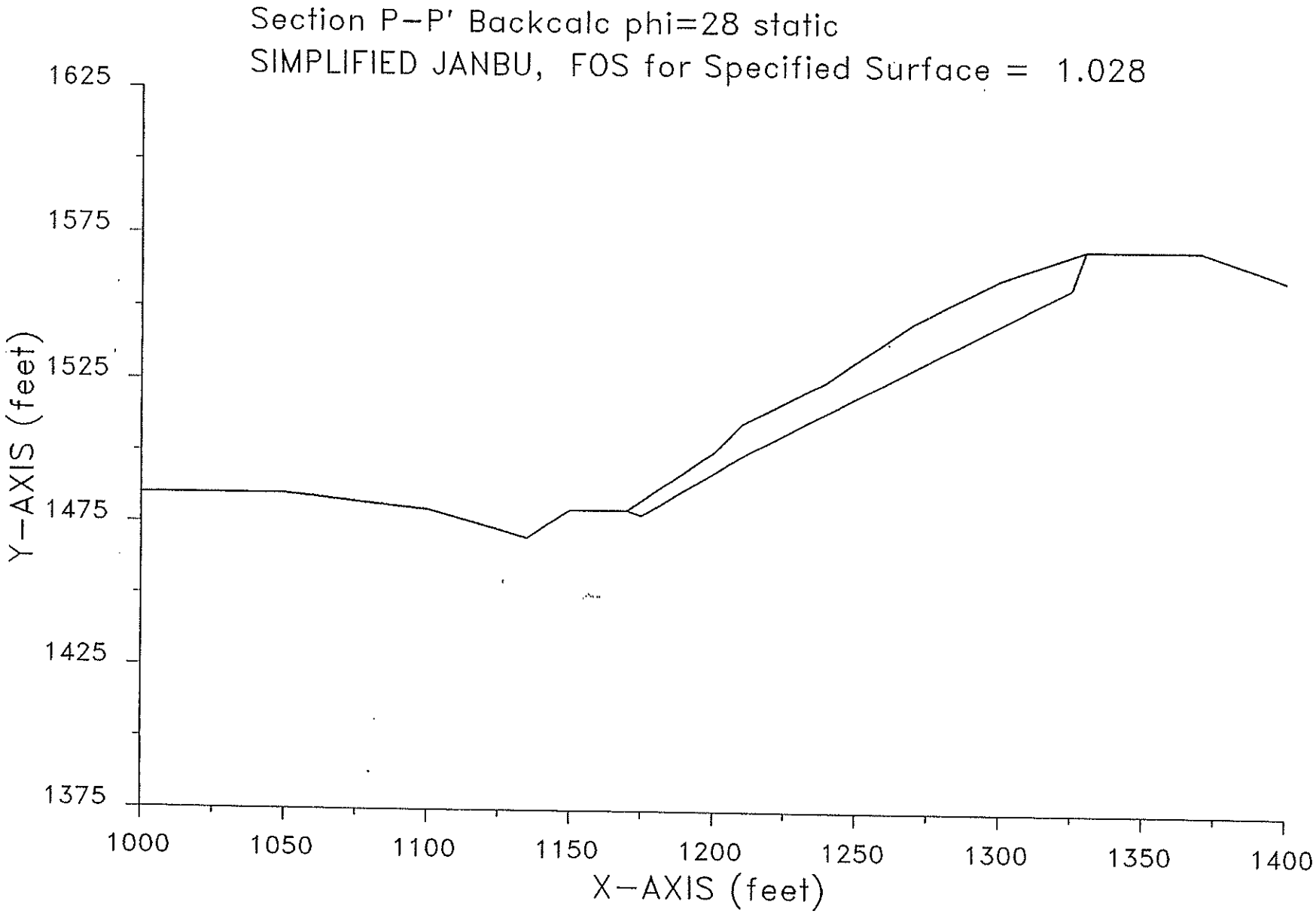
CHATSWORTH RIDGE ESTATES CHATSWORTH, CALIFORNIA

Analyses Number	File Name	Profile Name	Analyses Type	Condition	FS (Static)	FS (Pseudo-Static)	Description/Comments
1		A-A'	Parallel	South Slope Bridge Abutment	3.1	2.2	Existing condition stable, no improvements recommended
2		B-B'	Parallel	Southwest Slope Bridge Abutment	2.1	1.5	Existing condition stable, no improvements recommended
2		B-B'	Parallel	Southwest Slope Bridge Abutment (CDMG Tension crack)	2.3	1.6	Tension crack at the toe stability evaluation
3		C-C'	Qls Back Calc.	Existing landslide -Back Calculation of Slide Plane	1.0	N/A	Evaluation of existing conditions
3		C-C'	Parallel	Proposed Grades with Landslide Removed	1.0	<1.1	Evaluation of slope assuming failure of Qls-1 (removal of Slide Debris)
3		C-C'	Parallel	Proposed Grades with Landslide Removed	1.6	1.2	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed
3		C-C'	Parallel	Proposed Grades with Landslide In-Place	1.6	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
4		C2-D'	Parallel	Proposed Grades with Landslide Removed	<1.5	<1.1	Evaluation of existing conditions, FS<1.5; Slope mitigation (RUA) required
4		C2-D'	Parallel	Proposed Grades with Landslide Removed	1.7	1.3	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed (With Landslide In Place = Critical Case)
4		C2-D'	Parallel	Proposed Grades with Landslide In-Place	1.5	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
5		D-D'	Cross	South Facing Cut Slope 3	>1.5	>1.1	Stable by observation Cross Bedding no remediation required
6		D-D"	Parallel	Proposed Grades with Landslide Removed	<1.5	<1.1	Evaluation of existing conditions, FS<1.5; Slope mitigation (RUA) required
6		D-D"	Parallel	Proposed Grades with Landslide Removed	1.7	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed
6		D-D"	Parallel	Proposed Grades with Landslide In-Place	1.7	1.2	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
7		E-E'	Parallel	Daylight cut at top of slope	1.6	1.2	Block analysis of entire slope
7		E-E'	Parallel	Daylight cut at top of slope	1.9	1.4	Initiation at mid slope
7		E-E'	Parallel	Daylight cut at top of slope	2.5	1.5	Top of slope with 13 degree bedding plane analysis
8		F-F'	Cross	Daylight cut at top of slope	2.4	2.0	Circular Analyses with 5' tension crack
9		G-G'	Parallel	Daylight cut at top of slope/Qls-2	1.4	---	Evaluation of existing conditions, FS<1.5; Slope mitigation required
9		G-G'	Circular	Daylight cut shear key / Geogrid Reinforced Slope	1.5	1.1	Circular failure through geogrid slope (With Qls-2 Removed)
9		G-G'	Parallel	Daylight cut shear key / Geogrid Reinforced Slope	1.9	1.5	Along bedding failure at heel of reinforced shear key
10		H-H'	Cross	Fill Slope	>1.5	>1.1	Stable by observation and I-I' Analysis
11		I-I'	Cross	Fill Slope	1.7	1.2	Assumed rotational failure below B' Street
11		I-I'	Cross	Fill Slope	1.8	1.3	Assumed midslope rotational failure above B' Street
12		J-J'	Cross	Fill over cut slope	>1.5	>1.1	Stable by observation, cross bedded slope
13		K-K'	Circular	Fill Slope	1.9	1.3	Bottom of fill slope
13		K-K'	Circular	Fill Slope	1.9	1.4	Middle of fill slope
13		K-K'	Circular	Fill Slope	2.0	1.4	Top of fill slope
13		K-K'	Parallel	Fill Slope	1.7	1.1	Sandstone Block Failure
14		L-L'	Cross	Fill over Natural Slope	1.8	1.5	Sandstone Circular failure
15		M-M'	Circular	Proposed Fill slope with Retaining Walls	*<1.5*	*<1.1*	Circular failure through engineered fill with retaining walls FS<1.5 and <1.1
15		M-M'	Circular	Proposed Fill slope with geogrid reinforcement	*1.5*	*1.1*	Circular failure through geogrid reinforced engineered fill
16		M2-M2'	Circular	Proposed Fill slope with geogrid reinforcement	2.3	>1.1	Block failure along backcut and bedding planes
17		N-N'	Syncline Parallel	Proposed Cut Slope	>1.5	>1.1	Stable by observation; Steeply dipping bedding

Slope Stability Analysis Summary Table

18		O-O'	Folded	Qts over Kcs Cut Slope	1.7	1.2	Folded bedrock circular analysis through toe of slope
18		O-O'	Parallel	Qts over Kcs Cut Slope	1.6	1.1	Folded bedrock block analysis
18		O-O'	Circular	Qts over Kcs Cut Slope	1.7	1.3	Circular failure through Qts at top of slope
19		P-P'	Qls Back Calc.	Existing Landslide - Back Calculation	1.0	1.0	Back calc using updated limits (10/22/01)
19		P-P'	Folded	2.:1 layback in Qts over steepened slope	1.7	1.2	Circular failure in Qts after removal of Qls-3 , FS<1.5; Slope mitigation required
19		P-P'	Circular	Replacement fill at Toe of Slope and 2:1 (H:V) lay back in Qts	1.7	1.2	Circular failure through Qts
20		U-U' formerly AA-AA'	Circular	Daylight Cut at Natural Slope 2	2.0	1.6	Circular analysis through toe of slope
20		U-U' formerly AA-AA'	Parallel	Daylight Cut at Natural Slope 2	1.5	1.2	Along bedding analysis through toe of slope
21		Q-Q'	Qls Back Calc.	Existing Landslide(Qls-3) - Back Calculation	1.0	1.0	Back calc using updated limits (10/22/01)
21		Q-Q'	Folded	Qts over steepened slope	---	---	See Analyses for P-P'
22		R-R'	Cross	Cut Slope No. 2	>1.5	>1.1	Stable by Observation
23		S-S'	Cross	Cut Slope	>1.5	>1.1	Stable by Observation
24		T-T'	Parallel	Sandstone monument on slope with Retaining Wall at Toe of Slope	1.0	<1.1	Along Bedding Failure plane; FS<1.5, Mitigation Recommended
24		T-T'	Parallel	Sandstone monument on slope with Retaining Wall at Toe of Slope	1.5	1.1	Load that the wall is required to carry to achieve a FS=1.5: 13 kips / lf
24		T-T'	Parallel	Retaining Wall at Toe of Slope without Sandstone Monument	1.5	1.1	Load that the wall is required to carry to achieve a FS=1.5: 0.9 kips / lf
25		V-V'	Parallel	Existing Slope (Natural Slope 2)	1.5	1.3	Calculated setback distance for FS>1.5 and >1.1 (pseudo-static)
25		V-V'	Parallel	Existing Slope (Natural Slope 2)	<1.5	<1.1	Existing Slope FS<1.5 by Observation and evaluation of failure plane with FS=1.5
25		V-V'	Parallel	Existing Slope (Natural Slope 2)	>1.5	>1.1	Assumed failure plane at Daylight Cut Shear Key; FS >1.5 and >1.1 by Observation and evaluation of failure plane with FS>1.5 and >1.1
26		W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.9	1.6	Existing condition after Surficial Failure/Removal; assumed failure through top of slope
26		W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.6	1.3	Assumed failure plane through toe of slope after Surficial Failure/Removal
26		W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.5	1.1	Calculated Setback Distance; Assumed failure plane for FS=1.5 after Surficial Removal / Failure
27		X-X'	Circular	Fill Slope 3 over Natural Slope 1	2.8	2.2	Assumed circular failure near toe of slope
28		Y-Y'	Circular	Cut Slope No. 2	2.0	1.4	Circular failure through Qts;cut slope
Notes:		See Geologic Cross Section for left or right reference do not look at slope stability analysis sheets This average value represents the entire slope ht. See geologic profiles for details					
		For the Pseudo Static cases a horizontal coefficient Kh=0.15 and Kv=0.0 was used in the analysis					

SECP2B 10-22-** 15:44



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Problem Description : Section P-P' Backcalc phi=28 static

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1485.0	1050.0	1485.0	1
2	1050.0	1485.0	1100.0	1480.0	1
3	1100.0	1480.0	1135.0	1470.0	1
4	1135.0	1470.0	1150.0	1480.0	1
5	1150.0	1480.0	1170.0	1480.0	1
6	1170.0	1480.0	1200.0	1500.0	1
7	1200.0	1500.0	1210.0	1510.0	1
8	1210.0	1510.0	1240.0	1525.0	1
9	1240.0	1525.0	1270.0	1545.0	1
10	1270.0	1545.0	1300.0	1560.0	1
11	1300.0	1560.0	1330.0	1570.0	1
12	1330.0	1570.0	1370.0	1570.0	1
13	1370.0	1570.0	1400.0	1560.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	.0	28.00	.000	.0	0

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 5 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1170.00	1480.00
2	1175.00	1478.00
3	1212.00	1500.00
4	1325.00	1557.00
5	1330.00	1570.00

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1172.50	1479.00	2.67	5.00	-21.80	33.69	1600.
2	1187.50	1485.43	6.23	25.00	30.74	33.69	18703.
3	1205.00	1495.84	9.16	10.00	30.74	45.00	10995.
4	1211.00	1499.41	11.09	2.00	30.74	26.57	2663.
5	1226.00	1507.06	10.94	28.00	26.77	26.57	36752.
6	1255.00	1521.69	13.31	30.00	26.77	33.69	47915.
7	1285.00	1536.82	15.68	30.00	26.77	26.57	56437.
8	1312.50	1550.69	13.47	25.00	26.77	18.43	40416.
9	1327.50	1563.50	5.67	5.00	68.96	18.43	3400.

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	404.9	.0	28.00	0.	0.	0.	.00
2	570.3	.0	28.00	0.	0.	0.	.00
3	838.2	.0	28.00	0.	0.	0.	.00
4	1015.0	.0	28.00	0.	0.	0.	.00
5	1038.1	.0	28.00	0.	0.	0.	.00
6	1263.1	.0	28.00	0.	0.	0.	.00
7	1487.8	.0	28.00	0.	0.	0.	.00

8	1278.5	.0	28.00	0.	0.	0.	.00
9	287.8	.0	28.00	0.	0.	0.	.00

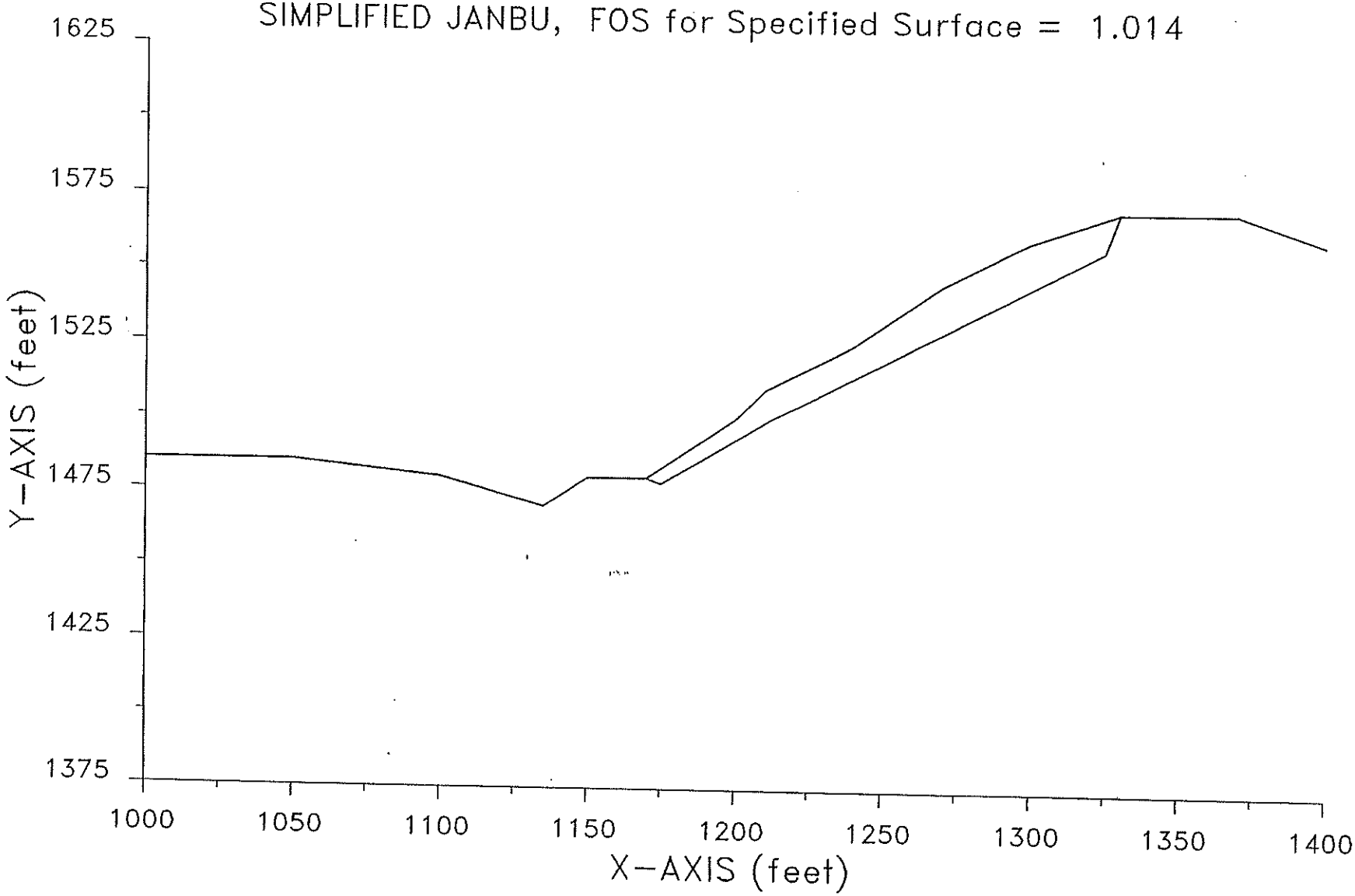
For the single specified surface,
Corrected JANBU factor of safety = 1.028 (Fo factor = 1.014)

Resisting Shear Strength = 104.04E+03 lb

SECP2 10-22-** 15:42

Section P-P' Backcalc phi=36 (PSEUDO STATIC)

SIMPLIFIED JANBU, FOS for Specified Surface = 1.014



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```

Problem Description : Section P-P' Backcalc phi=36

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1485.0	1050.0	1485.0	1
2	1050.0	1485.0	1100.0	1480.0	1
3	1100.0	1480.0	1135.0	1470.0	1
4	1135.0	1470.0	1150.0	1480.0	1
5	1150.0	1480.0	1170.0	1480.0	1
6	1170.0	1480.0	1200.0	1500.0	1
7	1200.0	1500.0	1210.0	1510.0	1
8	1210.0	1510.0	1240.0	1525.0	1
9	1240.0	1525.0	1270.0	1545.0	1
10	1270.0	1545.0	1300.0	1560.0	1
11	1300.0	1560.0	1330.0	1570.0	1
12	1330.0	1570.0	1370.0	1570.0	1
13	1370.0	1570.0	1400.0	1560.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	.0	36.00	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 5 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1170.00	1480.00
2	1175.00	1478.00
3	1212.00	1500.00
4	1325.00	1557.00
5	1330.00	1570.00

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1172.50	1479.00	2.67	5.00	-21.80	33.69	1600.
2	1187.50	1485.43	6.23	25.00	30.74	33.69	18703.
3	1205.00	1495.84	9.16	10.00	30.74	45.00	10995.
4	1211.00	1499.41	11.09	2.00	30.74	26.57	2663.
5	1226.00	1507.06	10.94	28.00	26.77	26.57	36752.
6	1255.00	1521.69	13.31	30.00	26.77	33.69	47915.
7	1285.00	1536.82	15.68	30.00	26.77	26.57	56437.
8	1312.50	1550.69	13.47	25.00	26.77	18.43	40416.
9	1327.50	1563.50	5.67	5.00	68.96	18.43	3400.

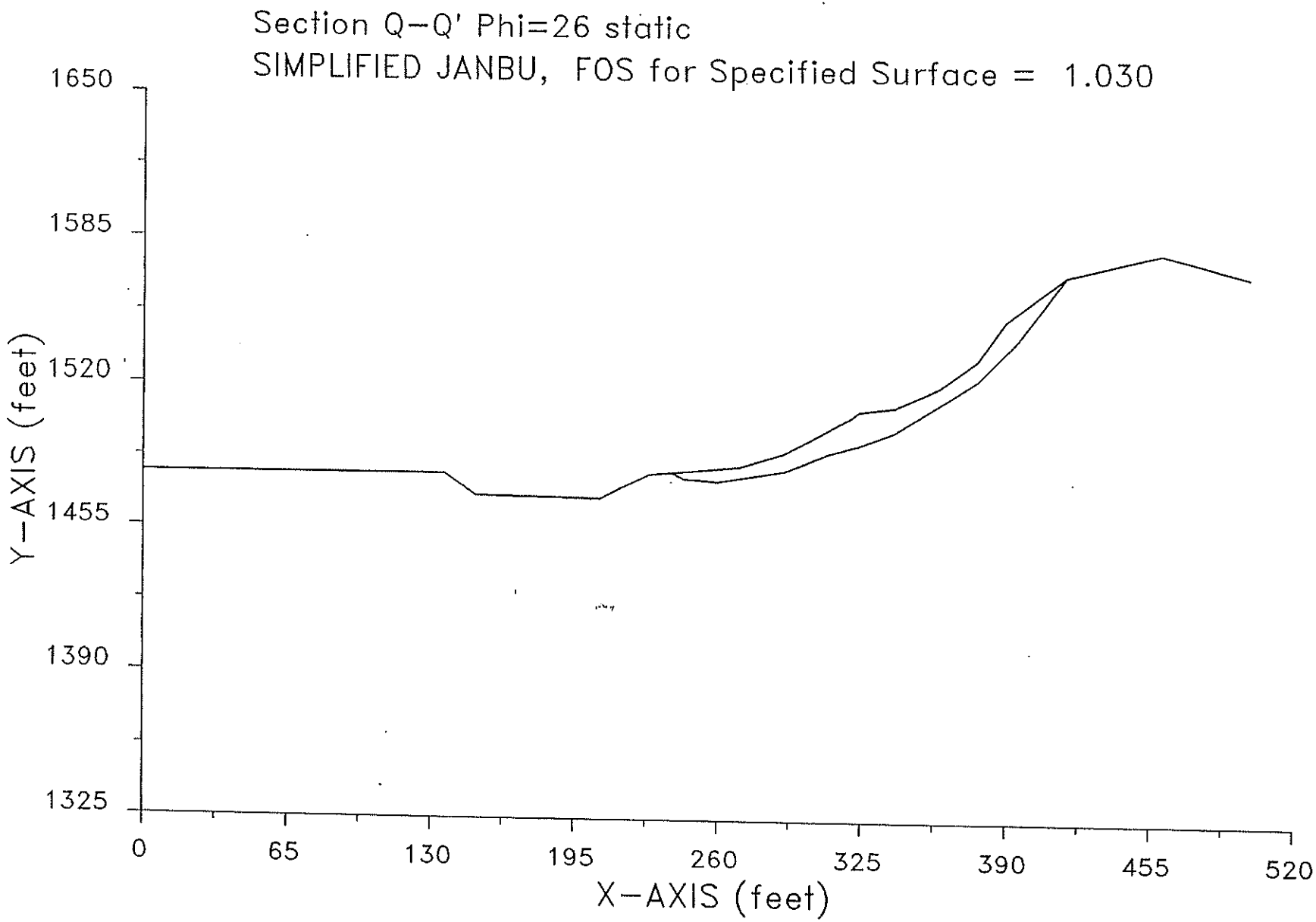
SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	451.2	.0	36.00	0.	0.	0.	.00
2	522.4	.0	36.00	0.	0.	0.	.00
3	767.7	.0	36.00	0.	0.	0.	.00
4	929.6	.0	36.00	0.	0.	0.	.00
5	960.5	.0	36.00	0.	0.	0.	.00
6	1168.7	.0	36.00	0.	0.	0.	.00
7	1376.6	.0	36.00	0.	0.	0.	.00
8	1182.9	.0	36.00	0.	0.	0.	.00
9	235.3	.0	36.00	0.	0.	0.	.00

For the single specified surface,
Corrected JANBU factor of safety = 1.014 (Fo factor = 1.014)

Resisting Shear Strength = 131.33E+03 lb

SECQ3B 10-22-** 15:23



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Problem Description : Section Q-Q' Phi=26 static

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1480.0	136.0	1480.0	1
2	136.0	1480.0	150.0	1470.0	1
3	150.0	1470.0	207.0	1469.0	1
4	207.0	1469.0	229.0	1480.0	1
5	229.0	1480.0	250.0	1482.0	1
6	250.0	1482.0	270.0	1484.0	1
7	270.0	1484.0	290.0	1490.0	1
8	290.0	1490.0	320.0	1506.0	1
9	320.0	1506.0	324.0	1509.0	1
10	324.0	1509.0	340.0	1511.0	1
11	340.0	1511.0	360.0	1520.0	1
12	360.0	1520.0	377.0	1532.0	1
13	377.0	1532.0	390.0	1550.0	1
14	390.0	1550.0	417.0	1570.0	1
15	417.0	1570.0	460.0	1580.0	1
16	460.0	1580.0	500.0	1570.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	.0	26.00	.000	.0	0

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 10 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	239.00	1480.95
2	245.00	1478.00
3	260.00	1477.00
4	290.00	1482.00
5	310.00	1490.00
6	324.00	1494.00
7	340.00	1500.00
8	377.00	1523.00
9	395.00	1541.00
10	417.00	1570.00

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	242.00	1479.48	1.76	6.00	-26.20	5.44	1269.
2	247.50	1477.83	3.93	5.00	-3.81	5.44	2357.
3	255.00	1477.33	5.17	10.00	-3.81	5.71	6200.
4	265.00	1477.83	5.67	10.00	9.46	5.71	6800.
5	280.00	1480.33	6.67	20.00	9.46	16.70	16000.
6	300.00	1486.00	9.33	20.00	21.80	28.07	22400.
7	315.00	1491.43	11.90	10.00	15.95	28.07	14286.
8	322.00	1493.43	14.07	4.00	15.95	36.87	6754.
9	332.00	1497.00	13.00	16.00	20.56	7.13	24960.
10	350.00	1506.22	9.28	20.00	31.87	24.23	22281.
11	368.50	1517.72	8.28	17.00	31.87	35.22	16899.
12	383.50	1529.50	11.50	13.00	45.00	54.16	17940.
13	392.50	1538.50	13.35	5.00	45.00	36.53	8011.
14	406.00	1555.50	6.35	22.00	52.82	36.53	16769.

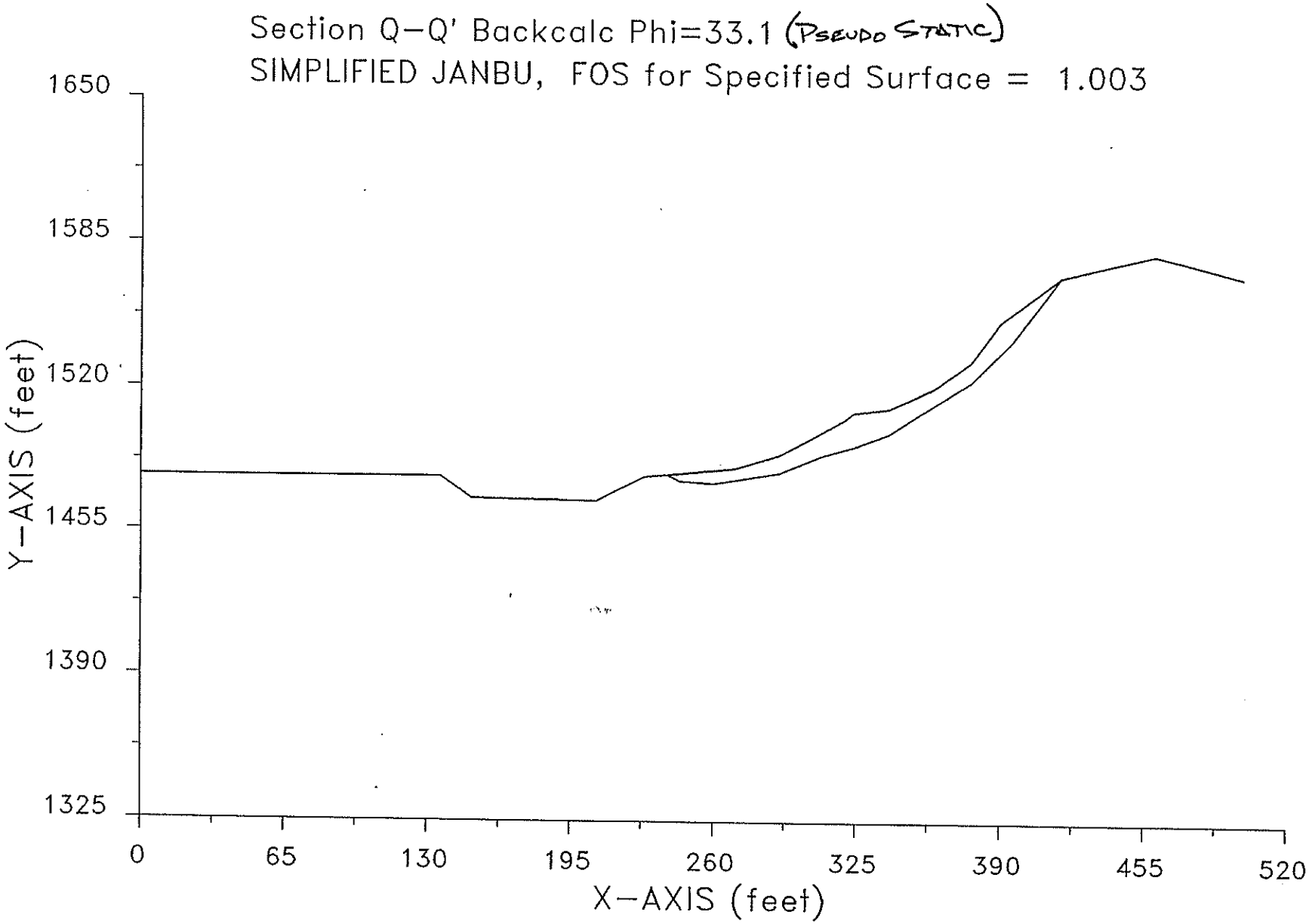
SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	278.6	.0	26.00	0.	0.	0.	.00
2	487.3	.0	26.00	0.	0.	0.	.00
3	640.9	.0	26.00	0.	0.	0.	.00
4	628.7	.0	26.00	0.	0.	0.	.00
5	739.6	.0	26.00	0.	0.	0.	.00
6	936.5	.0	26.00	0.	0.	0.	.00
7	1253.2	.0	26.00	0.	0.	0.	.00
8	1481.2	.0	26.00	0.	0.	0.	.00
9	1317.9	.0	26.00	0.	0.	0.	.00
10	854.0	.0	26.00	0.	0.	0.	.00
11	762.0	.0	26.00	0.	0.	0.	.00
12	926.2	.0	26.00	0.	0.	0.	.00
13	1075.4	.0	26.00	0.	0.	0.	.00
14	463.1	.0	26.00	0.	0.	0.	.00

For the single specified surface,
Corrected JANBU factor of safety = 1.030 (Fo factor = 1.035)

Resisting Shear Strength = 833.23E+02 lb

SECQ3 10-22-** 15:15



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Problem Description : Section Q-Q' Backcalc Phi=33.1

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1480.0	136.0	1480.0	1
2	136.0	1480.0	150.0	1470.0	1
3	150.0	1470.0	207.0	1469.0	1
4	207.0	1469.0	229.0	1480.0	1
5	229.0	1480.0	250.0	1482.0	1
6	250.0	1482.0	270.0	1484.0	1
7	270.0	1484.0	290.0	1490.0	1
8	290.0	1490.0	320.0	1506.0	1
9	320.0	1506.0	324.0	1509.0	1
10	324.0	1509.0	340.0	1511.0	1
11	340.0	1511.0	360.0	1520.0	1
12	360.0	1520.0	377.0	1532.0	1
13	377.0	1532.0	390.0	1550.0	1
14	390.0	1550.0	417.0	1570.0	1
15	417.0	1570.0	460.0	1580.0	1
16	460.0	1580.0	500.0	1570.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	.0	33.10	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 10 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	239.00	1480.95
2	245.00	1478.00
3	260.00	1477.00
4	290.00	1482.00
5	310.00	1490.00
6	324.00	1494.00
7	340.00	1500.00
8	377.00	1523.00
9	395.00	1541.00
10	417.00	1570.00

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	242.00	1479.48	1.76	6.00	-26.20	5.44	1269.
2	247.50	1477.83	3.93	5.00	-3.81	5.44	2357.
3	255.00	1477.33	5.17	10.00	-3.81	5.71	6200.
4	265.00	1477.83	5.67	10.00	9.46	5.71	6800.
5	280.00	1480.33	6.67	20.00	9.46	16.70	16000.
6	300.00	1486.00	9.33	20.00	21.80	28.07	22400.
7	315.00	1491.43	11.90	10.00	15.95	28.07	14286.
8	322.00	1493.43	14.07	4.00	15.95	36.87	6754.
9	332.00	1497.00	13.00	16.00	20.56	7.13	24960.
10	350.00	1506.22	9.28	20.00	31.87	24.23	22281.

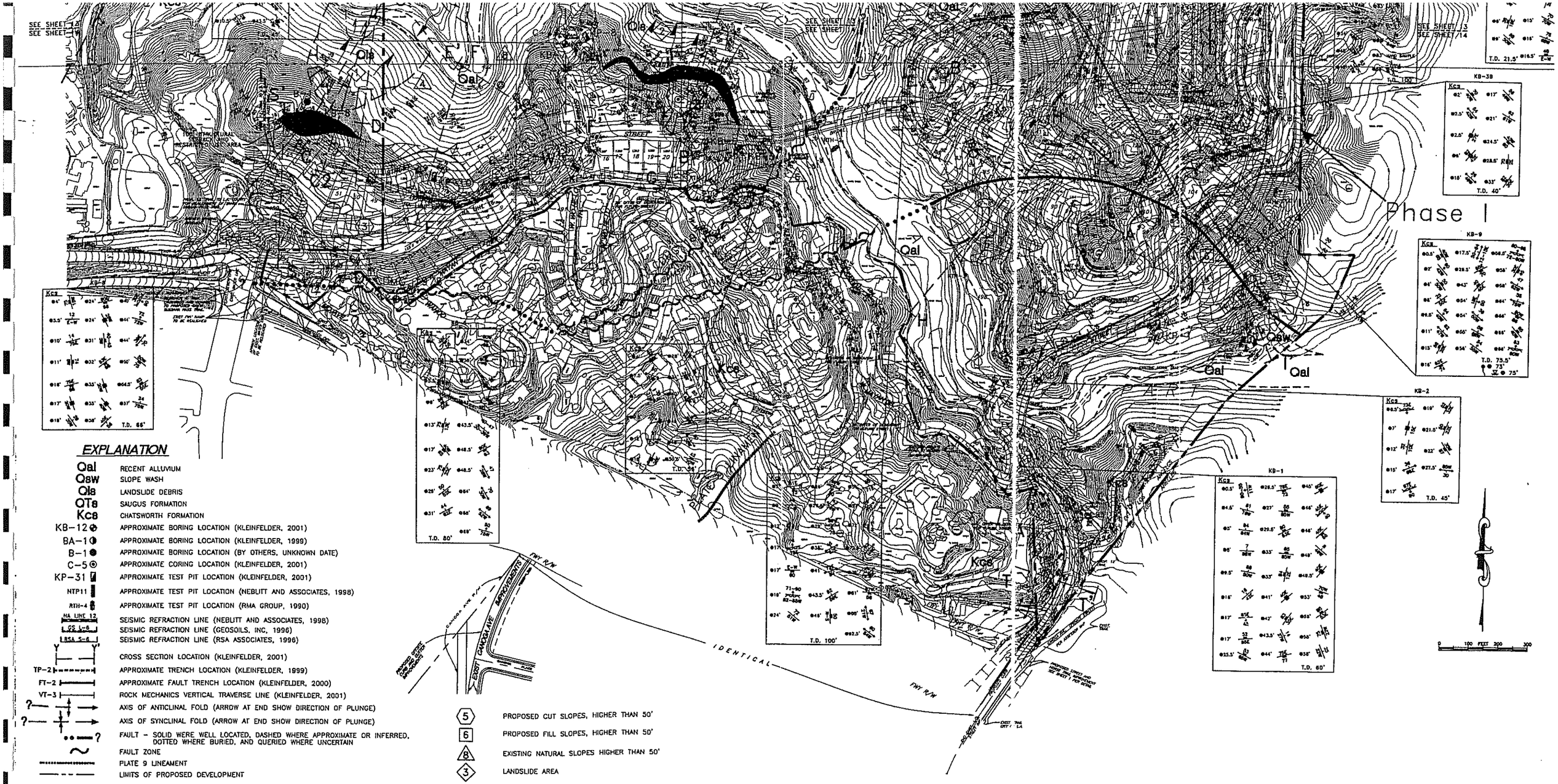
11	368.50	1517.72	8.28	17.00	31.87	35.22	16899.
12	383.50	1529.50	11.50	13.00	45.00	54.16	17940.
13	392.50	1538.50	13.35	5.00	45.00	36.53	8011.
14	406.00	1555.50	6.35	22.00	52.82	36.53	16769.

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	316.1	.0	33.10	0.	0.	0.	.00
2	493.6	.0	33.10	0.	0.	0.	.00
3	649.1	.0	33.10	0.	0.	0.	.00
4	611.4	.0	33.10	0.	0.	0.	.00
5	719.3	.0	33.10	0.	0.	0.	.00
6	882.4	.0	33.10	0.	0.	0.	.00
7	1198.1	.0	33.10	0.	0.	0.	.00
8	1416.2	.0	33.10	0.	0.	0.	.00
9	1245.6	.0	33.10	0.	0.	0.	.00
10	785.4	.0	33.10	0.	0.	0.	.00
11	700.8	.0	33.10	0.	0.	0.	.00
12	824.8	.0	33.10	0.	0.	0.	.00
13	957.6	.0	33.10	0.	0.	0.	.00
14	403.9	.0	33.10	0.	0.	0.	.00

For the single specified surface,
Corrected JANBU factor of safety = 1.003 (Fo factor = 1.035)

Resisting Shear Strength = 104.09E+03 lb



EXPLANATION

Qal	RECENT ALLUVIUM
Qsw	SLOPE WASH
Qls	LANDSLIDE DEBRIS
QTs	SAUGUS FORMATION
Kcs	CHATSWORTH FORMATION
KB-12	APPROXIMATE BORING LOCATION (KLEINFELDER, 2001)
BA-1	APPROXIMATE BORING LOCATION (KLEINFELDER, 1999)
B-1	APPROXIMATE BORING LOCATION (BY OTHERS, UNKNOWN DATE)
C-5	APPROXIMATE CORING LOCATION (KLEINFELDER, 2001)
KP-31	APPROXIMATE TEST PIT LOCATION (KLEINFELDER, 2001)
NTP11	APPROXIMATE TEST PIT LOCATION (NEBLITT AND ASSOCIATES, 1998)
RTH-4	APPROXIMATE TEST PIT LOCATION (RMA GROUP, 1990)
NA LINE 12	SEISMIC REFRACTION LINE (NEBLITT AND ASSOCIATES, 1998)
GS L-6	SEISMIC REFRACTION LINE (GEOSOILS, INC, 1996)
RSA S-6	SEISMIC REFRACTION LINE (RSA ASSOCIATES, 1996)
Y Y'	CROSS SECTION LOCATION (KLEINFELDER, 2001)
TP-2	APPROXIMATE TRENCH LOCATION (KLEINFELDER, 1999)
FT-2	APPROXIMATE FAULT TRENCH LOCATION (KLEINFELDER, 2000)
VT-3	ROCK MECHANICS VERTICAL TRAVERSE LINE (KLEINFELDER, 2001)
?	AXIS OF ANTICLINAL FOLD (ARROW AT END SHOW DIRECTION OF PLUNGE)
?	AXIS OF SYNCLINAL FOLD (ARROW AT END SHOW DIRECTION OF PLUNGE)
?	FAULT – SOLID WERE WELL LOCATED, DASHED WHERE APPROXIMATE OR INFERRED, DOTTED WHERE BURIED, AND QUERIED WHERE UNCERTAIN
	FAULT ZONE
	PLATE 9 LINEAMENT
	LIMITS OF PROPOSED DEVELOPMENT
	GEOLOGIC CONTACT
	POTENTIAL DEBRIS FLOW AREA
	HORIZONTAL BEDDING
OIL	OIL WELL LOCATION
WELL #5	DOMESTIC WATER WELL
	ROCK MASS RATING DATA POINT
	GROUNDWATER SEEPAGE
	ESTIMATED DEPTHS OF ALLUVIAL REMOVAL
5	PROPOSED CUT SLOPES, HIGHER THAN 50'
6	PROPOSED FILL SLOPES, HIGHER THAN 50'
8	EXISTING NATURAL SLOPES HIGHER THAN 50'
3	LANDSLIDE AREA
	LANDSLIDE
	AREA OF SURFICIAL INSTABILITY
40 40	BEDDING ATTITUDES
40 40	CLAY ATTITUDES
40 40	JOINT ATTITUDES
40 40	FAULT ATTITUDES
40 40	SHEAR ATTITUDES

CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765

Project: 58-9194-02 October 22, 2001

SITE PLAN AND GEOLOGIC MAP (SOUTH)

PLATE 13R

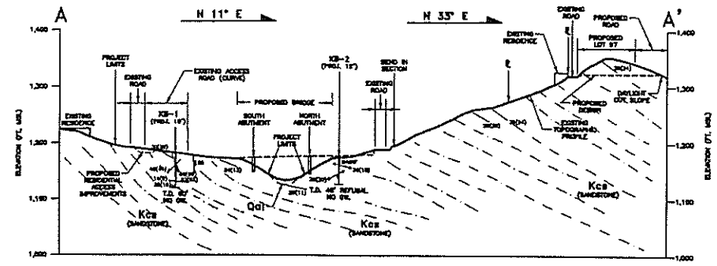
KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765

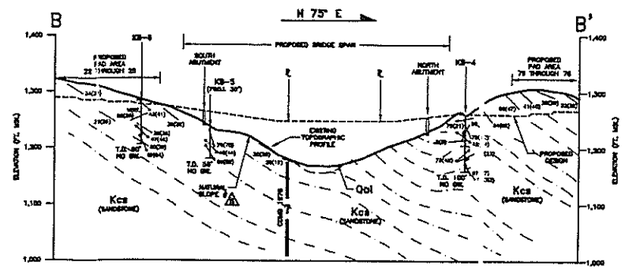
Project: 58-9194-02 October 22, 2001

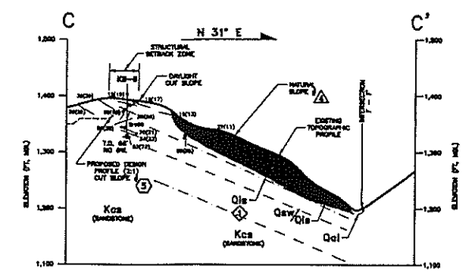
PLATE 14R

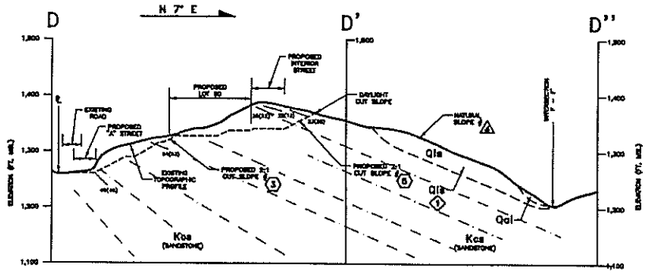
SITE PLAN AND GEOLOGIC MAP (NORTH)

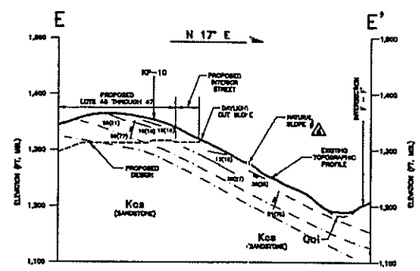
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53136
LOS ANGELES COUNTY, CALIFORNIA

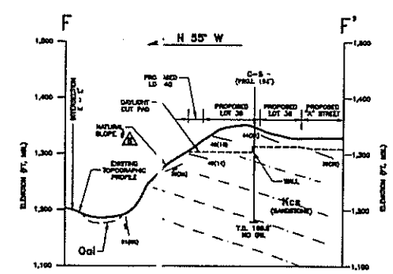


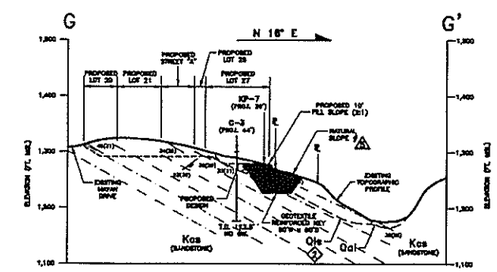


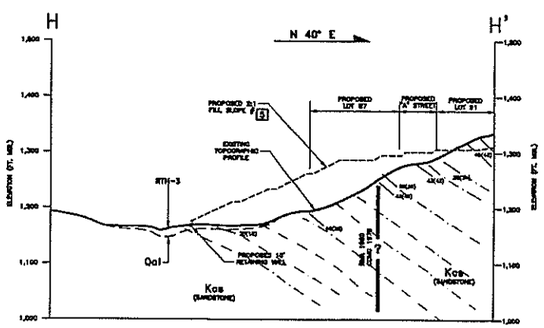


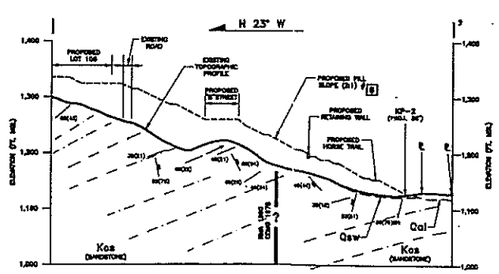


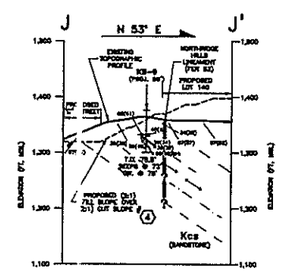


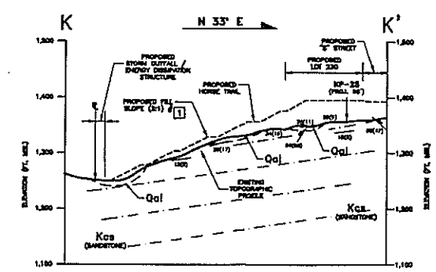












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY:

DATE

DESIGNED BY J. HERNANDEZ / A. HARDING
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MAP. K.D. COOK
DATE OCTOBER 22, 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53136

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765
(909) 396-0335

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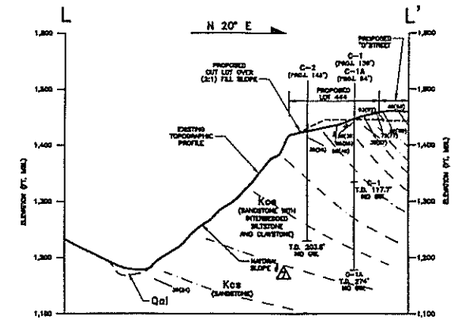
DESCRIPTION

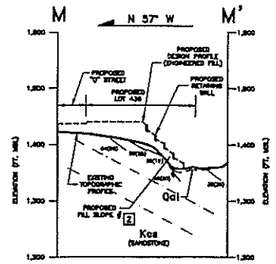
GEOLOGIC CROSS-SECTIONS A - A' THRU K - K'

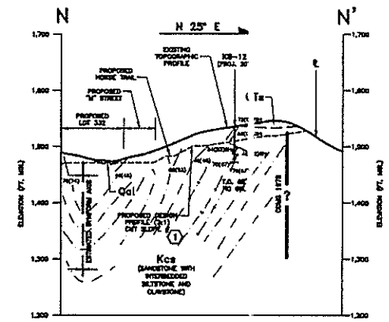
PROJ./JOB NO.	FILED AS	DRAWING NO.
58-9194-02	A9194	A9194P03

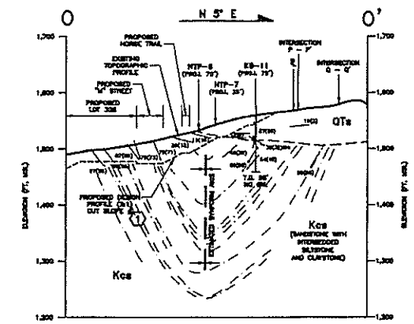
PLATE 15R

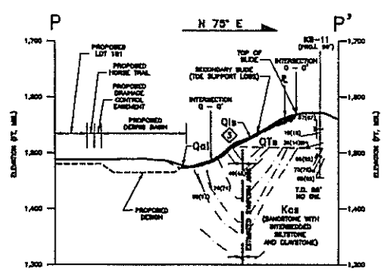
SHEET OF

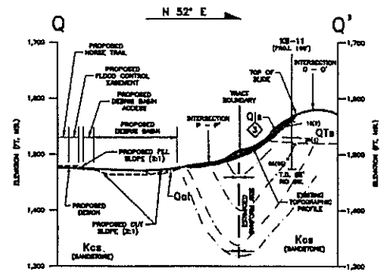


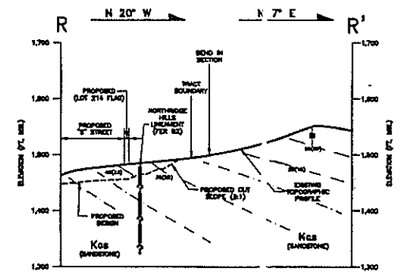


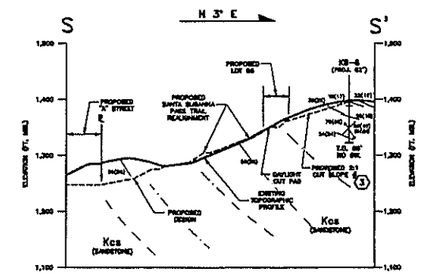


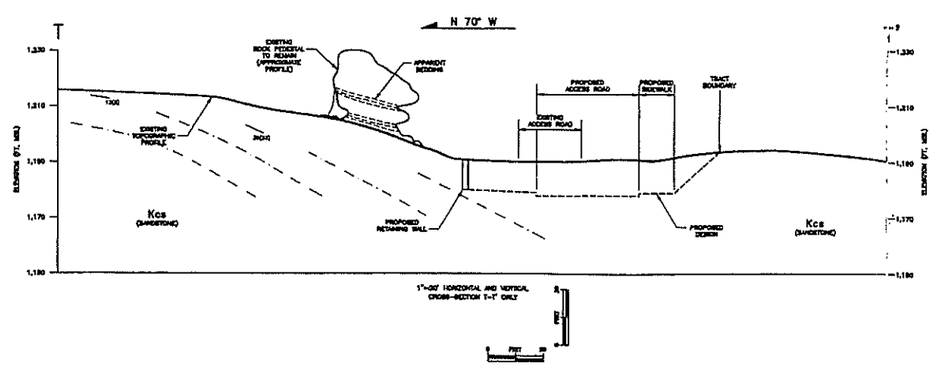


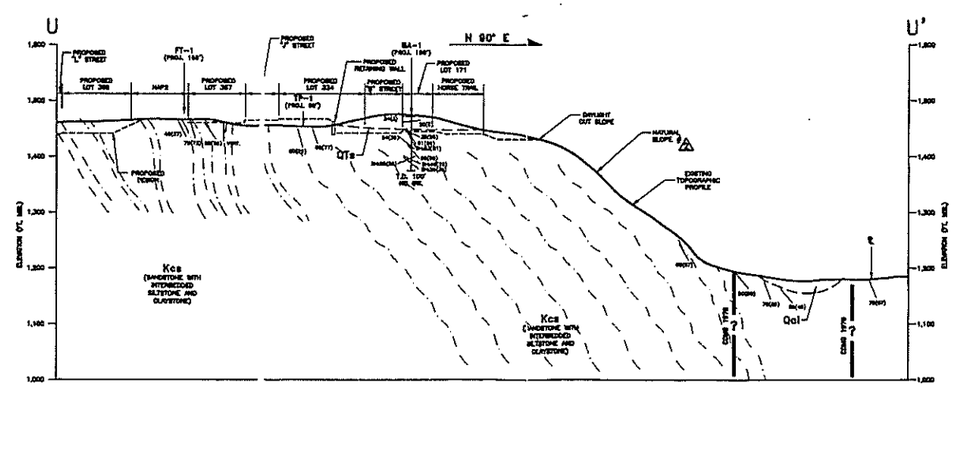












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY:

DATE

DESIGNED BY J. HERNANDEZ / A. HARDING
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MGR. K.D. COOK
DATE OCTOBER 22, 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53139

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765
(909) 396-0335

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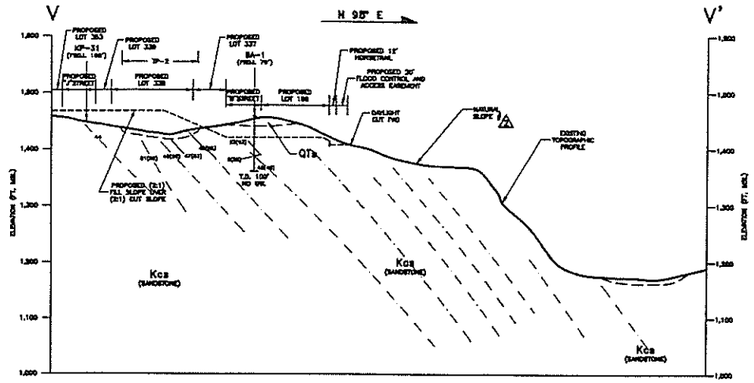
DESCRIPTION

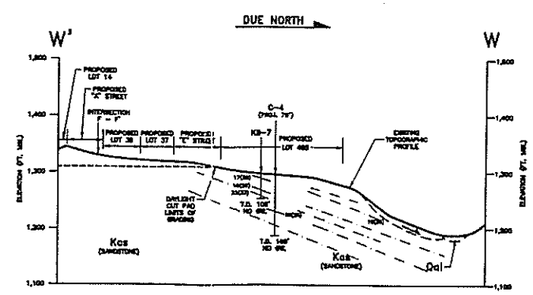
GEOLOGIC CROSS-SECTIONS L - L' THRU U - U'

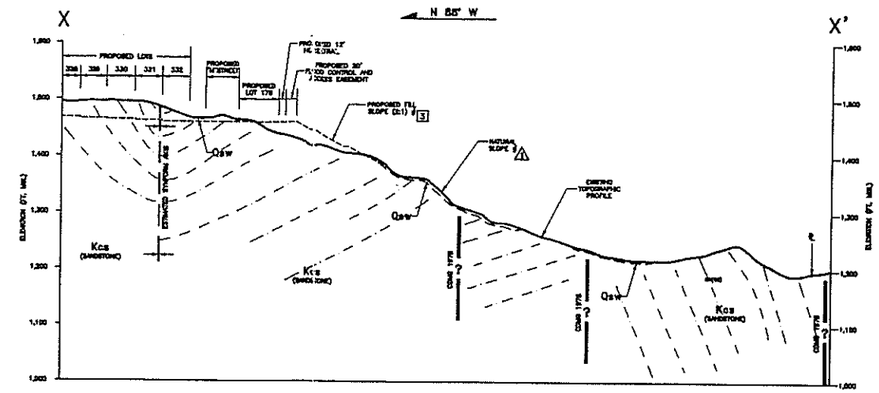
PROJ. NO. 58-9194-02
FILE NO. A9194
DRAWING NO. A9194P04

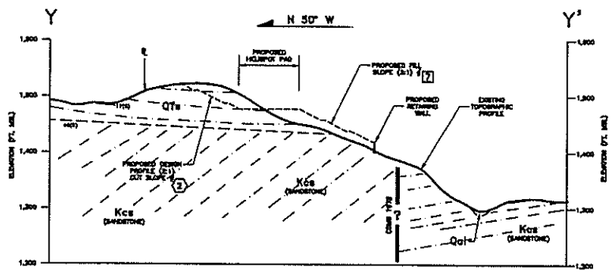
PLATE 16R

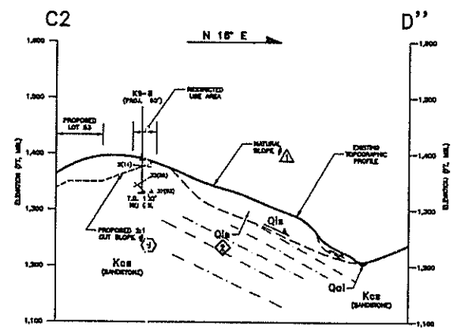
SHEET OF

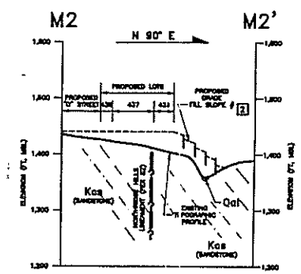












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY

DATE

DESIGNED BY A. HARDING / D. HASHAM
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MGR. K.D. COOK
DATE OCTOBER 22, 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 63136

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765
(909) 396-0335

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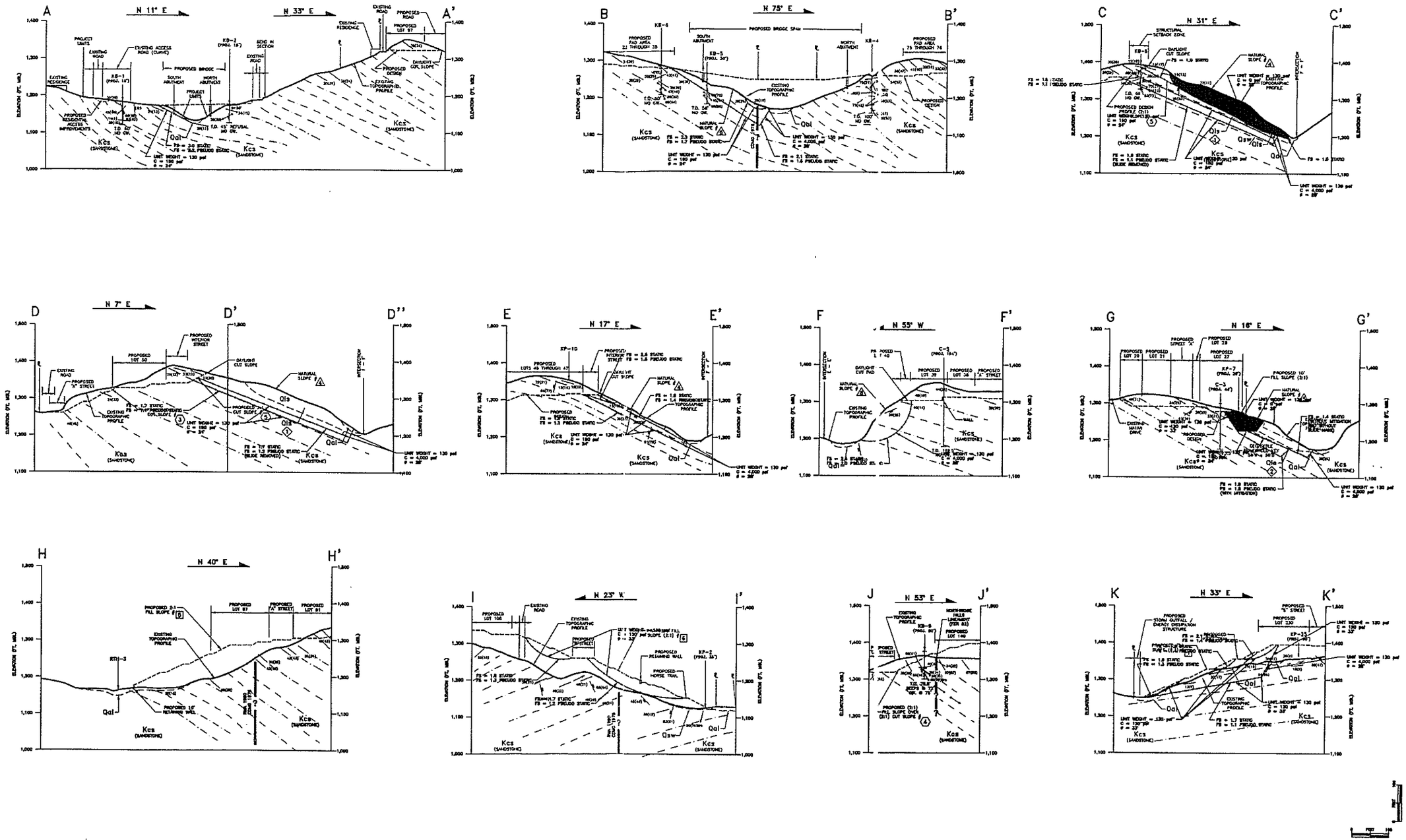
DESCRIPTION

GEOLOGIC CROSS-SECTIONS V - V' THRU M2 - M2'

P.O.U.NO.	FILED AS	DRAWING NO.
58-9194-02	A9194	A9194P04

PLATE 18R

SHEET OF



REV.	DATE	DESCRIPTION	CHK'L

APPROVED BY

DATE

DESIGNED BY J. HERNANDEZ / A. HARDING
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MGR. K.D. COOK
DATE OCTOBER 22, 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53136

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 13
Diamond Bar, CA 91765
(909) 396-0335

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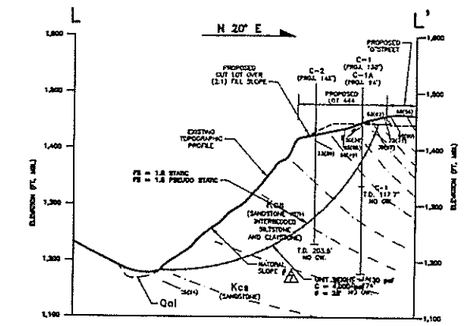
DESCRIPTION

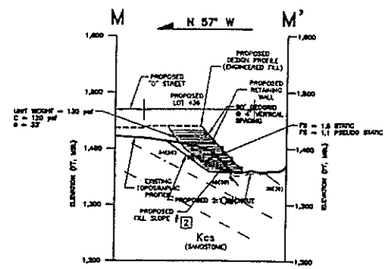
SLOPE STABILITY ANALYSIS SECTIONS A – A' THRU K – K'

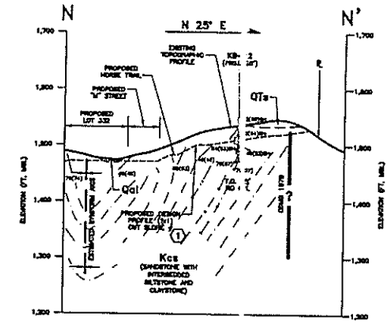
PROJ. NO.	FILED AS	DRAWING NO.
58-9194-02	A9194	A9194P03

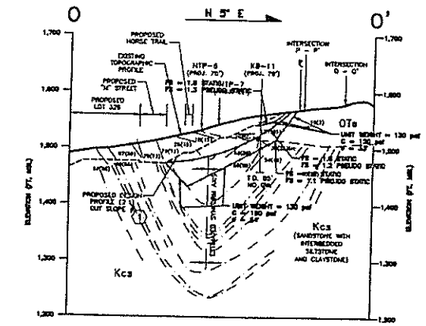
PLATE 19R

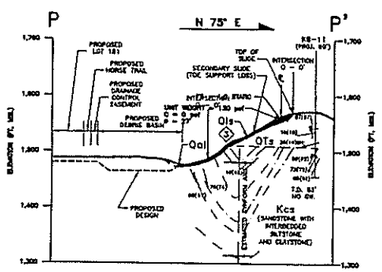
SHEET OF

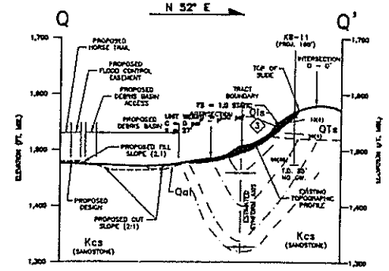


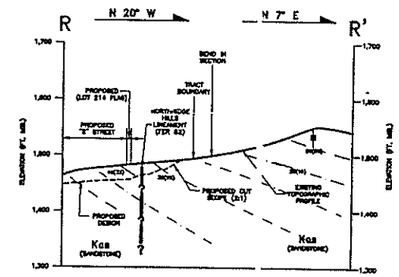


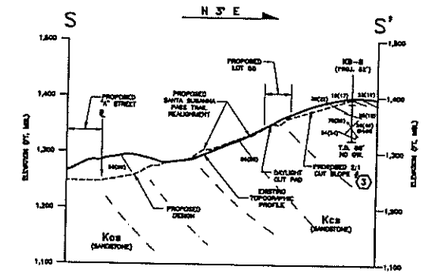


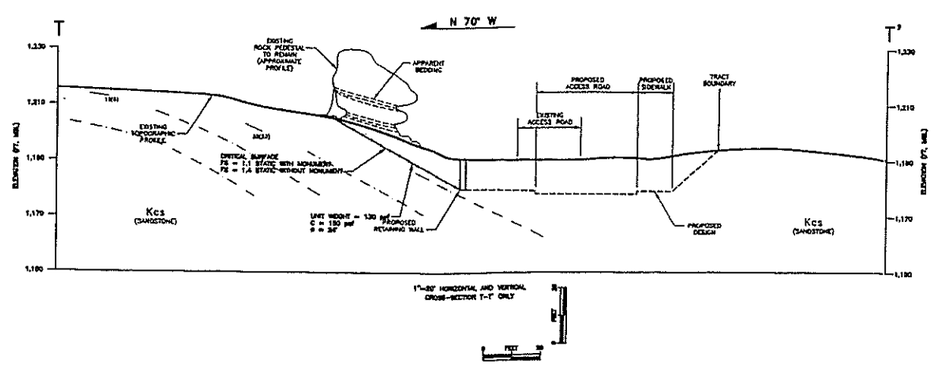


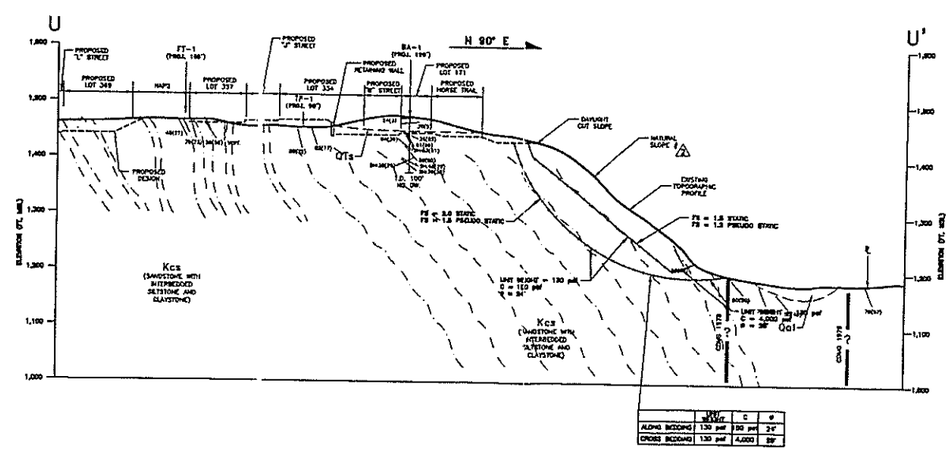












	DIP DIRECTION	C	φ
ALONG BEDDING	130 pcf	150 psf	24°
CROSS BEDDING	130 pcf	4,000	28°

NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY

DATE

DESIGNED BY J. HERNANDEZ / A. HARDING
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MGR. K.D. COOK
DATE OCTOBER 22, 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53198

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765
(909) 396-0335

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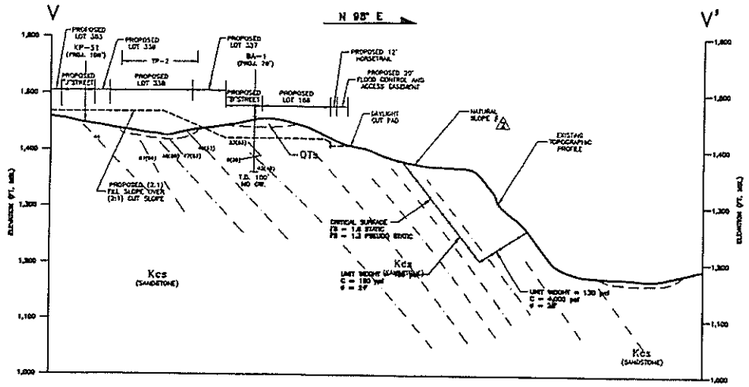
DESCRIPTION

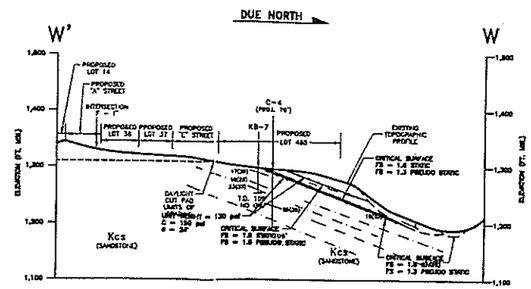
SLOPE STABILITY ANALYSIS SECTIONS L - L' THRU U - U'

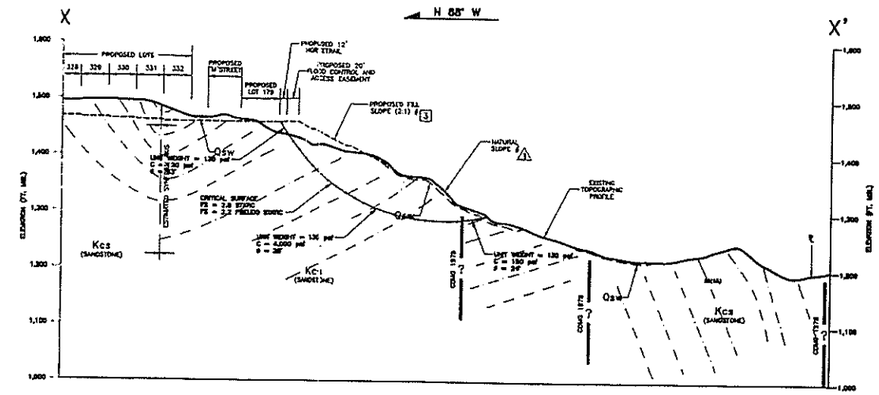
PROJ. NO. 53-9194-02
FILED AS A9194
DRAWING NO. A9194P04

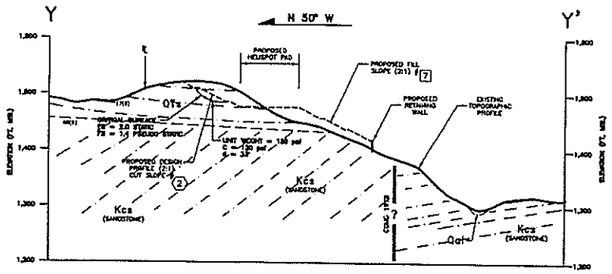
PLATE 20R

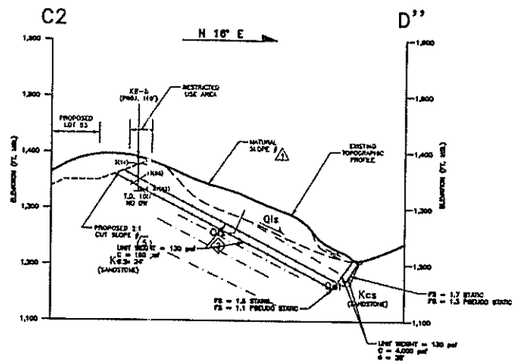
SHEET OF

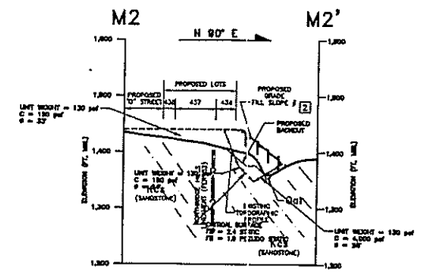












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY

DATE

DESIGNED BY A. HARDING / D. HASHAM
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
SECT. MGR. K.D. COOK
DATE OCTOBER 22, 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
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DESCRIPTION

SLOPE STABILITY ANALYSIS SECTIONS V - V' THRU M2 - M2'

F/N J.NO. 58-9194-02
FILED AS A9194
DRAWING NO. A9194P04

PLATE 21R
SHEET OF

KLEINFELDER
An employee owned company

RESPONSE TO COUNTY REVIEW COMMENTS
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

Project No. 58-9194-02

Prepared by:

KLEINFELDER, INC.
1370 Valley Vista Drive, Suite 150
Diamond Bar, CA 91765

October 9, 2001

KLEINFELDER
An employee owned company

October 9, 2001
Project No. 58-9194-02/003

Mr. Richard Garlinghouse
Presidio Chatsworth Partners, LLC
595 Market Street
San Francisco, California 94105

Subject: **Response to County of Los Angeles Review Comments Dated September 10 and 25, 2001, for Preliminary Geotechnical Investigation Report Dated August 8, 2001, Chatsworth Ridge Estates Project, Tentative Tract No. 53138 Chatsworth Area, Los Angeles County, California**

Reference: **"Preliminary Geotechnical Investigation, Chatsworth Ridge Estates Project, Tentative Tract 53138. Chatsworth Area, Los Angeles County, California", Project No. 58-9194-02/001, dated August 8, 2001, by Kleinfelder, Inc.**

Dear Mr. Garlinghouse:

This letter presents our response to the review comments made by the County of Los Angeles Department of Public Works Land Development Section regarding our referenced Preliminary Geotechnical Investigation report. The comments are respectively contained in the Geologic Review Sheet dated September 10, 2001 by Mr. Greg K. Johnson, and the Soils Engineering Review Sheet, dated September 25, 2001 by Mr. Mark A. Steuer.

A meeting was held on October 1, 2001 with both of the county reviewers and the undersigned respondents to clarify the intent of each comment and present the scope of our responses. As requested, copies of both Review Sheets are attached to this response letter. The County's review comments are presented below in italics and are followed by our response to each comment.

GEOLOGIC REVIEW SHEET COMMENTS AND RESPONSES

Comment #1

Provide additional surface and/or subsurface investigation to more fully define the limits of the currently mapped landslides and depth to slide planes, particularly Qls-1. The extent of the proposed Restricted Use Areas associated with landslides Qls-1 and Qls-2 are highly dependent on the limits of these slides and their respective slide plane geometries therefore, further definition of the mapped slides, particularly Qls-1, is warranted. Projection of the Qls-1 rupture surface along bedding as shown on Cross Section C-C' suggests this landslide extends much further upslope than currently shown.

Response #1

Additional reconnaissance geologic mapping, topographic and air photo analysis has been conducted as requested. This additional work has slightly revised in an upslope direction the head scarp area location of Landslide Qls-1. As discussed at our meeting, subsurface exploration

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of the slide and slope area would be very difficult due to access and environmental constraints of the hillside that is to remain as a natural slope (Natural Slope 4) within the proposed development. No development is proposed for the north facing dip slope in the immediate vicinity of, or above landslide Qls-1. Future headscarp failure of this slide may propagate up slope following the dip of the local geologic structure. The up dip daylight of which is near the hill crest that is also planned to remain as a natural slope area.

The stability analysis for Cross Section C-C' indicates that a Factor of Safety of 1.5 can not be calculated for the north facing Natural Slope #4, and that a structural set back and Restricted Use Area (RUA) is required. The depth of the failure model used for the calculated FS =1.5 was significantly deeper than the existing translational failure is modeled.

A south facing, Cut Slope #5 is proposed for the south facing slope over the ridge crest adjacent to Qls-1. Cut Slope #5 will be stable by inspection with respect to the southerly direction due to the into slope northern dip orientation of the geologic structure (bedding) of the Chatsworth Formation Sandstones. However the slope is not grossly stable with a calculated FS=1.5 due to the instability of the adjacent north facing Natural Slope 4 and Qls-1. As previously indicated, a RUA has been recommended which included the south facing slope as indicated on Plate 13R.

The stability analysis for Sections C-C', C2-D" and D-D" which were used to evaluate the recommended RUA are summarized in Table 1 (Revised) and are attached.

Comment #2

Prior to allowing any grading within Restricted Use Areas, the consultant must clearly demonstrate the following: a) any proposed grading will not worsen existing conditions; b) adjacent property will not be adversely affected; c) the area subject to instability and the Restricted Use Area must be contained on the same lot; and d) the change in use will not worsen existing conditions, e.g., change from natural area to development requiring irrigation.

Response #2

We understand that any recommended RUA's cannot coincide with proposed grading that may "worsen conditions" in that area or the adjacent parcel and that RUA's must be fully contained within the same lot. We have reviewed each RUA with B&E Engineers, to verify these conditions are met in the resubmitted Tentative Tract Map dated October 3, 2001. We also understand that RUA's cannot require special maintenance such as landscaping or irrigation.

Lots 54 and 55 have been reconfigured and is located outside the RUA for Qls-1. Cut Slope #5 located just north of Lot 55 remains within the RUA and is now to be include within one of the numbered open space lots.

The grading of the south facing Cut Slope #5 will not have any significant impact on the stability of the adjacent north facing slope and Qls-1. The grading will provide for drainage of surface waters which now flow uncontrolled over the surface and percolate into the subsurface. It is recommended that the graded surface of this cut slope not be landscaped or irrigated to help reduce the potential infiltration of surface water.

Comment #3

Extend Geologic Cross-Section D-D' northerly to the bottom of Devil Canyon and further evaluate the stability of proposed lots and streets considering a) daylighted bedding along apparent dip and b) loss of support due to failure of landslide Qls-1. Recommend revised

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structural setbacks, restricted use areas and mitigation, if factors of safety do not meet County minimum standards.

Response #3

Cross Section D-D' was initially drawn to depict the south facing Cut Slope 3. However, Section D-D' has been extended northward to the bottom of Devil Canyon as requested to include portions of Natural Slope 4 and Landslide Qls-1. The extended cross section is shown in plan on Plates 13R and 14R, and in section on Plate 15R. Additional slope stability analyses have been calculated for this revised section with respect to Landslide Qls-1 and Natural Slope 4. The results of the additional slope stability analyses are shown on the attached Table 1 (Revised), Summary of Stability Analyses, and the calculations are attached to this letter. Based on the results of the analyses, the conditions a) daylighted bedding along apparent dip and b) loss of support due to failure of landslide Qls-1 calculated to have acceptable factors of for the proposed development located along the ridge top. Additional discussion regarding the shear strength parameters used in the analyses is provided in our response to comments from the Soil Engineering Review Sheet.

Comment #4

Discuss the ability of the geotextile-reinforced keyway, shown on Geologic Cross Section G-G', to support the proposed lots considering complete failure and lack of support from Qls-2. Was this situation evaluated in the stability analyses? It appears that failure of the unmitigated portion of Qls 2 will undermine the proposed mitigation. Recommend additional mitigation, structural setbacks and restricted use areas, if factors of safety do not meet County minimum standards.

Response #4

We previously evaluated the geotextile reinforced keyway in Section G-G'. Additional stability analyses was conducted assuming failure and lack of support of Qls-2 in Section G-G'. The results of the analyses are presented in Table 1 (Revised) and the calculations are attached. Based on the stability analyses, the slope is considered stable with a factor of safety of 1.5 for the Lots 27, 28, and 29 located above the daylight cut. .

Comment #5

Provide further evaluation of the stability of the existing topography, the proposed fill slope and the proposed retaining walls, shown on Geologic Cross Section M-M', considering a daylighted bedding condition along both true dip and apparent dip of bedding. Recommend mitigation, if factors of safety do not meet County minimum standards.

Response #5

Additional analyses was conducted on Section M-M' considering a daylighted bedding condition along true dip (Section M2-M2') and apparent dip of bedding as shown on Section M-M'. The results of the analyses are presented in Table 1 (Revised) and the calculations are attached. Based on the stability analyses, the proposed fill slope and retaining walls will require geotextile reinforcement. For preliminary design purposes we evaluated the required geotextile reinforcement embeddment lengths, and type using the Miraslope V. 2.33 program. Based upon our analysis the minimum reinforcement needed to obtain the required calculated factor of safety consist of 16 layers of Mirafi 10 XT (or equilivent), 60 feet wide place at vertical intervals of 4 feet. The backcut will need to be laid back to a 2:1 (H:V) inclination. The analysis of the slope and cross sections are summarized on Table 1 (Revised) and the calculations are attached.

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Comment #6

Identify the locations and provide the logs for all trenches excavated by the consultants for this investigation or provide an explanation for the omission of these trenches from the submitted report. Only 21 of the reported 31 test pits excavated are shown on Plates 13 and 14 or included in the trench logs in Appendix A.

Response #6

A total of 31 trench excavations were initially proposed. However due to plant and stream crossings (environmental) and other access constraints only 21 of the trenches were excavated for this study. Each of the 21 excavated trenches retained the respective location numbers as initially laid out. The logs of the excaved trenches were presented in Appendix B of our August 8, 2001 report. Test pit numbers that appear to have been skipped were not excavated.

Comment #7

Please provide Cross Section AA-AA' referred to in Appendix C of the report. Identify the location and orientation of this section on Plates 13 and/or 14.

Response #7

Section U-U' from the August 8, 2001 report is Section AA-AA' which was re lettered during drafting of the Plates, late in the preparation of the report. The analyses previously presented in Appendix C of the report has been updated to indicate that Section U-U' was formerly labeled as Section AA-AA'. The revised calculations are attached and the summary of the calculations are included in Table 1.

Comment #8

Recommend mitigation for all areas that do not meet County minimum standards for factors of safety. This includes, but may not be limited to, the pseudostatic analysis for block failure along Section K-K' and the pseudostatic analysis for circular failure with a buttress fill along Section Q-Q'.

Response #8

Our slope stability analysis conducted for the project slopes inclusive of Sections K-K' and Q-Q' have been updated. The additional analyses includes pseudostatic analyses of a block failure along Section K-K' and a pseudostatic analyses within the replacement fill in Section Q-Q'. The results of the analyses are presented in Table 1 (Revised) and the calculations are attached. For those conditions where the calculated factors of safety were less that the required minimums we have presented herein recommendations for mitigation.

Based on the results of the analyses, the mitigated slopes are considered to be stable with static and pseudostatic factors of safety of at least 1.5 and 1.1, respectively .

Comment #9

Provide static and pseudostatic analyses to evaluate the factors of safety of Natural Slope #2 below the daylight cut slope shown on Geologic Cross Section U-U'. Analyses should consider both failure along bedding and across bedding. Recommend mitigation, structural setbacks and restricted use areas if factors of safety doe not meet County minimum standards.

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Response #9

See Response to Comment No. 7. Section U-U' from the August 8, 2001 report is Section AA. The analyses previously presented in Appendix C of the report has been updated to indicate that Section U-U' was formerly labeled as Section AA-AA'.

Comment #10

Prepare a geologic cross section, similar to Cross Section U-U' from Browns Canyon through the landslide of Natural Slope #2 to the top of the slope extending to at least proposed "J" Street. Provide stability analyses to determine static and pseudostatic factors of safety for failure along bedding, across bedding and considering failure and lack of support of the landslide below the proposed horse trail, Lots 164-168 and "B" Street. Recommend mitigation, structural setbacks and/or restricted use areas if factors of safety do meet County minimum standards.

Response #10

Section V-V' has been prepared through the surficial landslide area of Natural Slope #2 as requested. Additional slope stability analyses was conducted for both static and pseudostatic conditions and considering failure and lack of support of the landslide below the proposed horse trail, located adjacent to Lots 164-168 and "B" Street. The location of Section V-V' is shown on Plate 14R and the cross section is shown on Plate 18. The analysis of the existing natural slope indicate that the lower portions of the slope calculate to have a factor of safety below the requirements. However no development is proposed in this area and the slope is to remain in its current natural state.

Based on the results of our analyses, the lots located above the daylight cut of the natural slope is considered to be stable with required static and pseudostatic factors of safety. The results of the slope stability analyses are summarized in Table 1 (Revised) and the calculations are attached.

Comment #11

Prepare a geologic cross section oriented approximately north-south extending from "A" Street through boring KB-7 and Lot 486 down into and across the bottom of Devil Canyon. Provide stability analyses using appropriate shear strengths to determine static and pseudostatic factors of safety. Recommend mitigation, structural setbacks and/or restricted use areas if factors of safety do not meet County minimum standards. The description of the rock slope in Appendix C indicates "the sandstone is generally very weak to weak rock."

Response #11

Section W-W' was prepared as requested. The location of the section is shown on Plates 13R and 14R, and the cross section is presented on Plate 18. Lot 486 is a nonstructural green belt / parksite lot located at the top of the existing natural slope that will not be included in the propsed grading of the development. Based on the results of our analyses, the lots located above the daylight cut of the natural slope is considered to be stable with required static and pseudostatic factors of safety. The results of the slope stability analyses are summarized in Table 1 (Revised) and the calculations are attached.

Comment #12

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Provide an additional geologic cross section between Sections N-N' and U-U' through Natural Slope #1 and proposed Fill Slope #3. Orient the section in the most critical direction (approximately east west) and extend the section from the bottom of Browns Canyon through Lots 173-179 and across "B" Street. Perform stability analyses using appropriate shear strengths to determine the static and pseudostatic factors of safety. Recommend mitigation, structural setbacks and/or restricted use areas if factors of safety do not meet County minimum standards.

Response #12

Section X-X' was prepared to evaluate Natural Slope #1 and Fill Slope #3 as requested. Additional slope stability analyses was also conducted. The location of the section is shown on Plate 14R and the geologic section is presented on Plate 18. The results of the analyses are summarized in Table 1 (Revised) and the calculations are attached. Based on the results of our analyses, the slope is considered to be stable with required static and pseudostatic factors of safety and no mitigation is recommended.

Comment #13

Based on the State of California Seismic Hazards Maps, at Oat Mountain Quadrangle, areas of the subject site are located in an area with a potential for liquefaction. Engineering geology and soils engineering reports must address the potential for liquefaction and ground failure with respect to the proposed bridges. Please refer to the attached Materials Engineering Division's "Interim Geology Review Guidelines for Ground Failure/Liquefaction" (GS045 Rev. 5/18/99). Provide this office with two (2) original copies of all reports for review and distribution to the State of California Division of Mines and Geology.

Response #13

As discussed in our August 8, 2001 report, we acknowledge that portions of the site are situated within areas designated by the State as having a potential for liquefaction. As discussed on Pages 13, 20, 32 and G-4 of the August 8, 2001 report, the areas of potential liquefaction are located in the stream channels adjacent to the proposed bridges. With the noted exceptions of the proposed bridges, the areas mapped as having a liquefaction potential are not considered to impact the proposed development. Accordingly, the liquefaction potential of the soils adjacent to the bridge foundations is to be addressed in the planned design level geotechnical reports for the proposed bridges. The proposed bridges will require design and construction of bridge piers that not only penetrate through these materials but recognize possible negative skin friction in the event of liquefaction. Drilling was not performed in these areas at this time due to environmental restrictions and access issues but we recognize that exploration will be required in these locations prior to approval of the final design of the bridges.

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SOILS ENGINEERING REVIEW SHEET COMMENTS AND RESPONSES

Comment #1

Provide geotechnical update report/letter which specifically addresses and evaluates the latest tentative tract map submitted through the Department of Regional Planning..

Response #1

This response letter is based on the most recent revision of the map for Tentative Tract 53138, dated October 3, 2001, by B&E Engineers. Revisions made to the tract map since the date of the map utilized as basis for the referenced report include addition of a helicopter pad in the northeast corner of the site, and redesign of Lots 54 and 55, to exclude the recommended RUA and Cut Slope #5 as they have been incorporated into the adjacent green space lot.

We have also informed the project engineer that is imperative that we be notified of any submitted revised maps as they would need to be addressed in writing by Kleinfelder.

Comment #2

Provide a geotechnical map with corresponding cross sections which utilizes the current tentative map as a base.

Response #2

See Response to Soils Comment No. 1. The current map and geologic sections shown on Plates 13R, 14R, 15R, 16R and 18 are based on the most current revision of the Tentative Tract map dated October 3, 2001. Our stability analysis has been summarized in section on Plates 19, 20, and 21.

Comment #3

<u>Clearly</u> show the following on the geotechnical map and corresponding cross sections:

a. Existing and proposed grades.
b. Lot lines.
c. Approximate limits and depth of removal and recompaction of slide debris and unsuitable soils.
d. Grading required for construction of buttress/stabilization fills, including areas of geotextile reinforcement.
e. Location of "Restricted Use Area(s)".
f. Mitigative measures, per the geotechnical engineer's recommendations.

Response #3

We have provided to the County in this submittal, original prints and not duplicated copies of the plates. Plates 13R, 14R, 15R, 16R have been revised and Plate 18 added to clearly address the respective items identified in Comment No. 3.

Comment #4

Provide geotechnical cross sections AA-AA', CC-CC' and C3-C3' and identify their locations on the geotechnical map.

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Response #4

With respect to Section AA-AA', see our Response to Geologic Review Sheet Comment No. 7. Sections CC-CC' and C3-C3' were originally used to evaluated and assess the limits of the restricted use area adjacent to Natural Slope 4 and Qls-1. Sections CC-CC' and C3-C3' have been replaced in this submittal with sections C-C', C2-D", and D-D". The locations of these sections are presented on the revised plates.

Comment #5

Geotechnical cross sections A-A' and B-B' do not appear to coincide with the corresponding cross sections provided with the slope stability analyses. Verify and make revisions as necessary.

Response #5

The stability analyses for cross sections A-A' and B-B' presented in our August 8, 2001 report pertain to portions of the slopes near the southern bridge abutments. The critical failure surface and strength parameters used in the analyses are shown on each stability analyses section on Plate 19. The slope stability analyses section should provide clarification regarding the locations of the analyses for Sections A-A' and B-B'.

Comment #6

Show the depth and limits of surficial slumps (shown on the geotechnical map) on cross section L-L'.

Response #6

The mapped limits of the surficial slumps on and adjacent to Section L-L' are shown on Plate 14R. The shallow depth of these surficial slumps (estimated to be less than 10 feet) are of small scale with respect to the 100 scale map and sections included in this report. Accordingly, the depth limits are not shown on Section L-L due to graphical constraints. However, the influence of these shallow failures was considered in assessing the need for mitigation for gross stability of the daylight cut at the top of the natural slopes.

Comment #7

Show the critical failure planes used in the slope stability analyses on the geotechnical map.

Response #7

The critical failure planes used in the stability analysis are shown in section on Plates 19 and 20, and 21 which are attached to this response letter. The critical failure surface and strength parameters used in the analyses are shown on each stability analyses section.

Comment #8

Ultimate shear strength parameters must be used in static and surficial slope stability analyses. Indicate the type of shear strength parameters (i.e., ultimate, peak, etc.) representative of bedrock (cross-bedding) and fill material used in the slope stability analysis.

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Comment #9

In order to estimate "along bedding" shear strengths based on re-shear test results, the sample must be re-sheared several times until two consecutive runs yield the same shear value. Provide additional data to show that the residual shear strengths (Plate B-9) are representative of the lowest values based on the above criteria.

Comment #10

The shear strength values representative of slide plane material (obtained from back-calculation) appear high. Provide additional data to further substantiate these values. Make revisions as necessary.

Comment #11

The cohesion (4000 psf) representative of bedrock (C-1) is far greater that the values obtained from direct shear testing. Verify and make revisions as necessary.

Response to Comments 8, 9, 10 and 11

The material properties used in the slope stability analysis are summarized in the Table C-1 (revised), which is presented below.

Table C-1 (Revised)

Condition	Moist Density (pcf)	Saturated Density (pcf)	Friction Angle (deg)	Cohesion (psf)
Parallel Bedding	120	130	24	150
Cross Bedding	120	130	28	4000
Fill Material	120	130	33	120
Landslide – Slide Plane	120	130	25	0

The following presents clarification regarding the shear strength parameters used in the slope stability analyses for the various types of materials.

Engineered Fill: The shear strength parameters used in the stability analyses for engineered fill are based on saturated direct shear tests conducted on samples of the on-site materials remolded to approximately 90 percent relative compaction. The values used in the analyses are based on the ultimate shear strength of the tested soil samples. The direct shear test data presented in Appendix B of our August 8, 2001 report included the peak strengths of the soils samples. Plates B-10 through B-17, Direct Shear Test, which are attached to this letter, present the ultimate shear strength test results of the samples tested. The values used in the slope stability analyses are conservative relative to the direct shear tests results.

Parallel Bedding: The shear strength parameters used in the stability analyses for along bedding or parallel bedding conditions are based on saturated residual direct shear tests conducted on samples of the on-site materials. The residual direct shear tests were conducted by remolding a sample of sandy clay to a wet density of approximately 125 pcf, saturating the sample, and shearing the same sample three times. Plates B-9 from our August 8, 2001 has been updated to show the results of the three direct shear test runs and the values used in our analyses. Based on our review of the data the last two ultimate shear strengths runs of the sample were similar. In addition, the final ultimate shear strength parameters used in our analyses are considered to be

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the residual shear strength parameters and conservatively representative of the potential along bedding shear strength of the siltstone bedrock soils.

Landslide Slide Plane: The shear strength parameters used in our analyses of the landslide surfaces were obtained by back-calculating the shear strength of the slide plane based on an assumed factor of safety of 1.0. The results of the back-calculation of the mapped slides shown in Sections C-C', P-P, Q-Q', and U-U' (formerly AA-AA') are attached to this letter. The material parameters for these sections, all of which are existing landslides, were arrived at by performing a back analysis approach. From our analysis a cohesion value of 0 pounds per square foot and internal angle of friction of at least 25 degrees were evaluated to be appropriate parameters for the slide failure plane for the landslide analysis.

Cross Bedding: The cross bedding shear strength parameters of the Kcs formation that were used in our analyses were evaluated by 1) conducting unconfined compressive strength tests and triaxial compression tests on representative samples of bedrock core samples and by 2) geomechanic classification of the rock masses by methods after Z.T Bieniawski, 1989. Direct shear tests were initially conducted on samples of the bedrock materials obtained from the borings. However, the results of the direct shear tests are not considered to be as representative of the actual shear strengths of the materials as by the previously mentioned methods are considering that 1) the samples obtained were significantly disturbed by the sampling process due to the cementation of the rock. These values were only applied for deep-seated rotational failure of slopes in which the potential failure surface would extend beneath surficial, weathered and fractured sandstone.

The results of the unconfined compressive strength and triaxial compression tests and the geomechanic classification of the rock masses are presented in our August 8, 2001 report. Based on the unconfined compression and triaxial shear strength tests, the samples had strengths that exceeded the limits of the equipment which had a capacities of 262 ksf for the unconfined compression equipment and approximately 80 ksf for the triaxial shear test device.

The values used in the slope stability analyses are conservative relative to the direct shear tests results.

Landslide Slide Plane: The shear strength parameters used in our analyses of the landslide surfaces were obtained by back-calculating the shear strength of the slide plane base on an assumed factor of safety of 1.0. The results of the back-calculation of the mapped slides shown in Sections C-C' and Q-Q' are attached to this letter. The material parameters for the section at C-C', P-P', Q-Q, and U-U' (formerly AA-AA'), all of which are existing landslides were arrived at by performing a back analysis approach. From our analysis a cohesion value of 0 pounds per square foot and internal angle of friction of 25-degrees were evaluated to be appropriate parameters for the slide failure plane for the landslide analysis.

Ultimate Shear Strengths: Ultimate shear strength values were only used of analysis of undisturbed natural slopes and cut slopes along bedding. More conservative residual values were used for along-bedding strengths and in conjunction with back-analyses for existing failure surfaces. Cross-bedding strengths were selected based upon direct shear and unconfined compressive strength values for undisturbed samples.

Number of Reshears to Estimate Residual Strengths: We concur that residual strength values may be underestimated by performing an inadequate number of reshears until the true residual, or assymtotic value is reached. We reviewed our direct shear test procedure an verified that shears were performed a minimum of six times and not as three times as shown on former test results.

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High Slide Plane Values: The shear strength of rupture surface of existing failures was estimated by comparing remolded, residual direct shear values from hand-selected samples collected while downhole logging to back-analyzed values for landslide Qls-1. As discussed with you and as described in our response to question 1 of the Engineering Geology review sheet, we have re-analyzed our back-analysis for Qls-1 assuming no passive wedge. Results of that re-analysis are discussed in that response.

4000 psf Cohesion for Across-Bedding in Bedrock: This value was estimated by comparing laboratory-determined unconfined compressive strength values to broadly accepted values for similarly indurated sandstone using Goodman. These values were only applied for deep-seated rotational failure of slopes in which the potential failure surface would extend beneath surficial, weathered and fractured sandstone. We feel this value is representative of the these conditions after reviewing our methods.

Comment #12

Provide input/output data sheets for all slope stability analyses conducted.

Response #12

The input and output computer files of the stability analyses are provided to the County on a computer disk along with hard copies of the files. The hard copies of the input/output files are presented in a binder as a part of this response letter.

Comment #13

Provide static and seismic slope stability analysis for cross section C-C' considering failure of Qls-1. Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

Response #13

Slope stability analyses of Section C-C' was performed considering failure of Qls-1. The stability analysis conducted to evaluate Section C-C' and the RUA for Cut Slope 5 and Natural Slope 4 included an evaluation of geologic Cross Sections C-C', C2-D". and D-D". The summary of the analysis are presented in Table 1 (Revised) and the calculations are attached. The limits of the RUA ae based upon the analysis of these sections considering; 1) That Qls-1 will remain, and 2) that Qls-1 fails completely and the debris is totally removed. Based upon our analysis the critical condition is with the Qls-1 debris remaining on the slope. The recommended limits of the RUA are shown on Plate 13R and in section on Plate 15R. The critical analysis are presented on in section on Plate 19.

Comment #14

Provide static and seismic slope stability analysis for cross section G-G' considering failure of the portion of Qls-2 downslope of reinforced keyway. Analysis must consider geotextile reinforcement where applicable. Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in the slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

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Response #14

Slope stability analyses of Section G-G' was performed considering failure of Qls-2. The results of the analyses are presented in Table 1 (Revised) and the calculations are attached. For our analysis of the geotextile reinforced slope we initially designed the reinforced stabilization key to have in internal factor of safety of 1.5 and 1.1 (Minimum) static and puesdostatic respectively. We then evaluated the potential failure plane along the backcut of the engineered reinforced stability fill and along bedding at the heel of the daylight shear key. Satisfactory factors of safety greater that those required were calculated.

The analysis for the geotextile reinforcement stabilization were conducted using the STABLE 6H program. Based upon this analysis the reinforcement should consist of 14 layers of Tensar UX1700HS (or equivalent), with a minimum embeddment length of 40 feet wide and at vertical intervals of 4 feet. The stability calculations are attached and the results are summarized on Plate 19, which includes the strength parameters used, the critical failure plane, and the calculated factor of safety.

Comment #15

Provide static and seismic slope stability analyses for cross section M-M' considering the recommended mitigative measures (i.e. MSE wall, drilled piers and fill). Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in the slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

Response #15

Additional stability analyses were conducted to evaluate the recommended mitigation measure for Section M-M' which consist of a geotextile (geogrid) reinforced slope. For preliminary design purposes we evaluated the required geotextile reinforcement embeddment lengths, and type using the Miraslope V. 2.33 program. Based upon our analysis the minimum reinforcement needed to obtain the required calculated factor of safety consist of 16 layers of Mirafi 10 XT (or equilivent), 60 feet wide place at vertical intervals of 4 feet. The backcut will need to be laid back to a 2:1 (H:V) inclination. The analysis of the slope and cross sections are summarized on Table 1 (Revised) and the calculations are attached. With this measure the retaining walls may be supported on spread footings or MSE walls.

Comment #16

Provide static and slope stability analysis for cross sections P-P' and Q-Q' considering failure of Qls-3. Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

Response #16

Slope stability analyses of Section P-P' and Q-Q' was performed considering failure of Qls-3. The results of the analyses are presented in Table 1 (Revised) and the calculations are attached. Based on the stability analyses, the failed slope (Qls-3) is considered unstable without mitigation. Recommended mitigation of Qls-3 and this slope includes complete removal of the

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slide debris and rebuilding the slope as a stability fill slope founded on a 25 ft. wide x 5ft. deep fill key as shown on the revised sections and plates. The stability calculations are attached and the results are summarized on Plate 19 through 21, which includes the strength parameters used, the critical failure plane, and the calculated factor of safety.

Comment #17

Provide volume calculations for the anticipated amount of slide debris generated by failure of Qls-3 to verify the capacity of the proposed debris basin. Make revisions as necessary.

Response #17

Please refer to Response #16. The slide material is recommended to be overexcavated and the slope rebuilt at 2:1 (h:v). Accordingly, slide debris volume calculations are not warranted at this time.

Comment #18

Provide static and seismic slope stability analysis for the steep natural slope shown on cross section U-U'. Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

Response #18

Please refer to our response to Geologic Review Sheet, Comment No. 7. The stability calculations have been modified accordingly and are attached.

Comment #19

Provide data and analyses to determine liquefaction potential of the on-site soils in the area of the proposed bridges. Also, evaluate the potential for seismically induced settlement (dry and saturated soils), lateral spreading, surface manifestation, etc. The analyses must be performed for soils within the upper 50 feet, as a minimum, for shallow foundation, or greater depth where deep foundation and/or subterranean structure is proposed. The historic-high water table shall be used in the analyses, unless other information is provided which indicates a higher or lower level is appropriate. Recommend mitigation as necessary. The liquefaction data and analyses must conform to the State of California Division of Mines and Geology "Special Publication 117", dated 1997 and "Recommended Procedure For Implementation of DMG Special Publication 117", dated March 1999.

Response #19

Please refer to our response to Geologic Review Sheet Comment No. 13.

Comment #20

Additional slope stability analysis may be required when the geology of the site is conclusively determined.

Response #20

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Comment noted. We trust that our response is consistent with discussion at our meeting with you on October 1, 2001. If any additional concerns come to your attention, we would hope that you would call us and ask for additional data/analysis, as needed, prior to completion of a favorable review. We believe that close interaction initiated at our meeting with you and available from that point forward will reduce unnecessary use of your time and delays to the project.

Comment #21

Requirements of the Geology Section are attached.

Response #21

Comment noted.

Geology Section Review: Responses are provided in previous sections of this letter.

Comment #22

Include a copy of this review sheet with your response.

Response #22

A copy of the review sheet is attached.

Copy of Review Sheets: A copy of both review sheets is included in Appendix C, herein.

We trust that our Engineering Geologic and Soils Engineering responses are consistent with discussions during our October 1, 2001 meeting and that they fully document any outstanding issues required for approval of the Tentative Tract Map. If you require any further information, please do not hesitate to contact either of the undersigned, at your convenience.

Respectfully submitted,

KLEINFELDER, INC.

REGISTERED GEOLOGIST K. DOUGLAS COOK 12/01 Exp. No. EG 1391 CERTIFIED ENGINEERING GEOLOGIST 10-9-01 STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER JUSTIN J. KEMPTON No. 2385 Exp. 9-30-05 GEOTECHNICAL STATE OF CALIFORNIA 10/9/01

K. Douglas Cook, R.G., C.E.G. 1391
Senior Engineering Geologist

Justin J. Kempton, P.E., G.E.
Manager, Geotechnical Engineering

Attachments:
- Plate 13R – Site Plan and Geologic Map, South Half
- Plate 14R – Site Plan and Geologic Map, North Half
- Plate 15R – Geologic Cross Sections A-A' to K-K'
- Plate 16R – Geologic Cross Sections L-L' to U-U'
- Plate 18 – Geologic Cross Sections V-V' to X-X'
- Plate 19 – Slope Stability Analyses Sections A-A' to K-K'
- Plate 20 – Slope Stability Analyses Sections L-L' to U-U'
- Plate 21 – Slope Stability Analyses Sections V-V' to X-X'
- Table 1(Revised) - Slope Stability Analyses
- Table D-1 (Revised) – Table of Slopes
- Plates B-10 through B-17 – Direct Shear Tests

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LAND DEVELOPMENT DIVISION
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TENTATIVE TRACT 53138
SUBDIVIDER Presidio Chatsworth Partners LLC
ENGINEER B & E Engineers
GEOLOGIST Kleinfelder (58-919401-008)
SOILS ENGINEER Same as above

TENTATIVE MAP DATED 8/2/01
ADDRESS north end of Canoga Ave. at 118 Freeway
LOCATION Chatsworth
REPORT DATES 8/8/01, 4/24/00
REPORT DATES 8/8/01, 4/24/00

The Regional Planning Commission, developer and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR MINOR LAND SUBDIVISION MAP:

1. Provide additional surface and/or subsurface investigation to more fully define the limits of the currently mapped landslides and depth to slide planes, particularly Qls-1. The extent of the proposed Restricted Use Areas associated with landslides Qls-1 and Qls-2 are highly dependent on the limits of these slides and their respective slide plane geometries therefore, further definition of the mapped slides, particularly Qls-1, is warranted. Projection of the Qls-1 rupture surface along bedding as shown on Cross Section C-C' suggests this landslide extends much further upslope than currently shown.

   Prior to allowing any grading within Restricted Use Areas, the consultant must clearly demonstrate the following: a) any proposed grading will not worsen existing conditions; b) adjacent property will not be adversely affected; c) the area subject to instability and the Restricted Use Area must be contained on the same lot; and d) the change in use will not worsen existing conditions, e.g., change from natural area to development requiring irrigation.

3. Extend Geologic Cross Section D - D' northerly to the bottom of Devil Canyon and further evaluate the stability of proposed lots and streets considering a) daylighted bedding along apparent dip and b) loss of support due to failure of landslide Qls 1. Recommend revised structural setbacks, restricted use areas and mitigation, if factors of safety do not meet County minimum standards.

4. Discuss the ability of the geotextile-reinforced keyway, shown on Geologic Cross Section G - G', to support the proposed lots considering complete failure and lack of support from Qls 2. Was this situation evaluated in the stability analyses? It appears that failure of the unmitigated portion of Qls 2 will undermine the proposed mitigation. Recommend additional mitigation, structural setbacks and restricted use areas, if factors of safety do not meet County minimum standards.

   Provide further evaluation of the stability of the existing topography, the proposed fill slope and the proposed retaining walls, shown on Geologic Cross Section M - M', considering a daylighted bedding condition along both true dip and apparent dip of bedding. Recommend mitigation, if factors of safety do not meet County minimum standards.

   Identify the locations and provide the logs for all trenches excavated by the consultants for this investigation or provide an explanation for the omission of these trenches from the submitted report. Only 21 of the reported 31 test pits excavated are shown on Plates 13 and 14 or included in the trench logs in Appendix A.

   Please provide Cross Section AA - AA' referred to in Appendix C of the report. Identify the location and orientation of this section on Plates 13 and/or 14.

   Recommend mitigation for all areas that do not meet County minimum standards for factors of safety. This includes, but may not be limited to, the psuedostatic analysis for block failure along Section K - K' and the psuedostatic analysis for circular failure with a buttress fill along Section Q - Q'.

   Provide static and psuedostatic analyses to evaluate the factors of safety of Natural Slope #2 below the daylight cut slope shown on Geologic Cross Section U - U'. Analyses should consider both failure along bedding and across bedding. Recommend mitigation, structural setbacks and restricted use areas if factors of safety do not meet County minimum standards.

10. Prepare a geologic cross section, similar to Cross Section U - U', from Browns Canyon through the landslide of Natural Slope #2 to the top of the slope extending to at least proposed "J" Street. Provide stability analyses to determine static and psuedostatic factors of safety for failure along bedding, across bedding and considering failure and lack of support of the landslide below the proposed horse trail, Lots 164 - 168 and "B" Street. Recommend mitigation, structural setbacks and/or restricted use areas if factors of safety do meet County minimum standards.

11. Prepare a geologic cross section oriented approximately north-south extending from "A" Street through boring KB-7 and Lot 486 down into and across the bottom of Devil Canyon. Provide stability analyses using appropriate shear strengths to determine static and psuedostatic factors of safety. Recommend mitigation, structural setbacks and/or restricted use areas if factors of safety do not meet County minimum standards. The description of this rock slope in Appendix C indicates "the sandstone is generally very weak to weak rock."

(continued)

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LAND DEVELOPMENT DIVISION
GEOLOGIC REVIEW SHEET
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TEL. (626) 458-4925

NTATIVE TRACT 53138
BDIVIDER Presidio Chatsworth Partners LLC
NGINEER B & E Engineers
EOLOGIST Kleinfelder (58-919401-008)
OILS ENGINEER Same as above

TENTATIVE MAP DATED 8/2/01
ADDRESS north end of Canoga Ave. at 118 Freeway
LOCATION Chatsworth
REPORT DATES 8/8/01, 4/24/00
REPORT DATES 8/8/01, 4/24/00

RIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR MINOR LAND SUBDIVISION MAP:

2. Provide an additional geologic cross section between Sections N - N' and U - U' through Natural Slope #1 and proposed Fill Slope #3. Orient the section in the most critical direction (approximately east west) and extend the section from the bottom of Browns Canyon through Lots 173 - 179 and across "B" Street. Perform stability analyses using appropriate shear strengths to determine the static and psuedostatic factors of safety. Recommend mitigation, structural setbacks and/or restricted use areas if factors of safety do not meet County minimum standards.

3. Based on the State of California Seismic Hazard Maps, Oat Mountain Quadrangle, areas of the subject site are located in an area with a potential for liquefaction. Engineering geology and soils engineering reports must address the potential for liquefaction and ground failure with respect to the proposed bridges. Please refer to the attached Materials Engineering Division's "Interim Geology Review Guidelines for Ground Failure/Liquefaction" (GS045 Rev. 5/18/99). Provide this office with two (2) original copies of all reports for review and distribution to the State of California Division of Mines and Geology.

repared by _____ Date 9/10/01
Greg K. Johnson RG 5987, CEG 2050

OTICE: **Public Safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction and Safety Orders.**

ıe **"Manual for Preparation of Geotechnical Reports"** prepared by County of Los Angeles, Department of Public Works is available on the Internet at the following address:
tp://dpw.co.la.ca.us/med/manual.pdf

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GROUND FAILURE/LIQUEFACTION (INTERIM GUIDELINES)

This guideline addresses the general engineering geology review of developments in areas that have been designated to have a potential for liquefaction and associated lateral spreading. The Los Angeles County Building Code, 1994 U.B.C., State of California Seismic Hazard Mapping Act (SHMA), DMG Special Publication SP117, California Seismic Hazard Mapping Regulations ("Article 10") and procedures developed through the Southern California Earthquake Center were utilized in developing this guideline. The State Mining and Geology Board recommends that "engineering geologists and civil engineers conduct the assessment of the surface and subsurface geological/geotechnical conditions at the site, including off-site conditions, to identify potential hazards to the project. It is appropriate for the civil engineer to design and recommend mitigation measures. It is also appropriate for both the engineering geologists and civil engineers to be involved in the implementation of the mitigation measures - engineering geologists to confirm the geological conditions and civil engineers to oversee the implementation of the approved mitigation measures".

1) An engineering geology report that addresses the potential for liquefaction and associated settlement and lateral spreading is generally required. The report must minimally include and consider the following:

   a) A description of the proposed project's location, topographic relief, drainage, subsurface geologic conditions, and proposed grading.

   b) A site plan of the subject site showing the locations of all test pits, borings, penetration test locations, and soil or rock samples obtained.

   c) Local and regional geologic maps showing bedrock, alluvium, colluvium, soil material, faults, shears, joint systems, lithologic contacts, seeps or springs, and other pertinent geologic and soil features existing on and adjacent to the project site.

   d) Logs of borings, test pits, or other subsurface data obtained. It is recommended that a minimum depth of 50 feet below the existing ground surface be investigated for liquefaction.

e) Geologic cross sections depicting geologic structure, stratigraphy, and subsurface water conditions, supported by boring and/or trench logs at appropriate locations.

f) The groundwater level to be used in the liquefaction analysis. Location and extent of groundwater, perched groundwater and historic high groundwater. The historic high groundwater level should be used, in the liquefaction analysis, unless information obtained indicates that an alternate level is appropriate.

g) Description of seismic setting, historical seismicity and methods and/or sources used to determine earthquake ground-motion parameters used in the liquefaction analysis. For high occupancy structures it is common practice to use a deterministic seismic hazard analysis with a median-plus-one-standard-deviation (84th percentile) in developing ground motion estimates. The consulting engineering geologist must provide ground motion parameters using either the deterministic or probabilistic method as follows:

Probabilistic:

Earthquake magnitudes and associated peak ground accelerations (PGA) based upon simple prescribed parameter values (SPPV) generated by the Department of Conservation may be used. These maps are included in the Seismic Hazard Evaluation Reports issued by DMG. PGA is dependent on site conditions and several maps have been prepared to accommodate these differences. Refer to SP117 for further details.

In-lieu of utilizing SPPV, a site-specific probablistic seismic hazard analysis can be performed, and can supersede the SPPV values of PGA. If a site-specific probabilistic hazard analyses is performed, earthquake magnitudes must be based upon the current California Division of Mines and Geology Fault Model (fault catalog), with associated PGA utilizing recently published attenuation equations, and a probabilistic seismic hazard analysis (PSHA) utilizing a hazard level of at least 10 percent probability of exceedance in 50 years. All input and output data files (Dat,Out,Raw) associated with the computer program (e.g. FRISKSP) must accompany the geotechnical report as hard copies.

Any modifications to the program, standard user-selected input parameters, or the current California of Division Mines and Geology Fault Model, must be justified. It is important that the difference in duration of various earthquake magnitudes be accounted for when performing liquefaction analysis. Therefore, magnitude weighting must be performed per Idriss (1985)*. Magnitude Weighting Factors used in FRISKSP should be equivalent to the inverse of the Magnitude Scaling Factors used in the engineering analysis for liquefaction. Attenuation equations and values must reflect the use of current literature and site conditions. Attenuation relations produced by Campbell (1997), Joyner & Boore (1997), and Sadigh, et al. (1997) are acceptable** using the standard deviation on the attenuation functions. The geotechnical consultants must conduct the analysis utilizing all three of the above attenuation relations and then submit a discussion and conclusions justifying the seismic parameters utilized in the liquefaction analysis. The geotechnical consultants must justify all input parameters and certify the integrity of the data and program utilized in generating magnitudes and peak ground accelerations.

-OR-

Deterministic:

Earthquake magnitudes based upon the current California Division of Mines and Geology Fault Catalog, with associated PGA utilizing published attenuation equations and a deterministic seismic hazard analysis (DSHA). Attenuation equations and values must reflect the use of current literature and site conditions. Attenuation relations produced by Campbell (1997), Joyner & Boore (1997), and Sadigh, et al. (1997) are acceptable**. The geotechnical consultants should utilize the average ground motion obtained from the three attenuation relations in the liquefaction analysis. Again for high occupancy structures it is common practice to use a deterministic seismic hazard analysis with a median-plus-one-standard-deviation (84th percentile) in developing ground motion estimates.

NOTE: The results of the submitted site-specific seismic hazard analyses will be reviewed by utilizing a probabilistic seismic hazard analysis (PSHA), a hazard level of 10 percent probability of exceedance in 50 years, the current California Division of Mines and Geology Fault Catalog, the most updated version of FRISKSP by Thomas F. Blake, attenuation relations produced by Campbell (1997), Joyner & Boore (1997), and Sadigh, et al. (1997), and standard user-selected input parameters unless otherwise justified by the geotechnical consultants. Seismic parameters recommended by the geotechnical consultants are acceptable if they are greater than or equal to values obtained using these criteria.

h) Consideration of the geologic factors that may control or affect the severity of potential hazards (e.g., site-specific response characteristics due to amplification of soft soils, deep sedimentary basins, topography, near-source affects, etc.)

i) The engineering geology report must comply with and contain a finding in accordance with Sections 110 and 111 of the Los Angeles County Building Code.

j) Discussion of proposed mitigation measures, if any, necessary to reduce potential damage caused by liquefaction.

k) Consideration of general guidelines of the DMG "Notes 42, 44, and 48."

2. For "projects" governed under the State of California SHMA and Article 10 (Section 3724).

a) The required report(s) shall be prepared by a certified engineering geologist and/or registered civil engineer, having competence in the field of seismic hazard evaluation and mitigation.

b) The required report(s) shall be reviewed by a certified engineering geologist and/or registered civil engineer, having competence in the field of seismic hazard evaluation and mitigation.

c) A copy of all geotechnical reports must be sent to the State Geologist within 30 days of plan approval.

References: * Idriss, I. M. (1985), "Evaluating Seismic Risk in Engineering Practice", Eleventh International Conference on Soil Mechanics and Foundation Engineering, vol. 1, pp. 255-320.
** As used by DMG OFR 96-08 / USGS OFR 96-706

COUNTY OF LOS ANGELES
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SOILS ENGINEERING REVIEW SHEET

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Calling hours - Monday through Thursday 8-9 a.m. & 3-4 p.m.

District Office 5.0

Tentative Tract 53138
Location Chatsworth
Developer/Owner Presidio Chatsworth Partners L.L.C.
Engineer/Architect B & E Engineers
Soils Engineer Kleinfelder (58-919401-008)
Geologist Same as above

Review of:

Tentative Tract Dated By Regional Planning 8/2/01
Soils Engineering Report Dated 8/8/01 Geologic Report Dated 8/8/01

Previous review sheet dated 7/9/01

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

1. Provide a geotechnical update report/letter which specifically addresses and evaluates the latest tentative tract map submitted through the Department of Regional Planning.

2. Provide a geotechnical map with corresponding cross sections which utilizes the current tentative map as a base.

3. Clearly show the following on the geotechnical map and corresponding cross sections:

   a. Existing and proposed grades.
   b. Lot lines.
   c. Approximate limits and depth of removal and recompaction of slide debris and unsuitable soils.
   d. Grading required for construction of buttress/stabilization fills, including areas of geotextile reinforcement.
   e. Location of "Restricted Use Area(s)".
   f. Mitigative measures, per the geotechnical engineer's recommendations.

4. Provide geotechnical cross sections AA-AA', CC-CC' and C3-C3' and identify their locations on the geotechnical map.

5. Geotechnical cross sections A-A' and B-B' do not appear to coincide with the corresponding cross sections provided with the slope stability analyses. Verify and make revisions as necessary.

6. Show the depth and limits of surficial slumps (shown on the geotechnical map) on cross section L-L'.

7. Show the critical failure planes used in the slope stability analyses on the geotechnical ~~map~~. section

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

SOILS ENGINEERING REVIEW SHEET

Location Chatsworth

REMARKS (cont.):

8. Ultimate shear strength parameters must be used in static and surficial slope stability analyses. Indicate the type of shear strength parameters (i.e. ultimate, peak, ect.) representative of bedrock (cross-bedding) and fill material used in the slope stability analysis.

9. In order to estimate "along bedding" shear strengths based on re-shear test results, the sample must be re-sheared several times until two consecutive runs yield the same shear value. Provide additional data to show that the residual shear strengths (Plate B-9) are representative of the lowest values based on the above criteria.

10. The shear strength values representative of slide plane material (obtained from back-calculation) appear high. Provide additional data to further substantiate these values. Make revisions as necessary.

11. The cohesion (4000 psf) representative of bedrock (page C-1) is far greater that the values obtained from direct shear testing. Verify and make revisions as necessary.

2. Provide input/output data sheets for all slope stability analyses conducted.

13. Provide static and seismic slope stability analysis for cross section C-C' considering failure of Qls-1. Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

14. Provide static and seismic slope stability analysis for cross section G-G' considering failure of the portion of Qls-2 downslope of reinforced keyway. Analysis must consider geotextile reinforcement where applicable. Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

5. Provide static and seismic slope stability analysis for cross section M-M' considering the recommended mitigative measures (i.e. MSE wall, drilled piers and fill). Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

6. Provide static and slope stability analysis for cross sections P-P' and Q-Q' considering failure of Qls-3. Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

7. Provide volume calculations for the anticipated amount of slide debris generated by failure of Qls-3 to verify the capacity of the proposed debris basin. Make revisions as necessary.

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

SOILS ENGINEERING REVIEW SHEET

Location Chatsworth

REMARKS (cont.):

18. Provide static and seismic slope stability analysis for the steep natural slope shown on cross section U-U'. Also, provide a geotechnical cross section showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Revise mitigation if factors of safety are below County minimum standards.

19. Provide data and analyses to determine liquefaction potential of the on-site soils in the area of the proposed bridges. Also, evaluate the potential for seismically induced settlement (dry and saturated soils), lateral spreading, surface manifestation, etc. The analyses must be performed for soils within the upper 50 feet, as a minimum, for shallow foundation, or greater depth where deep foundation and/or subterranean structure is proposed. The historic-high water table shall be used in the analyses, unless other information is provided which indicates a higher or lower level is appropriate. Recommend mitigation as necessary. The liquefaction data and analyses must conform to the State of California Division of Mines and Geology "Special Publication 117", dated 1997 and "Recommended Procedure For Implementation of DMG Special Publication 117", dated March 1999.

20. Additional slope stability analysis may be required when the geology of the site is conclusively determined.

21. Requirements of the Geology Section are attached.

22. Include a copy of this review sheet with your response.

REGISTERED PROFESSIONAL ENGINEER
MARK ANDREW STEUER
No. C053672
Exp. 6-30-03
CIVIL
STATE OF CALIFORNIA

Prepared by Mark A. Steuer Date 9/25/01

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.

Mark:53138a

APPENDIX D

SUMMARY OF NATURAL AND PROPOSED SLOPES

Slope No. and Type	Cross-Section or General Location	Maximum Slope Height, Length and Inclination	Anticipated Geologic Conditions
Natural Slopes			
1 – Natural Slope	Below Lots 173 through 179	1½:1 to 2:1 natural slope	Kcs steeply oriented unfavorably out of slope, toward Browns Canyon
2 – Natural Slope	U-U' Below Lots 166 through 172	1 ½:1 to 1¼:1 natural slope	Kcs bedrock, with interbedded siltstone and some claystone, oriented steeply out of slope
3 – Natural Slope	Below Lots 141 through 144,and 164 through 166	1 ½:1 to 1¼:1 natural slope, small fill slope near "B" Street with 10 foot high retaining wall at the toe	Surficial debris on steep slope faces, Kcs bedrock, with interbedded siltstone and some claystone, oriented unfavorably out of slope, alluvial removals on the order of 3 to 5 feet anticipated
4 – Natural Slope	C-C'	190 Feet high, 280 feet long, 2:1 natural slope.	Slope contains wedge failure and potential block glide landslide. Lots 54 and 55 will be impacted by an existing head scarp and or extreme surficial slope instability. Kcs bedrock is oriented unfavorably out of slope. Recommend 100 foot structural setback restricted use area.
4 – Natural Slope	E-E'	130 Feet high, 240 feet long, 2:1 natural slope.	Kcs bedrock is oriented unfavorably out of slope, apparent dips 10 to 21 degrees
5 – Natural slope	G-G'	100 feet high, 200 feet long, 2:1 or flatter	Slope contains potential block glide landslide. Lots 26 through 29 will be impacted by surficial slope instability. Kcs bedrock oriented unfavorably out of slope, moderately dipping

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Slope No. and Type	Cross-Section or General Location	Maximum Slope Height, Length and Inclination	Anticipated Geologic Conditions
6 – Natural Slope	B-B'	100 feet high, 210 feet long (west), 200 feet long (east), 2:1 or flatter near top, 1 ½:1 mid-slope to toe	Lineament from CDMG identified approximately 100 feet east of left (western) bridge abutment, Kcs bedrock is oriented unfavorably out of slope along western slope areas. Eastern slope areas are oriented favorably into slope, moderately to steeply dipping.
7 – Natural Slope	L-L'	240 feet high, 250 feet long with 35 feet high fill slope, 90 feet long.	Kcs bedrock oriented favorably into slope, slope debris on anti-dip slope facing Devil Canyon, removals anticipated to generate debris toward blue-line stream area during slope construction. Debris control measures should be implemented during grading.
8 – Natural Slope	F-F'	120 feet high, 110 feet long, 1 ½ :1 to midslope and 1:1 ½ immediately below the proposed cut lots 35 through 44	Kcs bedrock neutral orientation.

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Slope No. and Type	Cross-Section or General Location	Maximum Slope Height, Length and Inclination	Anticipated Geologic Conditions
Cut Slopes			
1 – Cut Slope	O-O'	90 feet high, 200 feet long, 2:1 design with mid-slope benches	QTs bedrock consisting of sands and gravels of approximately 30 feet of top of slope, then cut will be in Kcs bedrock from mid-slope to toe of slope. Kcs bedrock is steeply dipping to the southwest. Fold axis of synform may be encountered near lower 1/3 of slope which changes bedding to be steeply dipping to the northeast. Fold area may need slope stability measures in this area.
1 – Cut Slope/back cut area	P-P'	2:1 cut slope design as referenced in O-O' (Cut Slope #1)	Slope western side and proposed debris basin may be impacted by landslide debris and tension cracks within QTs gravel and sandstone materials. Remove and replace landslide debris with 2:1 fill key (25'W x 5'D) at toe. Lay back landslide removal at toe of slope to 2:1.
2 – Cut Slope	N-N'	65 feet high, 220 feet long, 2:1 design with mid-slope bench and 6 foot retaining wall	Kcs bedrock steeply dipping 46 to 70 degrees to the southwest toward synform axis which changes bedding to be steeply dipping to the northeast. CDMG Fault crosses near top of slope. Fault is not anticipated to impact slope design.

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Slope No. and Type	Cross-Section or General Location	Maximum Slope Height, Length and Inclination	Anticipated Geologic Conditions
Cut Slopes			
3 – Cut Slope	D-D'	70 feet high, 150 feet long, 2:1 proposed slope	Kcs bedrock oriented favorably into slope, apparent dips 24 to 46 degrees into slope. On north side of ridge below top of cut slope, Kcs bedrock oriented unfavorably out of slope. Slope contains wedge failure and potential block glide landslide. Slope instability not anticipated to impact slope design.
4 – Cut Slope	J-J'	70 feet high, 2:1 design with 40 foot high fill-over-cut slope	Kcs oriented favorably into slope, some alluvial removals on the order of 3 to 5 feet anticipated in west end of slope.

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Slope No. and Type	Cross-Section or General Location	Maximum Slope Height, Length and Inclination	Anticipated Geologic Conditions
		Fill Slopes	
1 – Fill Slope	K-K'	140 feet high, 355 feet long, 2:1 design slope	Kcs bedrock oriented unfavorably out of slope, alluvial removals anticipated in isolated areas on the order of 3 to 5 feet.
2 – Fill Slope	M-M'	90 feet high, 160 feet long, engineered retaining walls (10 to 30 feet high)/fill slope combination proposed	Kcs bedrock oriented unfavorably out of slope. Moderately to steeply dipping 19 to 56 degrees obliquely out of slope, alluvial removals at toe anticipated on the order of 5 to 8 feet. Retaining wall foundation depths not known at this time.
3 – Fill Slope	Below Lots 173 through 179	70 foot high, 155 foot long 2:1 slope design,	Kcs bedrock oriented steeply dipping toward natural slope #1. Typical fill key recommended at toe of fill slope. Some alluvial removals on the order of 4 to 5 feet anticipated through center of slope.

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EXPLANATION

Qal	RECENT ALLUVIUM
Qsw	SLOPE WASH
Qls	LANDSLIDE DEBRIS
QTs	SAUGUS FORMATION
Kcs	CHATSWORTH FORMATION
KB-12	APPROXIMATE BORING LOCATION (KLEINFELDER, 2001)
BA-1	APPROXIMATE BORING LOCATION (KLEINFELDER, 1999)
B-1	APPROXIMATE BORING LOCATION (BY OTHERS, UNKNOWN DATE)
C-5	APPROXIMATE CORING LOCATION (KLEINFELDER, 2001)
KP-31	APPROXIMATE TEST PIT LOCATION (KLEINFELDER, 2001)
NTP11	APPROXIMATE TEST PIT LOCATION (NEBLITT AND ASSOCIATES, 1998)
RTH-4	APPROXIMATE TEST PIT LOCATION (RMA GROUP, 1990)
NA LINE 12	SEISMIC REFRACTION LINE (NEBLITT AND ASSOCIATES, 1998)
L GS 1-6	SEISMIC REFRACTION LINE (GEOSOILS, INC, 1990)
L RSA 5-6	SEISMIC REFRACTION LINE (RSA ASSOCIATES, 1996)
Y — Y'	CROSS SECTION LOCATION (KLEINFELDER, 2001).
TP-2	APPROXIMATE TRENCH LOCATION (KLEINFELDER, 1999)
FT-2	APPROXIMATE FAULT TRENCH LOCATION (KLEINFELDER, 2000)
VT-3	ROCK MECHANICS VERTICAL TRAVERSE LINE (KLEINFELDER, 2001)
?	AXIS OF ANTICLINAL FOLD (ARROW AT END SHOW DIRECTION OF PLUNGE)
?	AXIS OF SYNCLINAL FOLD (ARROW AT END SHOW DIRECTION OF PLUNGE)
?	FAULT – SOLID WERE WELL LOCATED, DASHED WHERE APPROXIMATE OR INFERRED, DOTTED WHERE BURIED, AND QUERIED WHERE UNCERTAIN
	FAULT ZONE
	PLATE 9 LINEAMENT
	LIMITS OF PROPOSED DEVELOPMENT
	GEOLOGIC CONTACT
	POTENTIAL DEBRIS FLOW AREA
	HORIZONTAL BEDDING
OIL	OIL WELL LOCATION
WELL #5	DOMESTIC WATER WELL
	ROCK MASS RATING DATA POINT
	GROUNDWATER SEEPAGE
5'–8'	ESTIMATED DEPTHS OF ALLUVIAL REMOVAL
5	PROPOSED CUT SLOPES, HIGHER THAN 50'
6	PROPOSED FILL SLOPES, HIGHER THAN 50'
8	EXISTING NATURAL SLOPES HIGHER THAN 50'
3	LANDSLIDE AREA
	LANDSLIDE
	AREA OF SURFICIAL INSTABILITY
40 40/50W	BEDDING ATTITUDES
40 40/50W	CLAY ATTITUDES
40 40/50W	JOINT ATTITUDES
40 40/50W	FAULT ATTITUDES
40 40/50W	SHEAR ATTITUDES

CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765

Project: 58-9194-02 October 2001

SITE PLAN AND GEOLOGIC MAP (SOUTH)

PLATE R13

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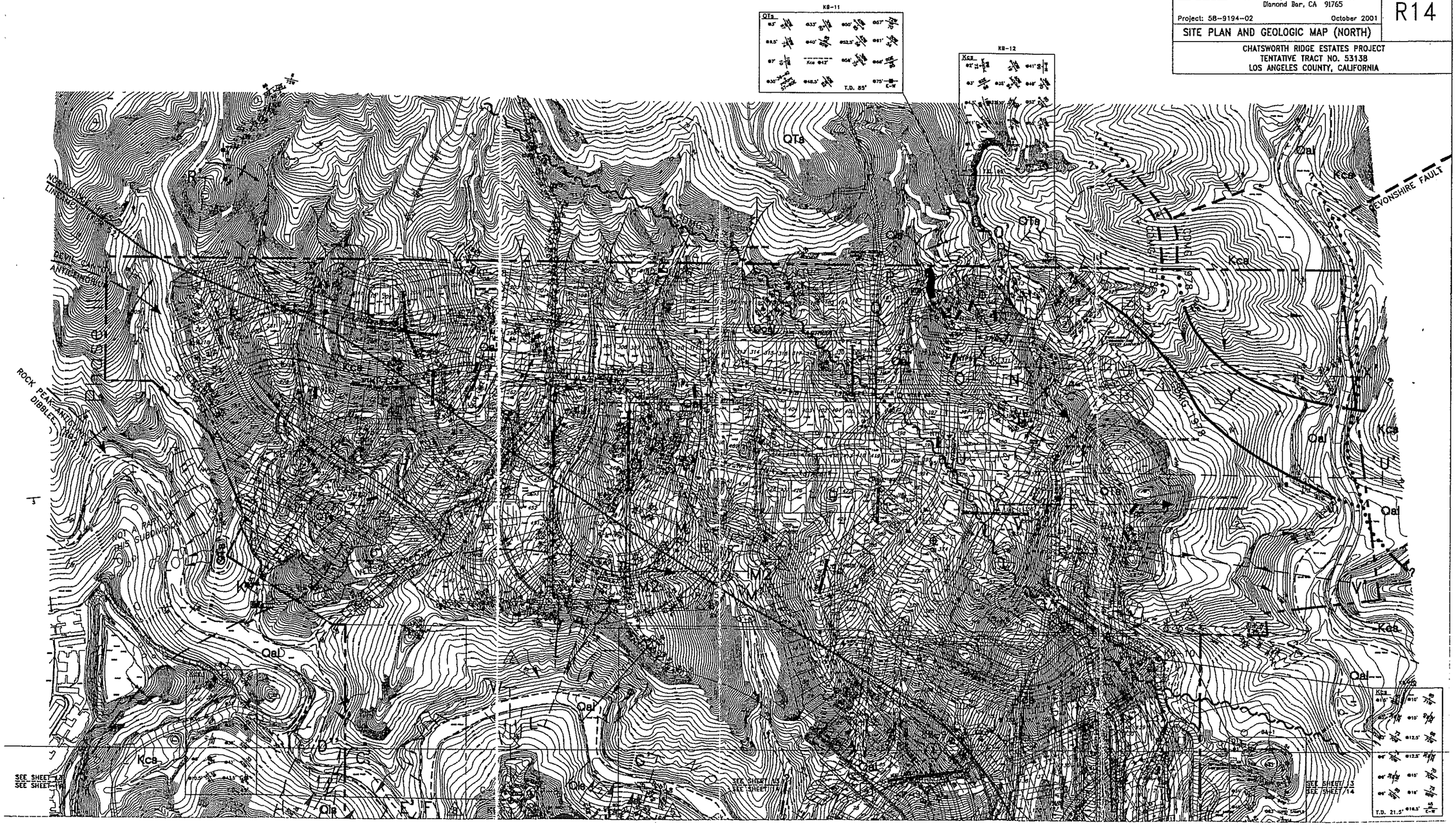
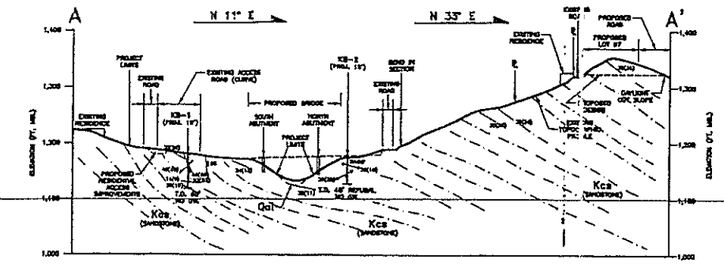
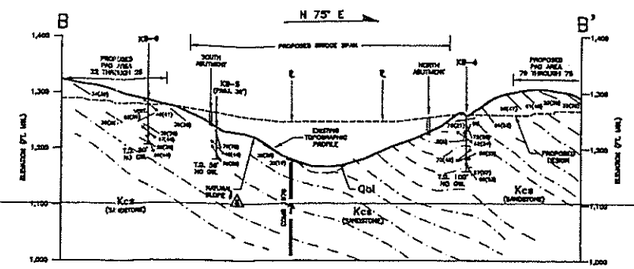
PLATE
R14

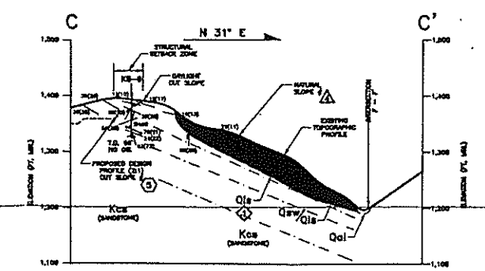
SITE PLAN AND GEOLOGIC MAP (NORTH)

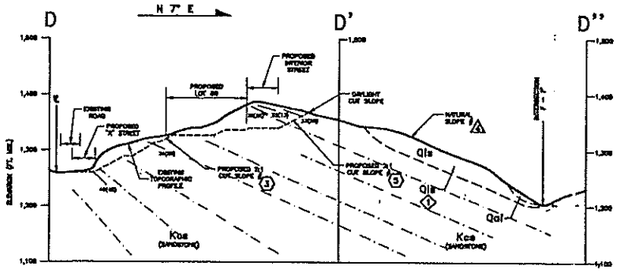
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138
LOS ANGELES COUNTY, CALIFORNIA

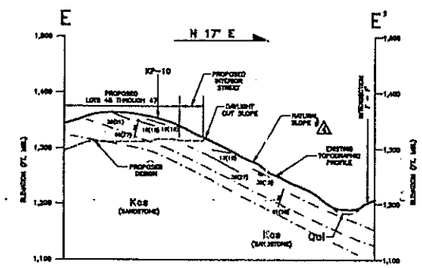


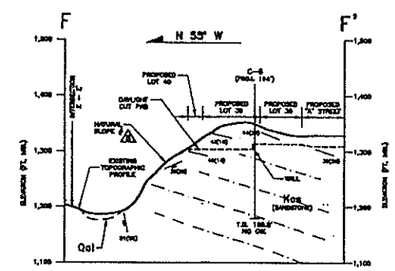


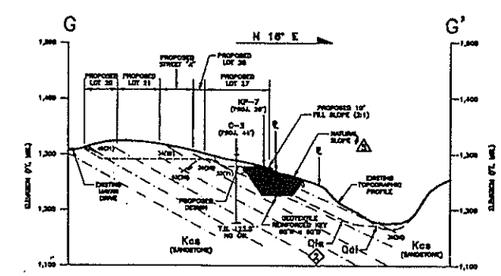


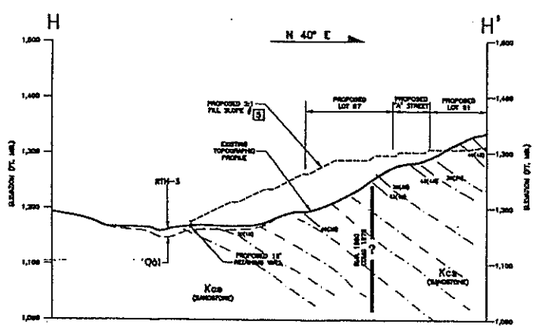


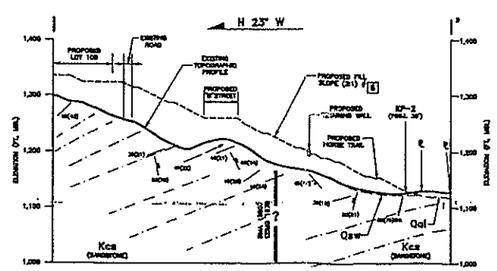


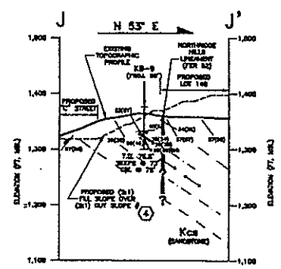


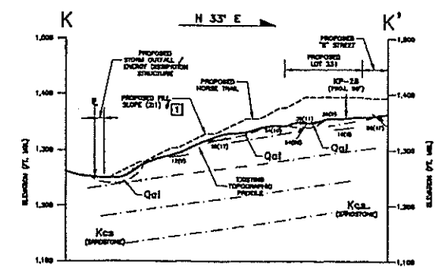












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY

DATE

DESIGNED BY J. HERNANDEZ / A. HARDING
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MGR. K.D. COOK
DATE OCTOBER 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53136

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765
(909) 396-0335

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GEOLOGIC CROSS-SECTIONS A - A' THRU K - K'

PROJ. NO.	FILED AS	DRAWING NO.
58-9194-02	A9194	A9194P03

PLATE R15

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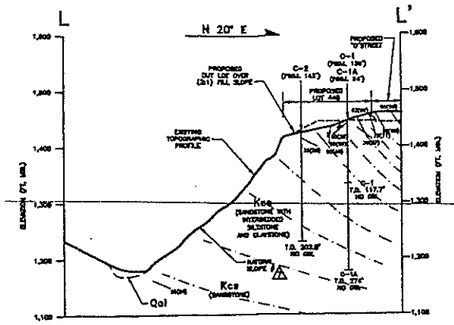

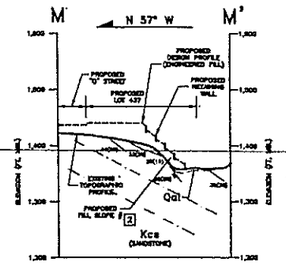

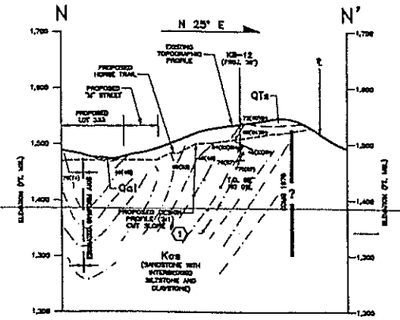

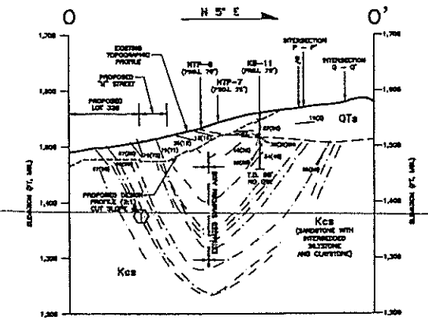

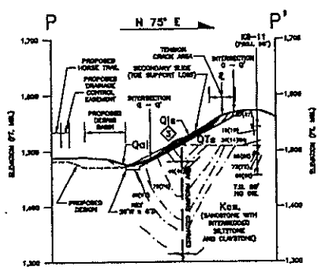

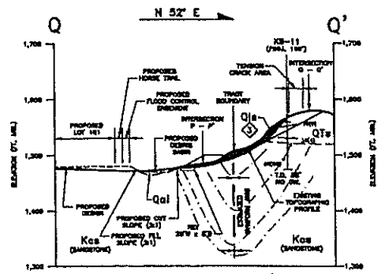

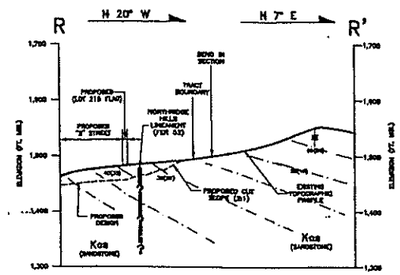

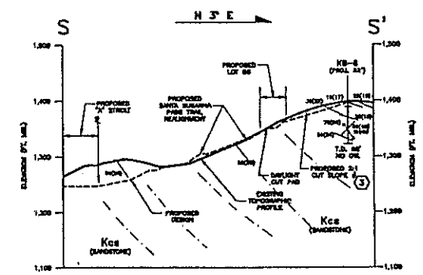

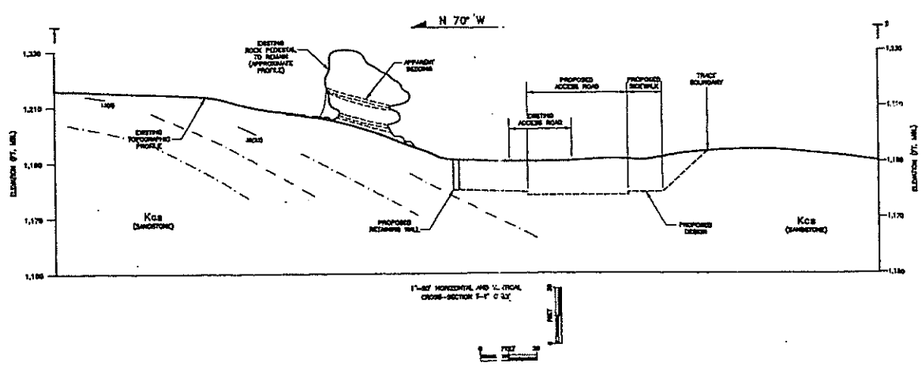

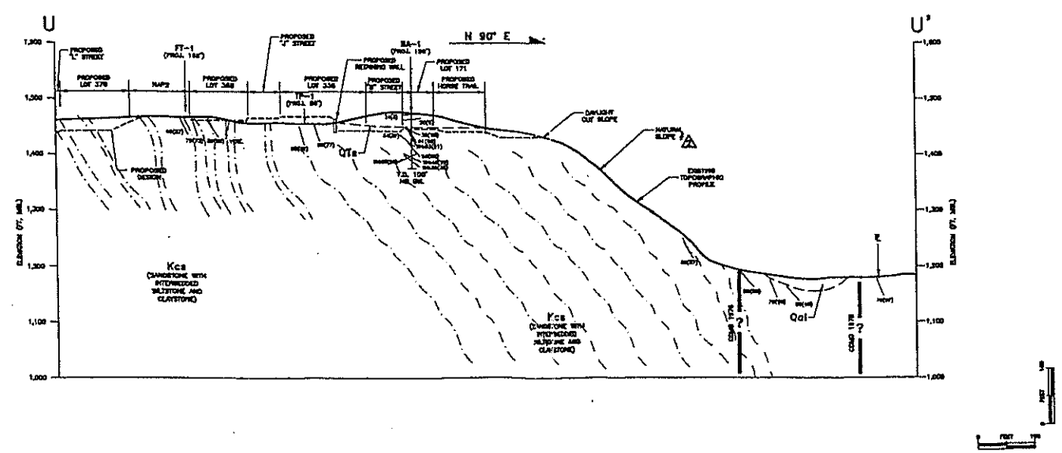

NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

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DATE

DESIGNED BY J. HERNANDEZ / A. HARDING
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MGR. K.D. COOK
DATE OCTOBER 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53139

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

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GEOLOGIC CROSS-SECTIONS L - L' THRU U - U'

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PLATE R16

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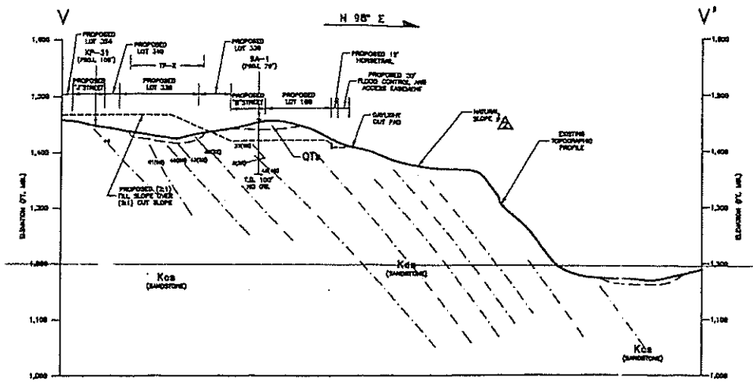

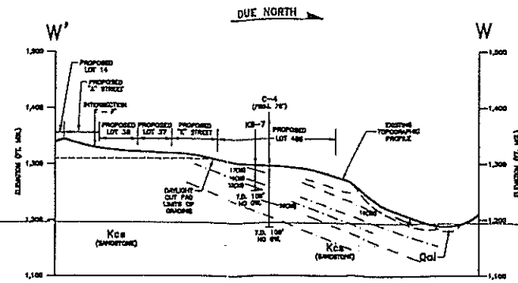

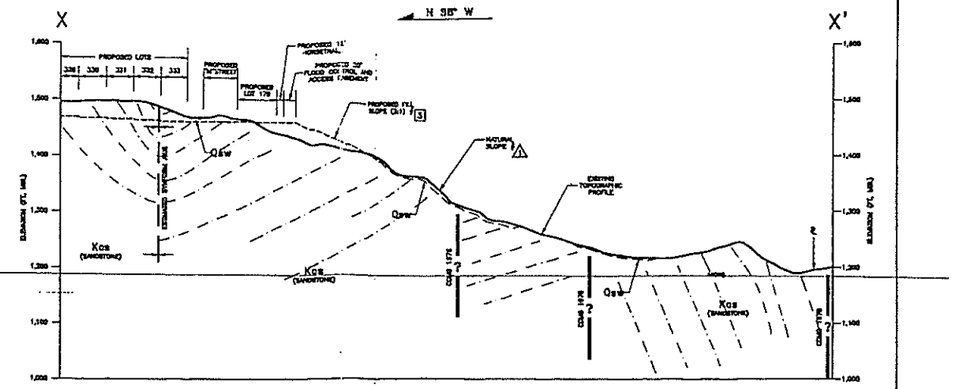

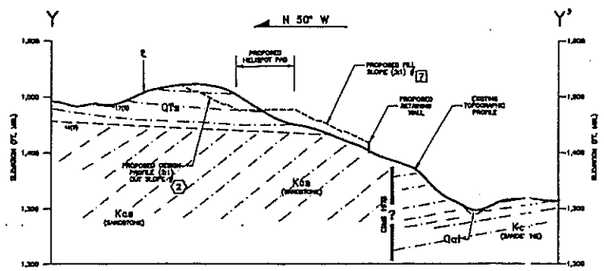

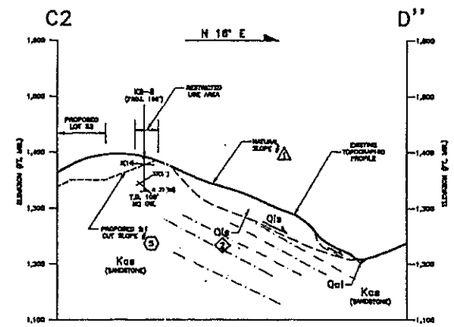

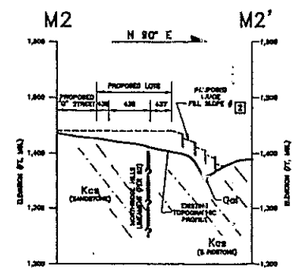

NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY

DATE

DESIGNED BY A. HARDING / D. HASHAM
DRAWN D. FAHRNEY
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MGR. K.D. COOK
DATE OCTOBER 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

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DESCRIPTION

GEOLOGIC CROSS-SECTIONS V - V' THRU M2 - M2'

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DRAWING NO. A9194P04

PLATE 18

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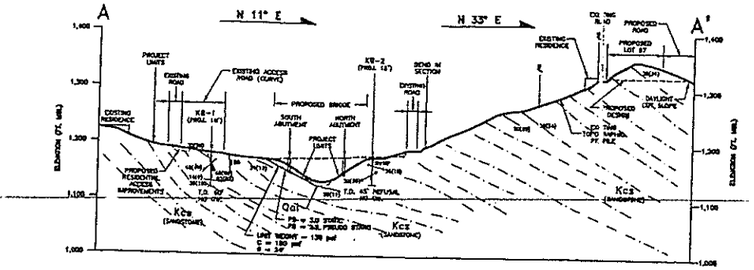

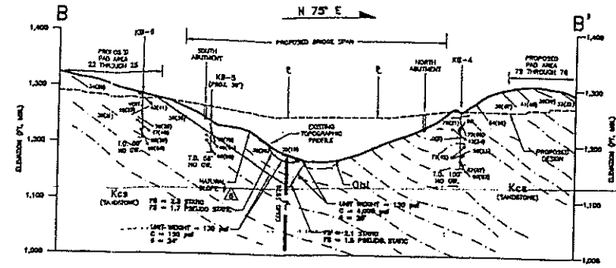

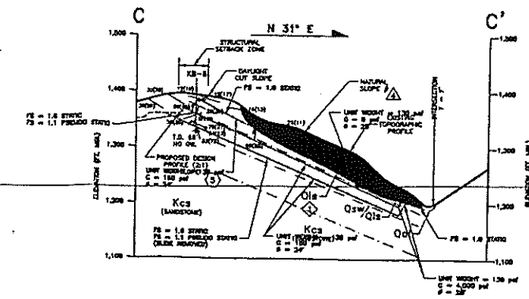

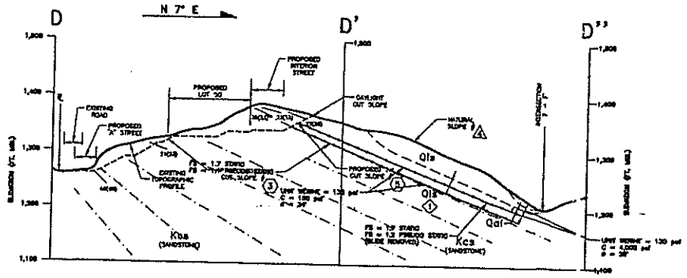

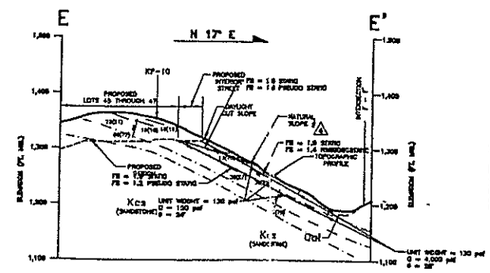

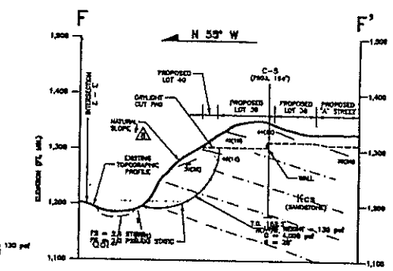

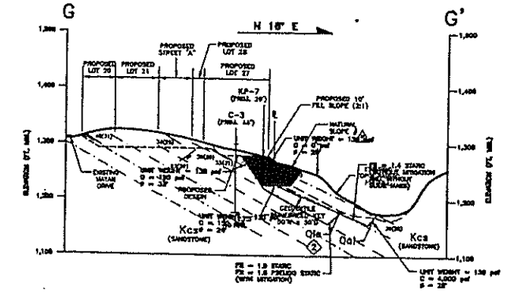

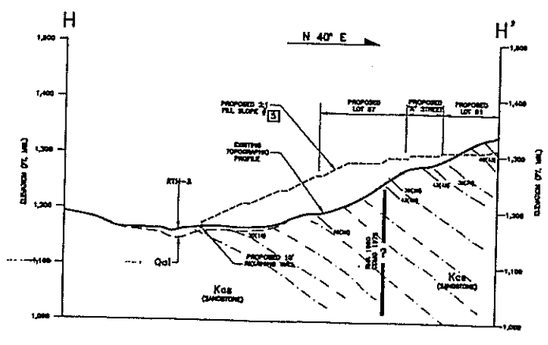

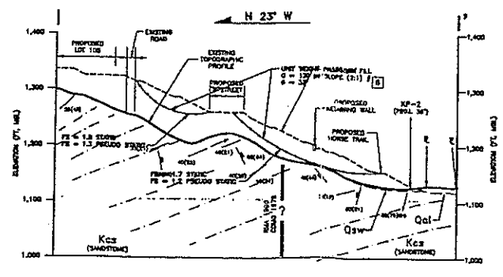

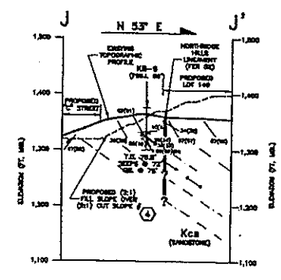

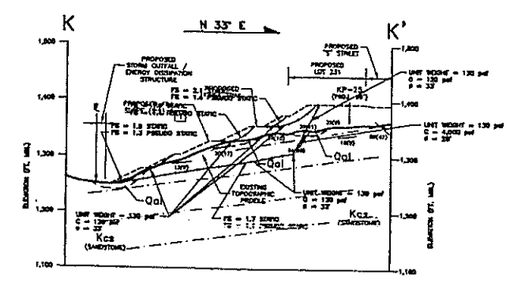

NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY

DATE

DESIGNED BY J. FERNANDEZ / A. HARDING
DRAWN D. FAHRNEY
CHECKED K.I. COOK
APPROVED K.I. COOK
GEOL. MGR. K.I. COOK
DATE OCTOBER 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 130
Diamond Bar, CA 91765
(909) 396-0335

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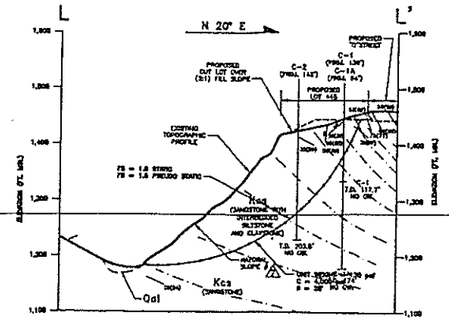
DESCRIPTION

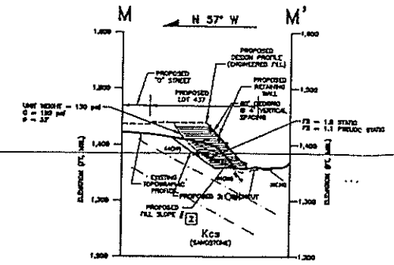
SLOPE STABILITY ANALYSIS SECTIONS A - A' THRU K - K'

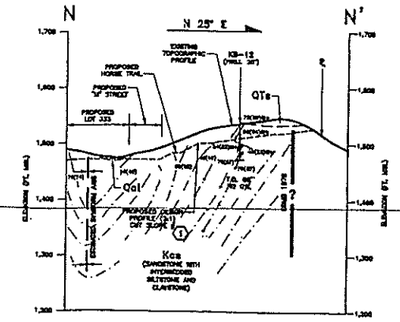
PROJ. NO. 28-9194-02
FILED AS A9194
DRAWING NO. A9194P03

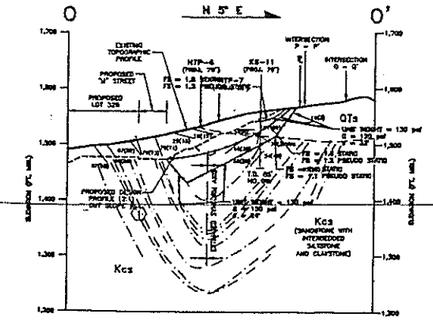
PLATE 19

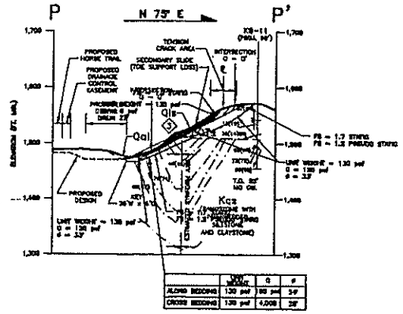
SHEET OF

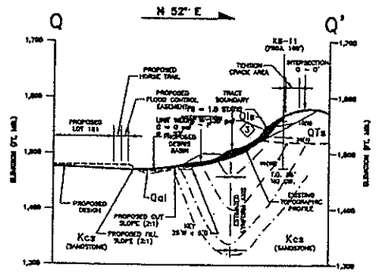


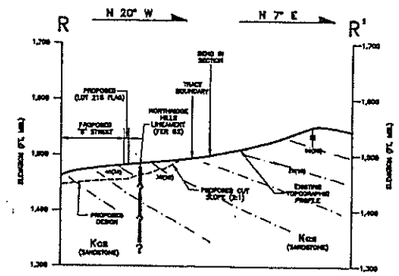


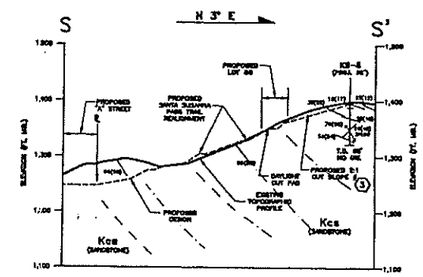


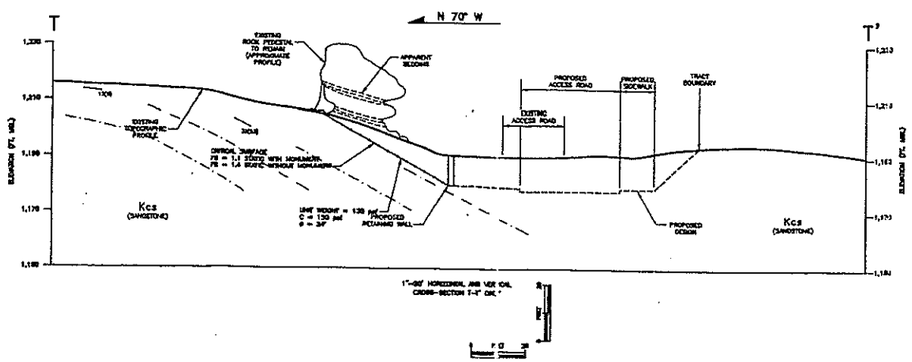


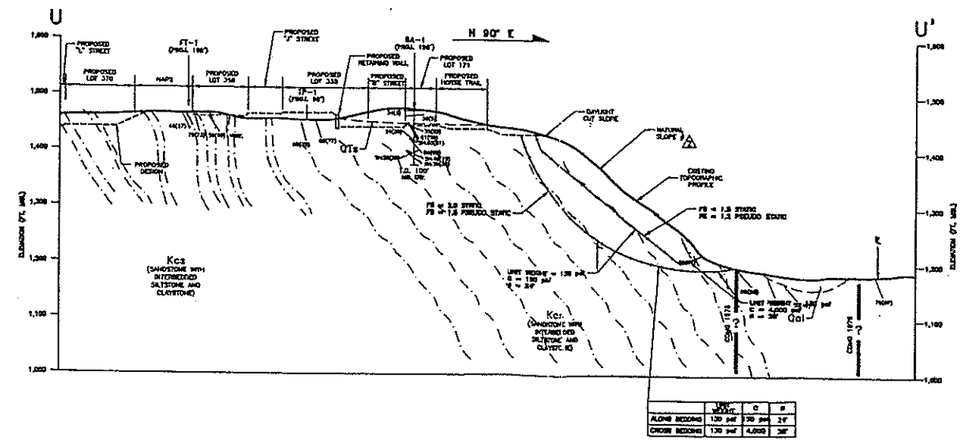












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY

DATE

DESIGNED BY L. HERNANDEZ / A. HARDING
DRAWN J. FAHRNEY
CHECKED C.D. COOK
APPROVED C.D. COOK
GEOL. MAP. C.D. COOK
DATE OCTOBER 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53108

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765
(909) 396-0335

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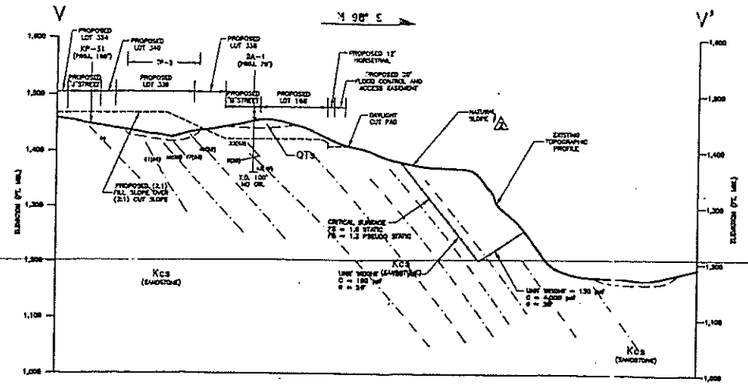
DESCRIPTION

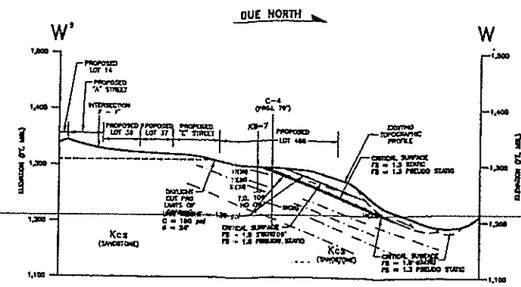
SLOPE STABILITY ANALYSIS SECTIONS L – L' THRU U – U'

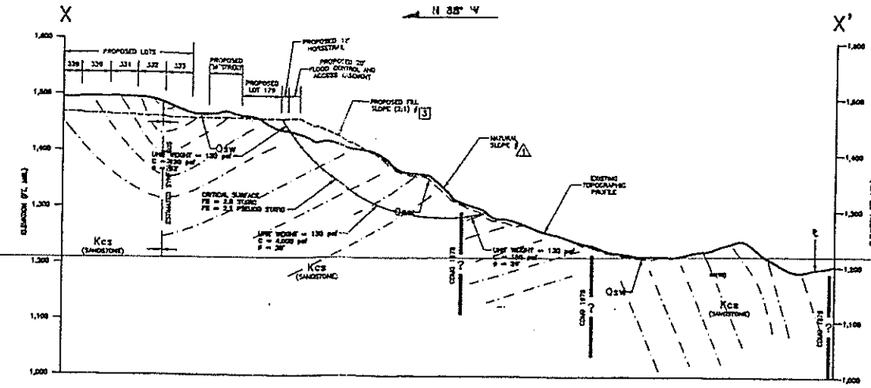
PROJ. NO. 58-9194-02 | FILED AS A9194 | DRAWING NO. A9194P04

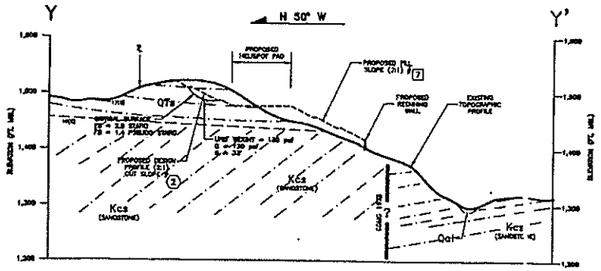
PLATE 20

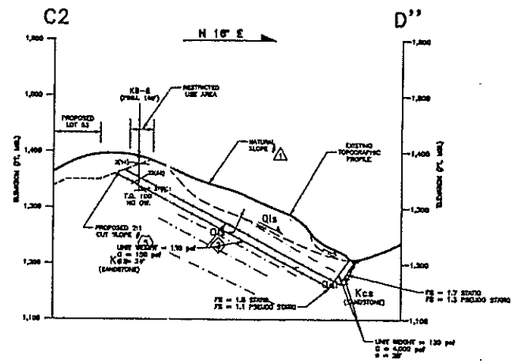
SHEET OF

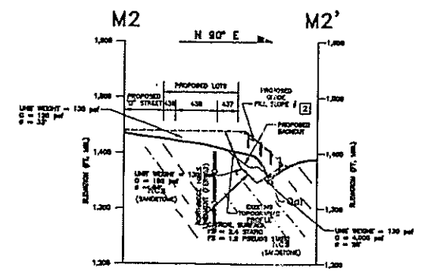












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY

DATE

DESIGNED BY A. HARDING / D. HASHAM
DRAWN D. FAHRNEY
CHECKED K. D. COOK
APPROVED K. D. COOK
REGL. MGR. K. D. COOK
DATE OCTOBER, 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53038

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765
(909) 396-0320

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DESCRIPTION

SLOPE STABILITY ANALYSIS SECTIONS V - V' THRU M2 - M2'

PROJ. NO. 58-9194-02
FILED AS A9194
DRAWING NO. A9194P04

PLATE 21

SHEET OF

Date Drilled:	9/8/99	Water Depth:	>100 feet
Drilled By:	Tri Valley Drilling	Date Measured:	9/09/99
Drilling Method:	Bucket Auger 24"	Elevation:	1457 feet
Logged By:	J.Hernandez,B.Hilton	Reference Datum:	msl

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
1455					**BEDROCK - Saugus Formation (QTs)**			
					SANDSTONE: light yellowish brown, moist, dense, some silt, fine to medium sand, minor iron oxide staining, trace coarse sand to fine gravel, occasional thin bedded fine gravel layer			
					@1': GB: N84E, 24NW			
5					@ 2': becomes dense to very dense			
					@ 3': gray with iron oxide mottling, thinner bedded with silty fine sand beds, 1 inch thick alternating with sand beds and silty fine sand			
1450					@ 3': B: N82W, 24SW			
					@ 4': well oxidized, massively bedded			
					@ 5': relatively easy drilling			
10			9		@ 7': GB: N75E, 20NW			
					@ 9': alternating between tan SANDSTONE with light gray SILTSTONE			
1445					-- very dense, strongly cross-bedded, slightly weathered			
					@ 12': B: N76W, 20SW			
15					@ 12.5': thin sandstone beds with siltstone interbeds, grayish green and light gray, iron oxide staining above and below each bed			
					@ 15': siliceous concretion zone, occasional friable, approximately 6 inches thick			
1440					@ 17': general increase in moisture content			
					BEDROCK: Chatsworth Formation (Kcs)			
					SILTY SANDSTONE: grayish brown, moist, hard			
20			4		@ 18': CLAY rip-up clasts, semishpericle 6" high by 4" wide			
					-- sand is fine to medium grain			
1435			push 3" 4/9"		@ 19': changes to SANDY SILTSTONE: grayish brown, moist, hard, thin clay layer at base of sandstone above			
					@ 21': interbedded SILTSTONE with SANDSTONE, gray, sandstone is fine to coarse grained, iron oxide staining common			
25					@ 22': changes to moist SANDY SILTSTONE, thin clay seams, moderately plastic			
1430					@ 26': slightly clayey SILTY SANDSTONE			
					@ 29': no clay, becomes sandier			
30			8		@ 30': SANDSTONE: thin bedded, some siltstone rip-up clasts, vertical to near vertical bedding in sampler			
1425					@ 33': discontinuous SILTSTONE rip-up clasts			
					@ 34': B: N48W, 35NE			

KLEINFELDER

PROJECT NO.

LOG OF BORING BA-1

PLATE

A-2a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
1420					@ 36': very dense, locally hard, yellow brown to light gray			
					@ 38': harder drilling			
					@ 39': massive, tighter materials			
40			27/6"		@ 40': brown, fine to medium grain sandstone, moist, very dense			
1415					@ 40': B: N23W, 61NE			
45								
					@ 46': SH: N21W, 63NE			
1410					@ 47': same as 36'.			
50			32/5"					
					@ 51': same as 47'.			
1405								
					@ 54': slightly friable			
55					@ 54.5': gravel layer, some cobbles, most 1-2" diameter, approximately 1.5 feet thick, hard, tight			
1400								
					@ 58': B: N54E, 54NE			
60			31/8"		@ 60': becomes siltier			
1395								
					@ 63': B: N37W, 56NE			
65								
1390					@ 67': concretion zone, irregular shaped, very hard			
70								
1385								
					@ 73': massive SILTY SANDSTONE, localized concretion layers			
75								

KLEINFELDER

PROJECT NO.

LOG OF BORING BA-1

PLATE

A-2b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
1380					@ 77': SH: N24W, 28SW			
					@ 78 to 79.5': unoxidized zone, dark gray rip-up clasts, some 18 inches long and 2 feet high, occurs on northeast wall of boring, slickensides in it and polished surfaces, no healing or shear zone observed, completely unremarkable gray silty fine sandstone above and below			
80			39/8"		@ 81': SH: N64W, 48NE			
1375					@ 82': SANDY SILTSTONE: unoxidized, light gray, moist, very dense, fine sand, with thin bedded, medium gray slightly clayey SILTSTONE beds, 1-2" thick			
85								
1370								
					@ 88': SH: N13W, 39NE			
90								
1365								
95					@ 95': unoxidized SILTY SANDSTONE, fine grain, massive, dense			
1360								
100			51/7"					
					Total depth of boring: 100.0 feet No groundwater encountered No seepage encountered Boring backfilled and tamped with soil cuttings Downhole logged by B. Hilton on 09/09/99 and K. D. Cook on 4/27/01			

KLEINFELDER

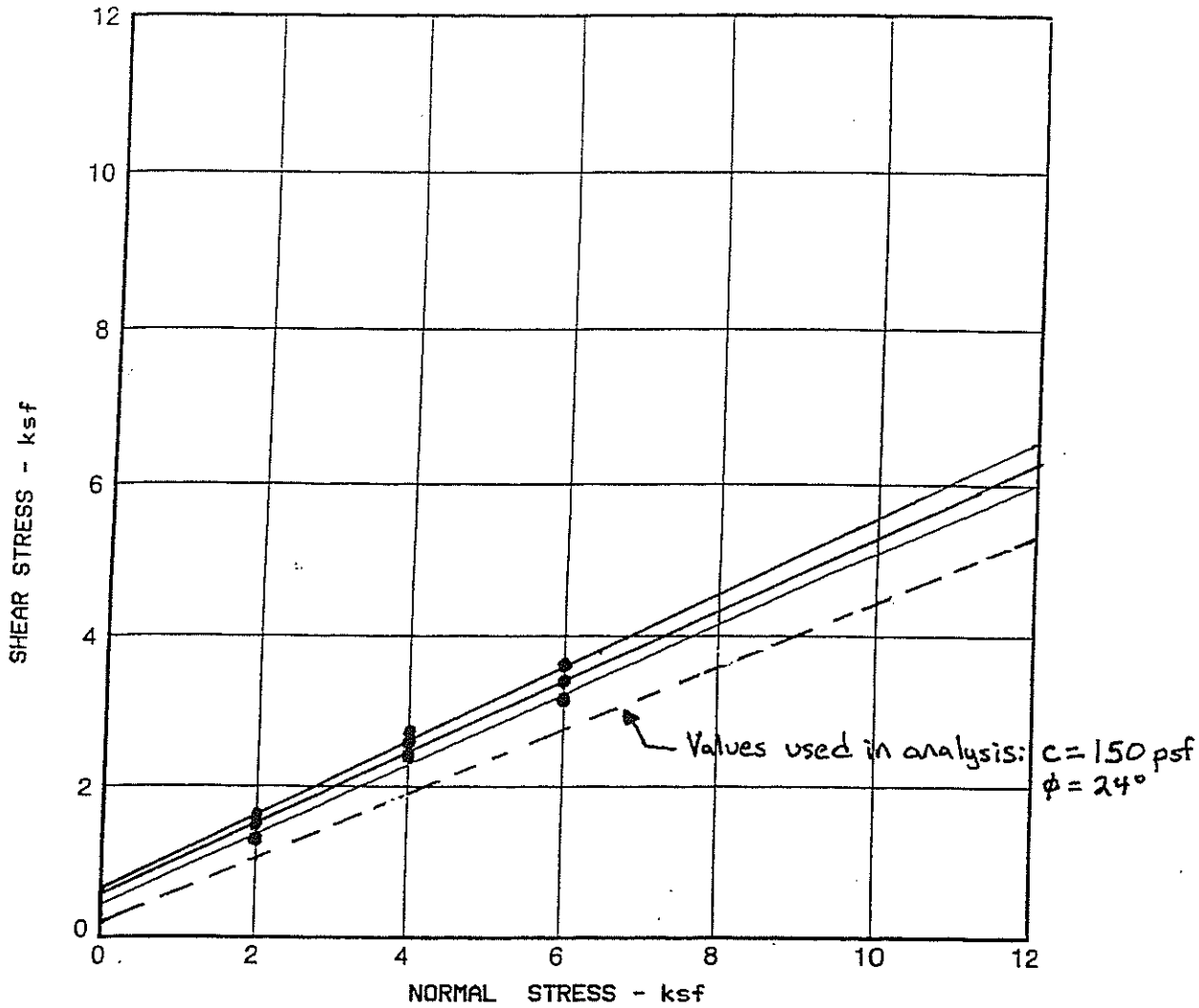
PROJECT NO.

LOG OF BORING BA-1

PLATE

A-2c

Explanation To Logs On Plate A-1



Test type	controlled - strain test		
Rate of shear - in/min	0.0125		
Normal Stress - psf	2000	4000	6000
Maximum Shear - psf	1296	2412	3156
Shear Strain - %			

Moisture Content Before Test= 11.3 %
Moisture Content After Test = 19.2 %

Sample	BA-1
Depth - ft	83.0
Friction Angle - deg	
Cohesion - ksf	
Description	Remolded Siltstone
Classification	-

-Sample remolded to wet density of 125 pcf
-Sample was sheared 3 times. Results of final shear (residual shear strength) are presented above

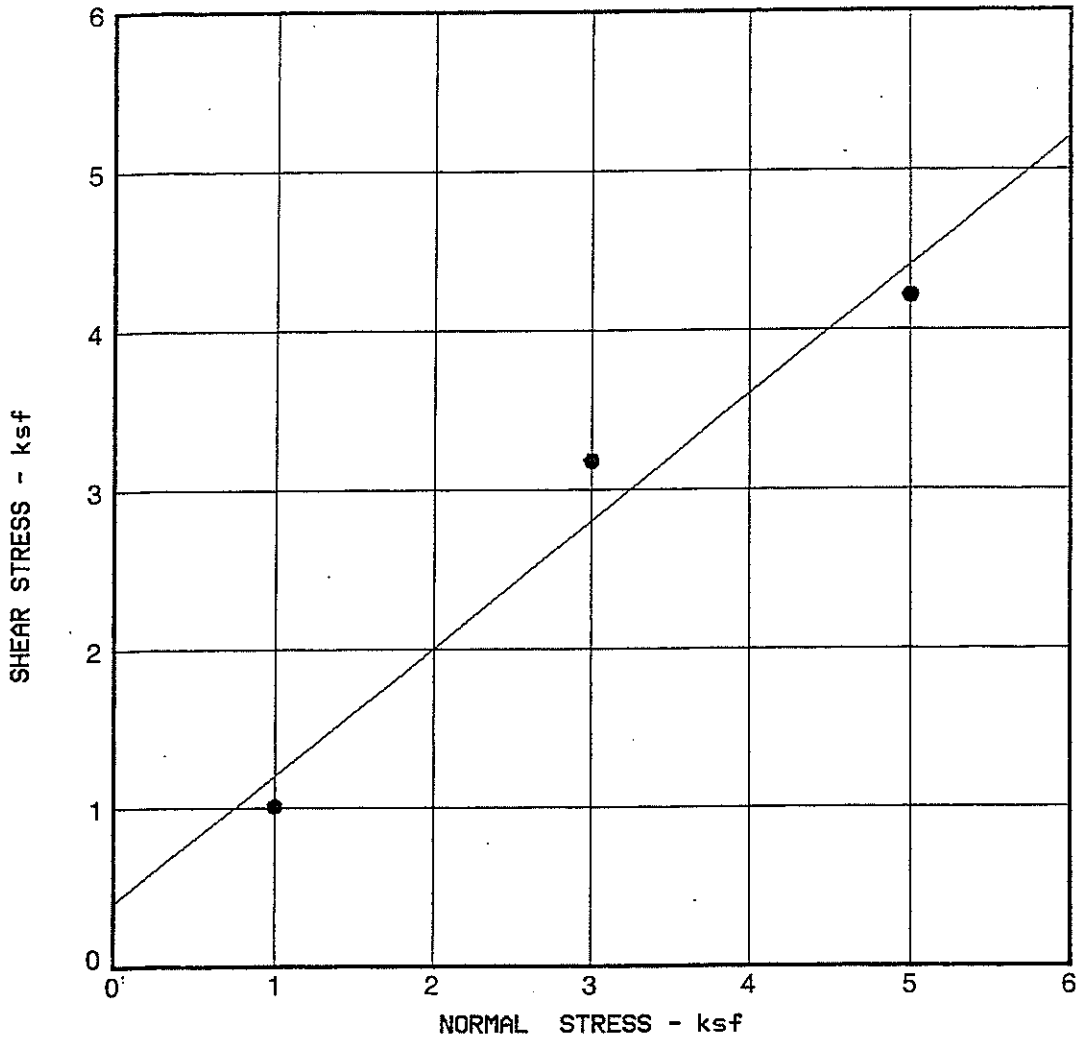
KLEINFELDER

PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE
B-9R



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	1000	3000	5000
Ultimate Shear - psf	1008	3180	4212
Shear Strain - %	2.9	5.8	4.6

Boring	KB-4
Depth - ft	5.0
Friction Angle - deg	39
Cohesion - ksf	0.40
Description	Silty Sandstone
Classification	NA

KLEINFELDER

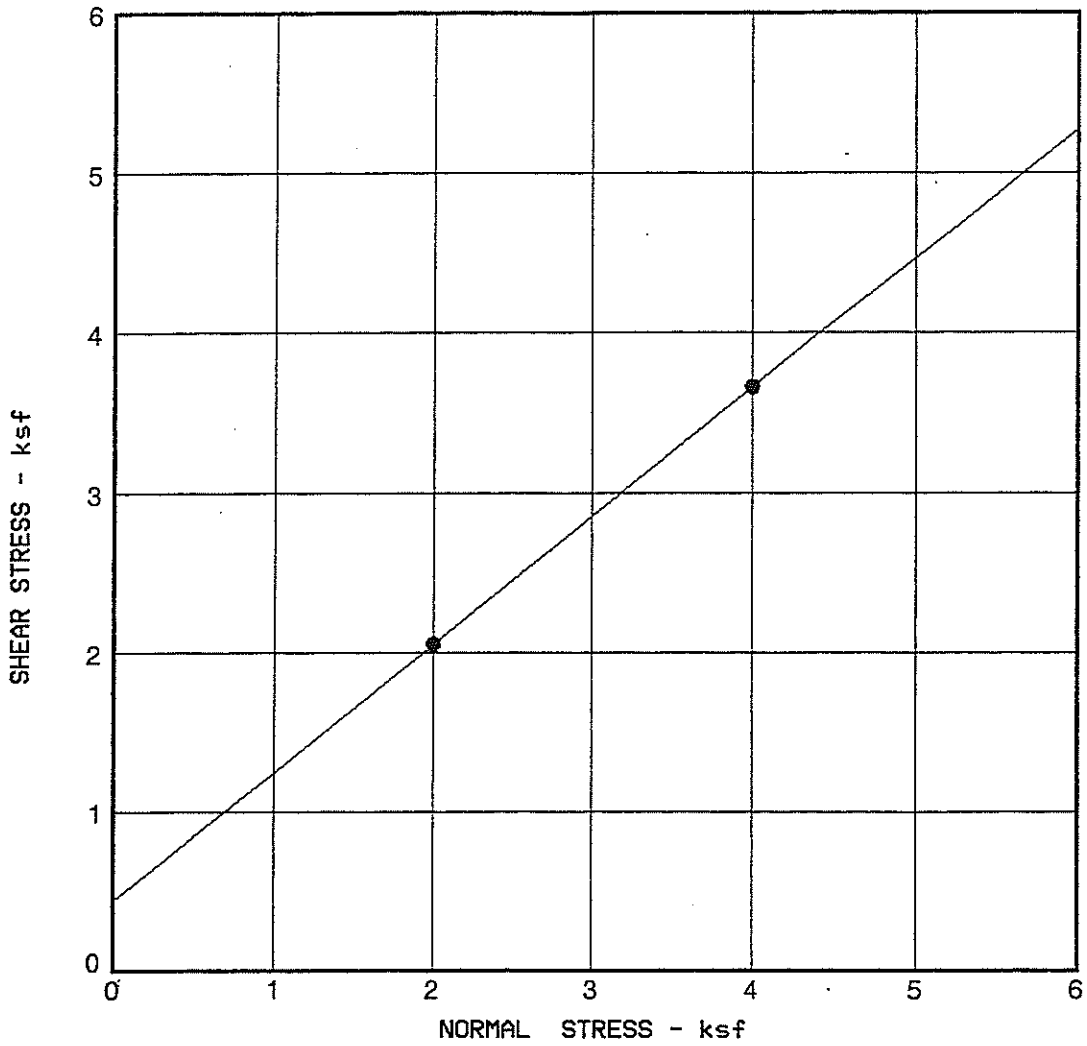
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-10



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	2000	4000	
Ultimate Shear - psf	2052	3660	
Shear Strain - %	3.3	5.4	

Boring	KB-4
Depth - ft	20.0
Friction Angle - deg	39
Cohesion - ksf	0.44
Description	Silty Sandstone
Classification	NA

KLEINFELDER

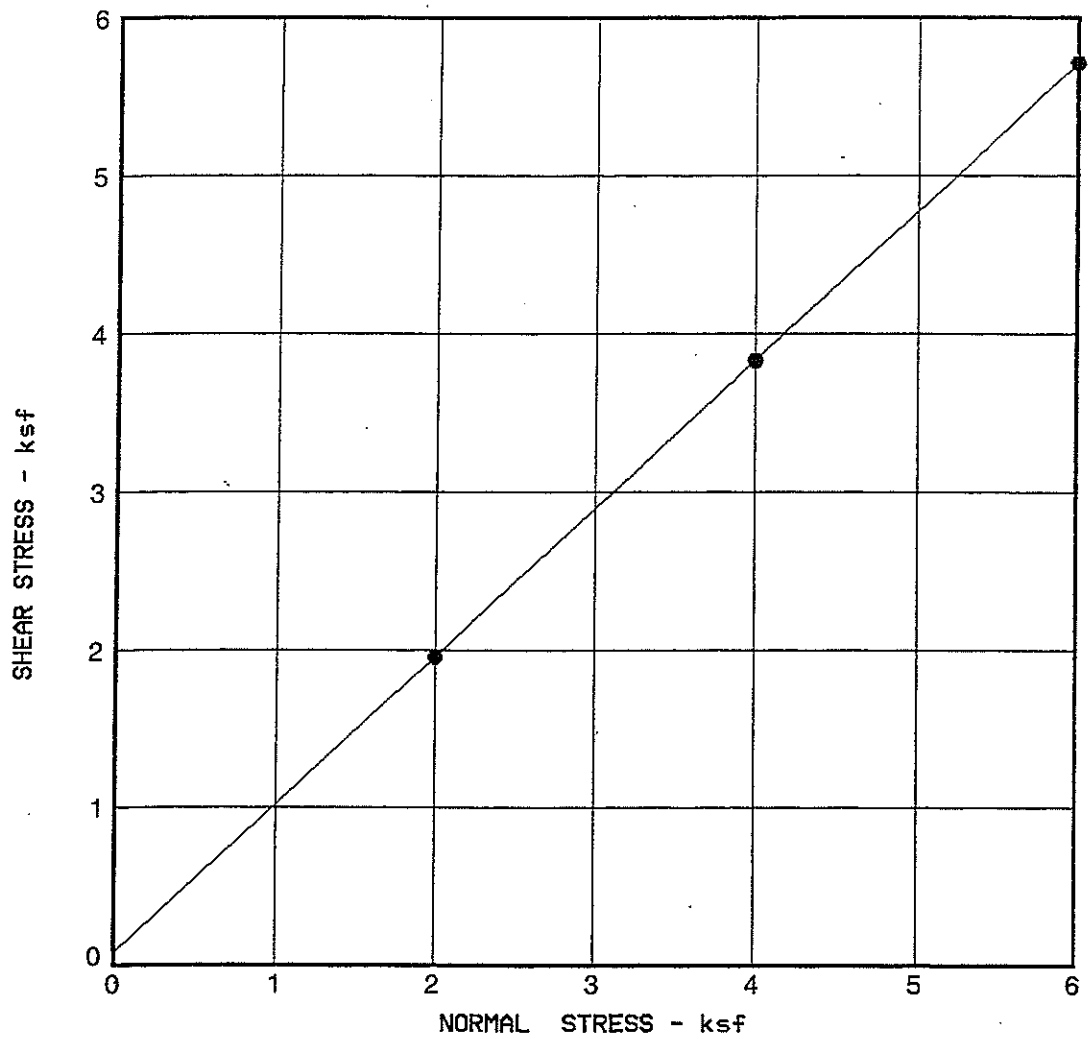
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-11



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	2000	4000	6000
Ultimate Shear - psf	1956	3828	5711
Shear Strain - %	2.9	5.4	5.8

Boring	KB-4
Depth - ft	30.0
Friction Angle - deg	43
Cohesion - ksf	0.08
Description	Silty Sandstone
Classification	NA

KLEINFELDER

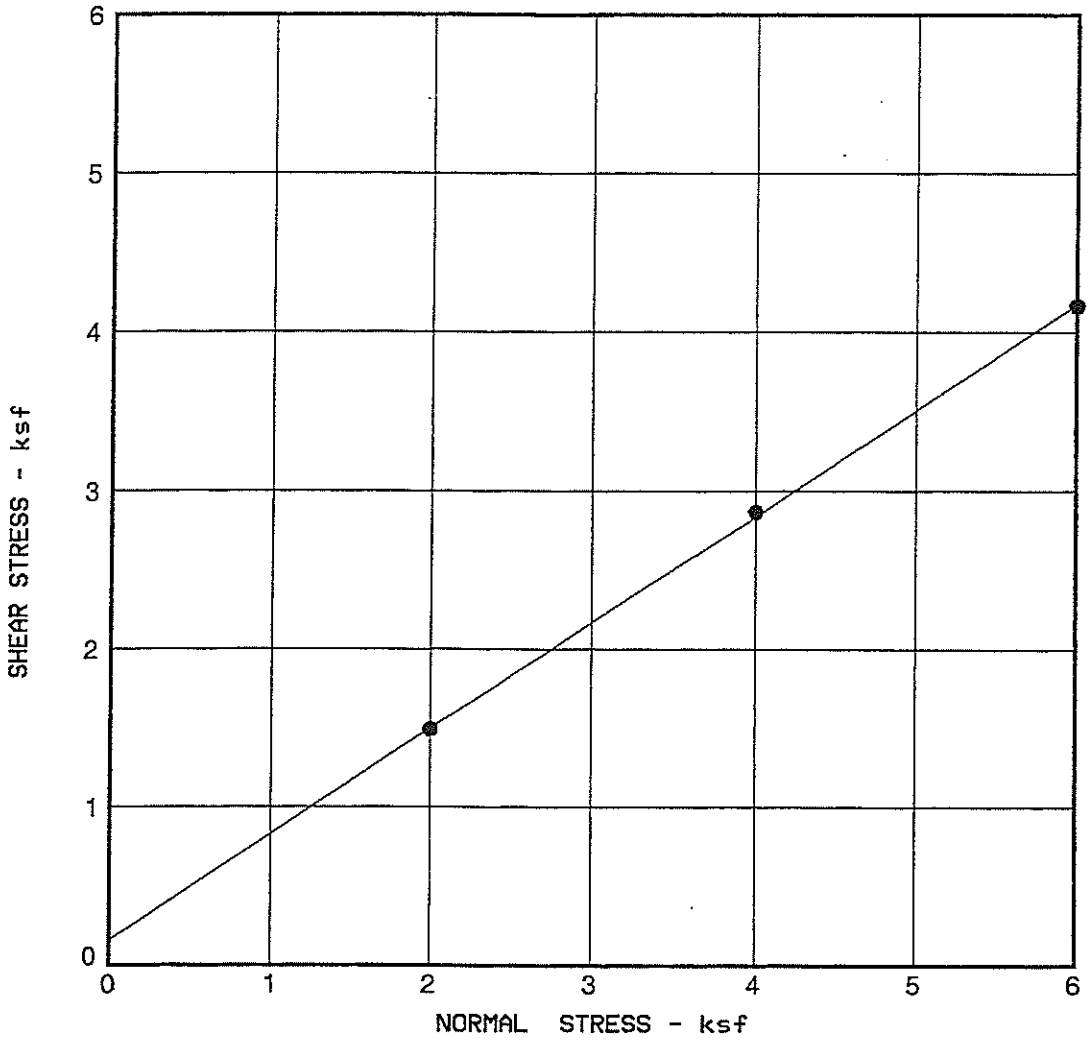
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-12



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	2000	4000	6000
Ultimate Shear - psf	1488	2868	4164
Shear Strain - %	2.1	4.1	4.1

Boring	KB-7
Depth - ft	40.0
Friction Angle - deg	34
Cohesion - ksf	0.16
Description	Sandy Siltstone
Classification	NA

KLEINFELDER

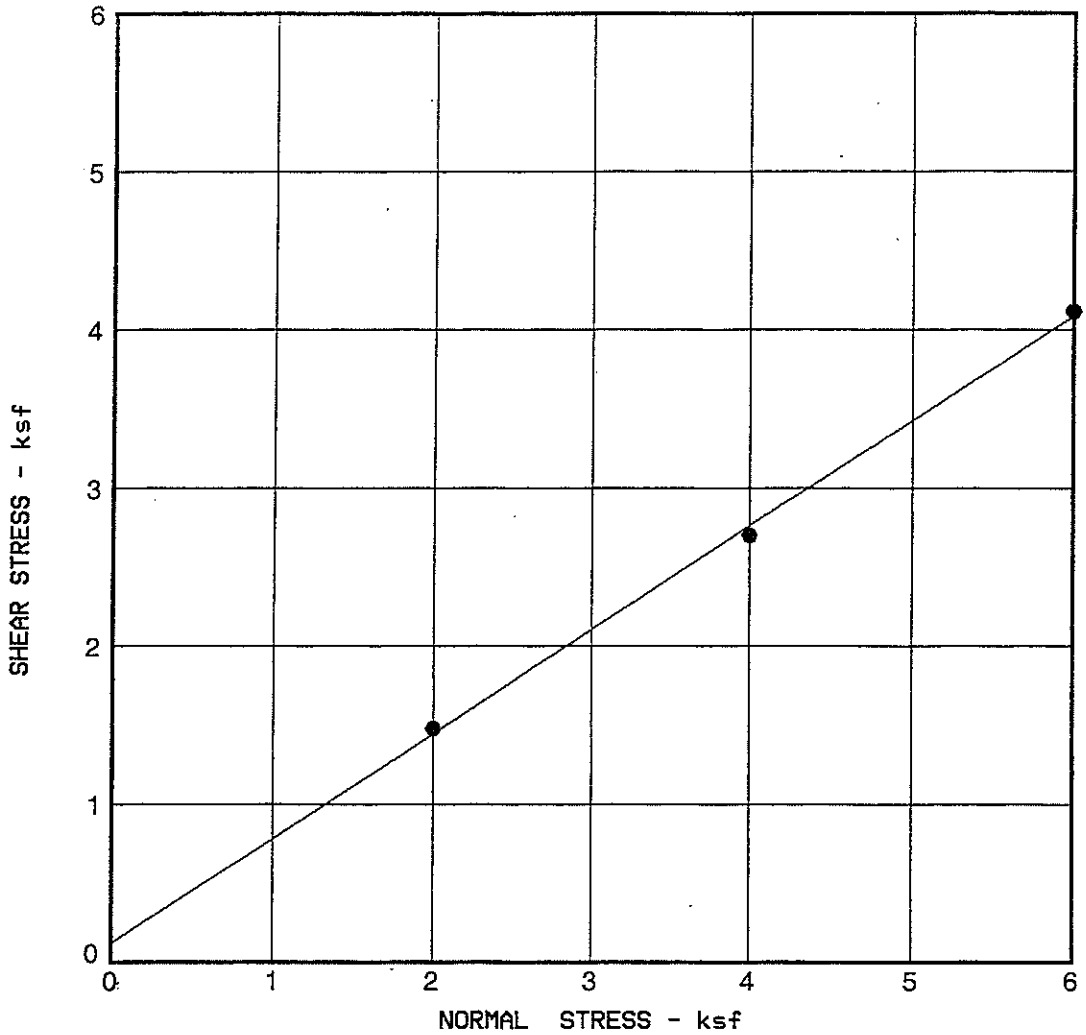
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-13



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	2000	4000	6000
Ultimate Shear - psf	1476	2700	4116
Shear Strain - %	10.3	10.3	5.0

Boring	KB-8 *
Depth - ft	50.0
Friction Angle - deg	33
Cohesion - ksf	0.12
Description	Sandstone
Classification	NA

*Sample compacted to 90% of Maximum Dry Density
Maximum Dry Density = 116.0 pcf; Optimum Moisture Content = 14.0 %
Test Sample: Dry Density = 104.4 pcf, Moisture Content = 14.2 %

KLEINFELDER

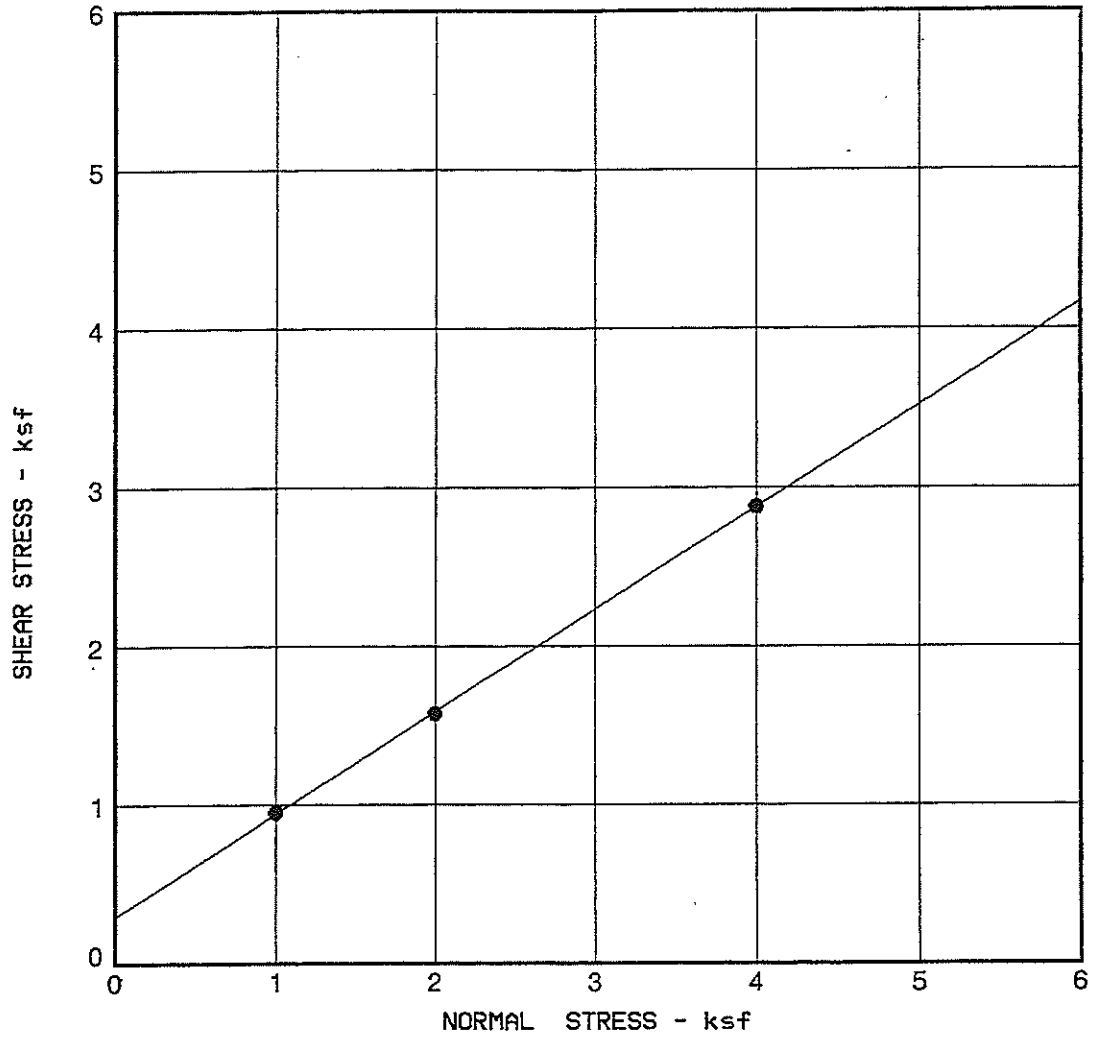
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-14



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	1000	2000	4000
Ultimate Shear - psf	948	1572	2880
Shear Strain - %	1.7	1.7	10.3

Boring	KB-10 *
Depth - ft	9.0
Friction Angle - deg	33
Cohesion - ksf	0.29
Description	Siltstone/Sandstone
Classification	NA

*Sample compacted to 90% of Maximum Dry Density
Maximum Dry Density = 127.5 pcf; Optimum Moisture Content = 11.0 %
Test Sample: Dry Density = 114.8 pcf, Moisture Content = 11.0 %

KLEINFELDER

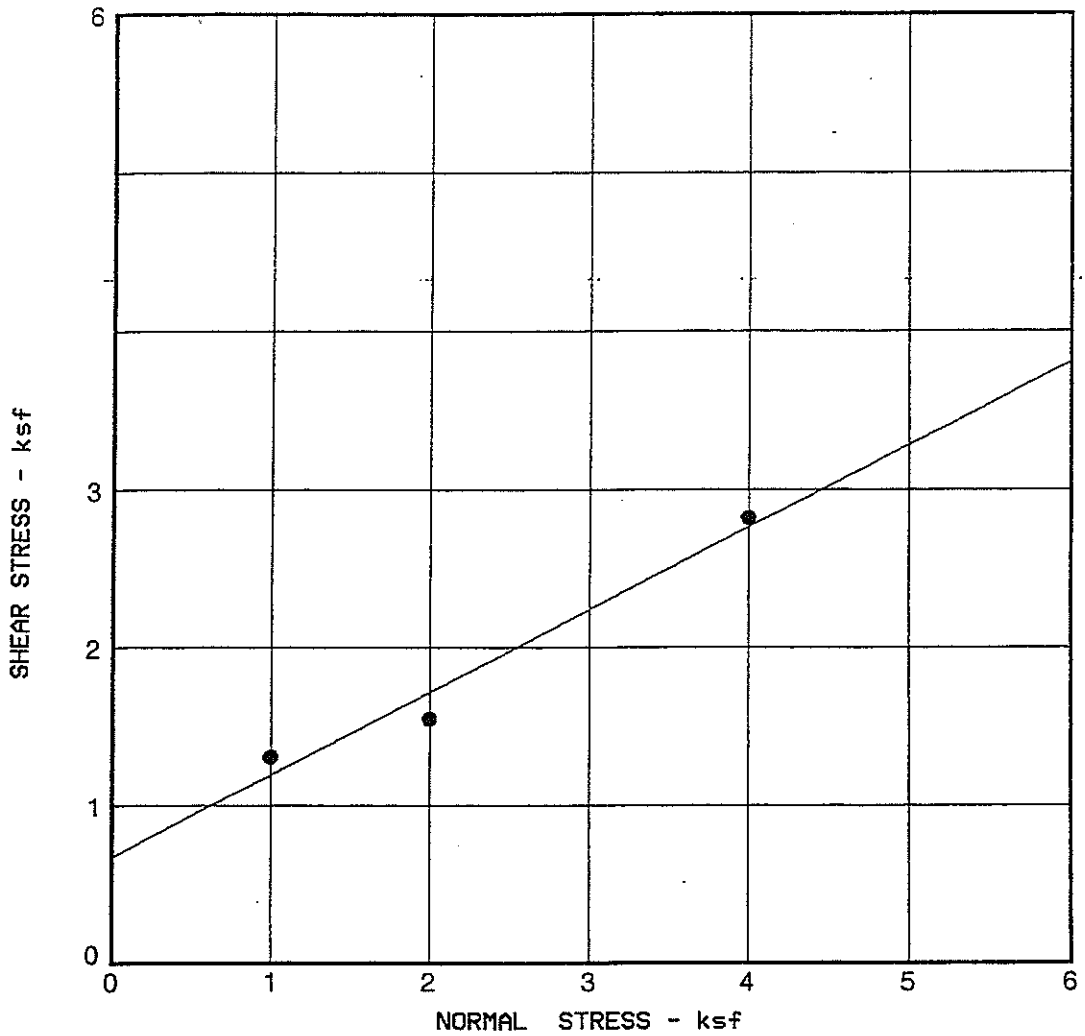
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-15



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	1000	2000	4000
Ultimate Shear - psf	1308	1548	2820
Shear Strain - %	2.9	4.1	4.6

Boring	KB-12
Depth - ft	20.0
Friction Angle - deg	28
Cohesion - ksf	0.67
Description	Sandstone
Classification	NA

KLEINFELDER

PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

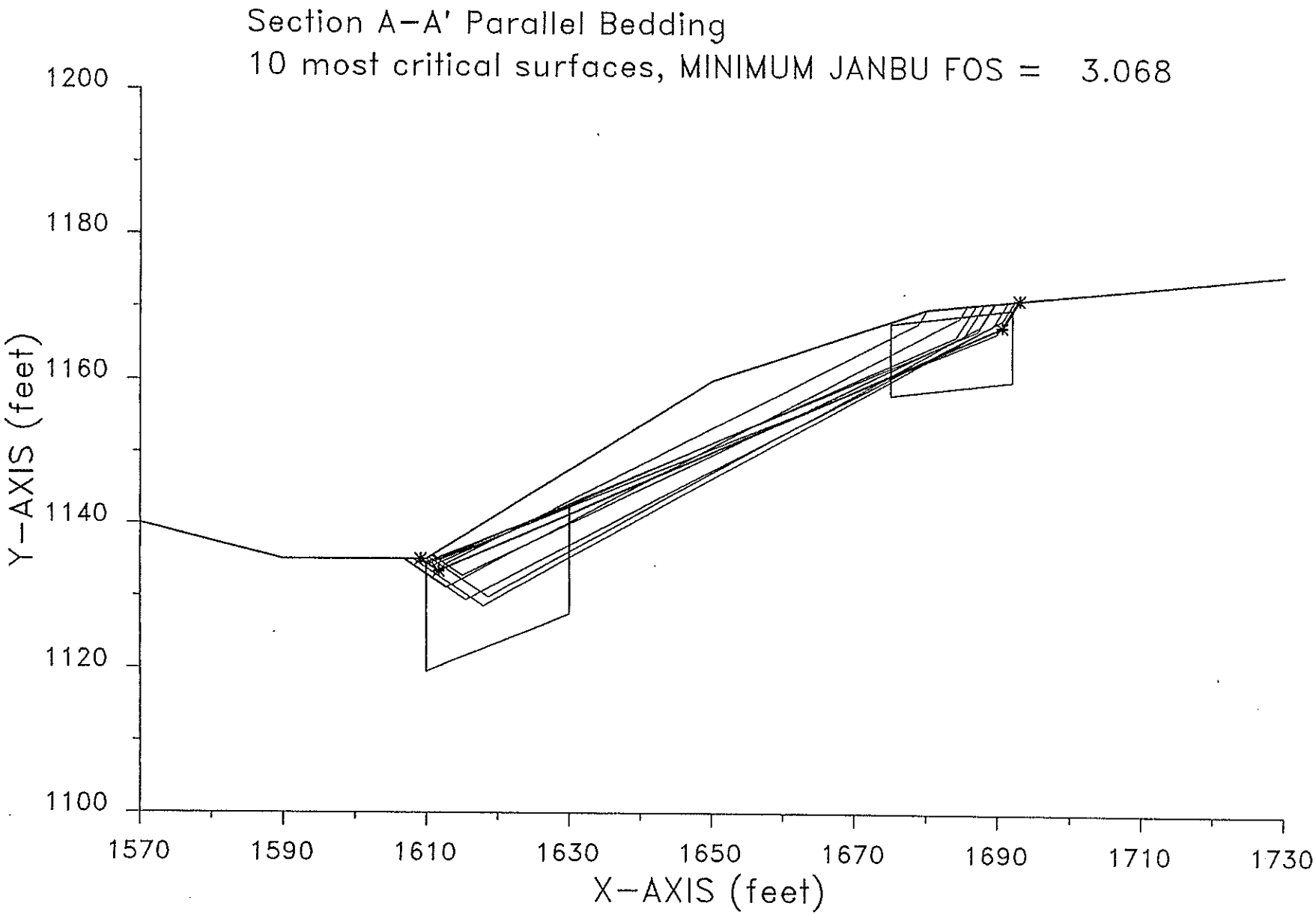
B-16

Analyses Number	File Name	Profile Name	Analyses Type	Condition	FS (Static)	FS (Pseudo-Static)	Description/Comments
1		A-A'	Parallel	South Slope Bridge Abutment	3.1	2.2	Existing condition stable, no improvements recommended
2		B-B'	Parallel	Southwest Slope Bridge Abutment	2.1	1.5	Existing condition stable, no improvements recommended
2		B-B'	Parallel	Southwest Slope Bridge Abutment (CDMG Tension crack)	2.3	1.6	Tension crack at the toe stability evaluation
3		C-C'	Qls Back Calc.	Existing landslide -Back Calculation of Slide Plane	1.0	N/A	Evaluation of existing conditions
3		C-C'	Parallel	Proposed Grades with Landslide Removed	1.0	<1.1	Evaluation of slope assuming failure of Qls-1 (removal of Slide Debris)
3		C-C'	Parallel	Proposed Grades with Landslide Removed	1.6	1.2	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed
3		C-C'	Parallel	Proposed Grades with Landslide In-Place	1.6	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
4		C2-D'	Parallel	Proposed Grades with Landslide Removed	<1.5	<1.1	Evaluation of existing conditions, FS<1.5; Slope mitigation (RUA) required
4		C2-D'	Parallel	Proposed Grades with Landslide Removed	1.7	1.3	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed (With Landslide In Place = Critical Case)
4		C2-D'	Parallel	Proposed Grades with Landslide In-Place	1.5	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
5		D-D'	Cross	South Facing Cut Slope 3	>1.5	>1.1	Stable by observation Cross Bedding no remediation required
6		D-D"	Parallel	Proposed Grades with Landslide Removed	<1.5	<1.1	Evaluation of existing conditions, FS<1.5; Slope mitigation (RUA) required
6		D-D"	Parallel	Proposed Grades with Landslide Removed	1.7	1.1	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide Removed
6		D-D"	Parallel	Proposed Grades with Landslide In-Place	1.7	1.2	Setback analysis for Qls-1 with setback measured from top of slope adjacent to Lot 55 - Landslide In-Place
7		E-E'	Parallel	Daylight cut at top of slope	1.6	1.2	Block analysis of entire slope
7		E-E'	Parallel	Daylight cut at top of slope	1.9	1.4	Initiation at mid slope
7		E-E'	Parallel	Daylight cut at top of slope	2.5	1.5	Top of slope with 13 degree bedding plane analysis
8		F-F'	Cross	Daylight cut at top of slope	2.4	2.0	Circular Analyses with 5' tension crack
9		G-G'	Parallel	Daylight cut at top of slope/Qls-2	1.4	---	Evaluation of existing conditions, FS<1.5; Slope mitigation required
9		G-G'	Circular	Daylight cut shear key / Geogrid Reinforced Slope	1.5	1.1	Circular failure through geogrid slope (With Qls-2 Removed)
9		G-G'	Parallel	Daylight cut shear key / Geogrid Reinforced Slope	1.9	1.5	Along bedding failure at heel of reinforced shear key
10		H-H'	Cross	Fill Slope	>1.5	>1.1	Stable by observation and I-I' Analysis
11		I-I'	Cross	Fill Slope	1.7	1.2	Assumed rotational failure below B' Street
11		I-I'	Cross	Fill Slope	1.8	1.3	Assumed midslope rotational failure above B' Street
12		J-J'	Cross	Fill over cut slope	>1.5	>1.1	Stable by observation, cross bedded slope
13		K-K'	Circular	Fill Slope	1.9	1.3	Bottom of fill slope
13		K-K'	Circular	Fill Slope	1.9	1.4	Middle of fill slope
13		K-K'	Circular	Fill Slope	2.0	1.4	Top of fill slope
13		K-K'	Parallel	Fill Slope	1.7	1.1	Sandstone Block Failure
14		L-L'	Cross	Fill over Natural Slope	1.8	1.5	Sandstone Circular failure
15		M-M'	Circular	Proposed Fill slope with Retaining Walls	*<1.5*	*<1.1*	Circular failure through engineered fill with retaining walls FS<1.5 and <1.1
15		M-M'	Circular	Proposed Fill slope with geogrid reinforcement	*1.5*	*1.1*	Circular failure through geogrid reinforced engineered fill
16		M2-M2'	Circular	Proposed Fill slope with geogrid reinforcement	2.3	>1.1	Block failure along backcut and bedding planes
17		N-N'	Syncline Parallel	Proposed Cut Slope	>1.5	>1.1	Stable by observation; Steeply dipping bedding
18		O-O'	Folded	Qts over Kcs Cut Slope	1.7	1.2	Folded bedrock circular analysis through toe of slope
18		O-O'	Parallel	Qts over Kcs Cut Slope	1.6	1.1	Folded bedrock block analysis

Slope Stability Analysis Summary Table

18		O-O'	Circular	Qts over Kcs Cut Slope	1.7	1.3	Circular failure through Qts at top of slope
19		P-P'	Qls Back Calc.	Existing Landslide - Back Calculation	1.0	---	Specified Surface Spencers Method
19		P-P'	Qls Back Calc.	Existing Landslide - Back Calculation	0.9	---	Circular Failure Surface Bishops method
19		P-P'	Folded	2.:1 layback in Qts over steepened slope	1.7	1.2	Circular failure in Qts after removal of Qls-3 , FS<1.5; Slope mitigation required
19		P-P'	Circular	Replacement fill at Toe of Slope and 2:1 (H:V) lay back in Qts	1.7	1.2	Circular failure through Qts
20		U-U' formerly AA-AA'	Circular	Daylight Cut at Natural Slope 2	2.0	1.6	Circular analysis through toe of slope
20		U-U' formerly AA-AA'	Parallel	Daylight Cut at Natural Slope 2	1.5	1.2	Along bedding analysis through toe of slope
21		Q-Q'	Qls Back Calc.	Existing Landslide(Qls-3) - Back Calculation	1.0	---	Evaluation of existing conditions
21		Q-Q'	Folded	Qts over steepened slope	---	---	See Analyses for P-P'
22		R-R'	Cross	Cut Slope No. 2	>1.5	>1.1	Stable by Observation
23		S-S'	Cross	Cut Slope	>1.5	>1.1	Stable by Observation
24		T-T'	Parallel	Sandstone monument on slope with Retaining Wall at Toe of Slope	1.0	<1.1	Along Bedding Failure plane; FS<1.5, Mitigation Recommended
24		T-T'	Parallel	Sandstone monument on slope with Retaining Wall at Toe of Slope	1.5	1.1	Load that the wall is required to carry to achieve a FS=1.5: 13 kips / lf
24		T-T'	Parallel	Retaining Wall at Toe of Slope without Sandstone Monument	1.5	1.1	Load that the wall is required to carry to achieve a FS=1.5: 0.9 kips / lf
25		V-V'	Parallel	Existing Slope (Natural Slope 2)	1.5	1.3	Calculated setback distance for FS>1.5 and >1.1 (pseudo-static)
25		V-V'	Parallel	Existing Slope (Natural Slope 2)	<1.5	<1.1	Existing Slope FS<1.5 by Observation and evaluation of failure plane with FS=1.5
25		V-V'	Parallel	Existing Slope (Natural Slope 2)	>1.5	>1.1	Assumed failure plane at Daylight Cut Shear Key; FS >1.5 and >1.1 by Observation and evaluation of failure plane with FS>1.5 and >1.1
26		W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.9	1.6	Existing condition after Surficial Failure/Removal; assumed failure through top of slope
26		W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.6	1.3	Assumed failure plane through toe of slope after Surficial Failure/Removal
26		W-W'	Parallel	North Facing Natural Slope with Surficial failure Removed	1.5	1.1	Calculated Setback Distance; Assumed failure plane for FS=1.5 after Surficial Removal / Failure
27		X-X'	Circular	Fill Slope 3 over Natural Slope 1	2.8	2.2	Assumed circular failure near toe of slope
28		Y-Y'	Circular	Cut Slope No. 2	2.0	1.4	Circular failure through Qts;cut slope
Notes:		See Geologic Cross Section for left or right reference do not look at slope stability analysis sheets This average value represents the entire slope ht. See geologic profiles for details					
		For the Pseudo Static cases a horizontal coefficient Kh=0.15 and Kv=0.0 was used in the analysis					

SECTA-AB 10-05-** 9:44



XSTABL File: SECTA-AB 10-05-** 9:44

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section A-A' Parallel Bedding

SEGMENT BOUNDARY COORDINATES
---

5 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1570.0	1140.0	1590.0	1135.0	1
2	1590.0	1135.0	1610.0	1135.0	1
3	1610.0	1135.0	1650.0	1160.0	1
4	1650.0	1160.0	1680.0	1170.0	1
5	1680.0	1170.0	1730.0	1175.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 4

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-25.00	4000.0	28.00
2	10.00	4000.0	28.00
3	35.00	150.0	24.00

4	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

400 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 8.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1610.0	1127.0	1630.0	1135.0	15.0
2	1675.0	1163.0	1692.0	1165.0	10.0

```
*************************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
*************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*************************************************************************
```

USER SELECTED option to maintain strength greater than zero

```
*************************************************************
**     Factor of safety calculation for surface #     7    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.5253    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1617.47	1139.67
2	1620.54	1137.68
3	1627.25	1133.32
4	1679.36	1160.02
5	1683.72	1166.73
6	1686.25	1170.63

```
*************************************************************
**     Factor of safety calculation for surface #     9    **
```

```
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.9968    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1590.58	1135.00
2	1597.25	1130.67
3	1603.96	1126.31
4	1610.67	1121.95
5	1675.16	1159.96
6	1679.51	1166.67
7	1681.80	1170.18

```
*************************************************************
**     Factor of safety calculation for surface #    12    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.7569    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1619.93	1141.21
2	1625.25	1137.76
3	1682.54	1161.20
4	1686.90	1167.91
5	1688.83	1170.88

```
*************************************************************
**     Factor of safety calculation for surface #    18    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.2734    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1622.88	1143.05
2	1628.40	1139.47
3	1675.21	1158.08
4	1679.57	1164.79
5	1683.16	1170.32

```
*************************************************************
**     Factor of safety calculation for surface #    23    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.3627    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1622.20	1142.63
2	1626.03	1140.14
3	1676.19	1162.15
4	1680.54	1168.86
5	1681.38	1170.14

```
************************************************************
**     Factor of safety calculation for surface #    25    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  48.8413    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1611.26	1135.79
2	1612.63	1134.90
3	1619.34	1130.54
4	1626.04	1126.19
5	1682.31	1168.26
6	1683.67	1170.37

```
************************************************************
**     Factor of safety calculation for surface #    32    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.7614    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1624.27	1143.92
2	1629.09	1140.79
3	1680.77	1163.47
4	1685.13	1170.18
5	1685.36	1170.54

```
************************************************************
**     Factor of safety calculation for surface #    33    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.6153    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1616.14	1138.84

2	1617.95	1137.66
3	1675.30	1158.28
4	1679.66	1164.99
5	1683.11	1170.31

```
************************************************************
**     Factor of safety calculation for surface #    43    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.6580    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1611.64	1136.03
2	1612.84	1135.25
3	1675.05	1159.31
4	1679.40	1166.02
5	1682.13	1170.21

```
************************************************************
**     Factor of safety calculation for surface #    49    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.4190    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1615.06	1138.16
2	1619.10	1135.54
3	1676.03	1158.72
4	1680.39	1165.43
5	1683.59	1170.36

```
************************************************************
**     Factor of safety calculation for surface #    50    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-139.0385    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1607.35	1135.00
2	1607.80	1134.70
3	1614.51	1130.35
4	1621.22	1125.99
5	1678.05	1167.71
6	1679.41	1169.80

```
************************************************************
```

```
**      Factor of safety calculation for surface #     58     **
**      failed to converge within FIFTY iterations            **
**                                                            **
**    The last calculated value of the FOS was    6.5230     **
**    This will be ignored for final summary of results      **
*************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1619.01	1140.63
2	1623.50	1137.72
3	1681.75	1160.84
4	1686.11	1167.55
5	1688.23	1170.82

```
*************************************************************
**      Factor of safety calculation for surface #     69     **
**      failed to converge within FIFTY iterations            **
**                                                            **
**    The last calculated value of the FOS was    8.8864     **
**    This will be ignored for final summary of results      **
*************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1622.54	1142.84
2	1628.88	1138.72
3	1675.52	1160.77
4	1679.88	1167.48
5	1681.62	1170.16

```
*************************************************************
**      Factor of safety calculation for surface #     70     **
**      failed to converge within FIFTY iterations            **
**                                                            **
**    The last calculated value of the FOS was-767.7588      **
**    This will be ignored for final summary of results      **
*************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.56	1137.85
2	1614.61	1137.81
3	1621.32	1133.45
4	1628.03	1129.10
5	1676.91	1164.87
6	1680.26	1170.03

```
*************************************************************
**      Factor of safety calculation for surface #     72     **
**      failed to converge within FIFTY iterations            **
**                                                            **
**    The last calculated value of the FOS was 105.7630      **
**    This will be ignored for final summary of results      **
*************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1599.63	1135.00
2	1603.37	1132.57
3	1610.08	1128.22
4	1616.79	1123.86
5	1677.24	1168.01
6	1678.12	1169.37

```
************************************************************
**     Factor of safety calculation for surface #    78    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.4067    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1617.08	1139.42
2	1619.90	1137.59
3	1626.61	1133.24
4	1675.57	1158.89
5	1679.93	1165.60
6	1682.98	1170.30

```
************************************************************
**     Factor of safety calculation for surface #    85    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.6237    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1619.58	1140.99
2	1621.98	1139.42
3	1628.69	1135.07
4	1675.11	1160.41
5	1679.47	1167.12
6	1681.43	1170.14

```
************************************************************
**     Factor of safety calculation for surface #    86    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.2671    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1623.05	1143.16
2	1629.48	1138.98
3	1676.00	1158.60
4	1680.36	1165.31
5	1683.64	1170.36

```
************************************************************
**     Factor of safety calculation for surface #    87    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was1766.5090    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.44	1137.78
2	1619.63	1134.41
3	1626.34	1130.05
4	1677.33	1168.21
5	1678.07	1169.36

```
************************************************************
**     Factor of safety calculation for surface #    90    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.0482    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1619.68	1141.05
2	1622.25	1139.39
3	1685.85	1160.25
4	1690.20	1166.96
5	1693.02	1171.30

```
************************************************************
**     Factor of safety calculation for surface #    92    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.3617    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1625.53	1144.71
2	1629.52	1142.11
3	1677.36	1164.95
4	1680.68	1170.07

```
************************************************************
```

```
**     Factor of safety calculation for surface #   104     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was 163.7817     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1613.07	1136.92
2	1618.90	1133.14
3	1625.61	1128.78
4	1676.67	1165.24
5	1679.70	1169.90

```
************************************************************
**     Factor of safety calculation for surface #   113     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  24.2548     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1612.32	1136.45
2	1613.25	1135.84
3	1619.96	1131.48
4	1626.67	1127.13
5	1679.56	1165.36
6	1682.75	1170.28

```
************************************************************
**     Factor of safety calculation for surface #   122     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  24.3405     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.39	1137.74
2	1616.31	1136.49
3	1623.02	1132.13
4	1629.73	1127.78
5	1684.15	1166.69
6	1686.74	1170.67

```
************************************************************
**     Factor of safety calculation for surface #   143     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was   6.5375     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1601.93	1135.00
2	1606.84	1131.81
3	1613.55	1127.46
4	1675.02	1159.10
5	1679.38	1165.81
6	1682.24	1170.22

```
************************************************************
**     Factor of safety calculation for surface #   144    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  95.5760    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1612.34	1136.46
2	1613.21	1135.89
3	1619.92	1131.54
4	1626.63	1127.18
5	1684.47	1167.78
6	1686.32	1170.63

```
************************************************************
**     Factor of safety calculation for surface #   146    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.1020    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1624.31	1143.94
2	1629.90	1140.31
3	1689.58	1162.08
4	1693.94	1168.79
5	1695.75	1171.58

```
************************************************************
**     Factor of safety calculation for surface #   158    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.1327    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1617.97	1139.98
2	1621.99	1137.37
3	1685.50	1159.97
4	1689.86	1166.68
5	1692.85	1171.28

```
************************************************************
**     Factor of safety calculation for surface #   171    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   4.4864    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1613.85	1137.41
2	1615.82	1136.13
3	1681.23	1159.75
4	1685.59	1166.46
5	1688.44	1170.84

```
************************************************************
**     Factor of safety calculation for surface #   173    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-197.6234    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1613.57	1137.23
2	1613.68	1137.17
3	1620.39	1132.81
4	1627.10	1128.45
5	1676.15	1166.84
6	1677.70	1169.23

```
************************************************************
**     Factor of safety calculation for surface #   185    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.7008    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1618.53	1140.33
2	1620.47	1139.07
3	1627.18	1134.72
4	1678.86	1159.54
5	1683.22	1166.25
6	1686.05	1170.61

```
************************************************************
**     Factor of safety calculation for surface #   189    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  31.3781    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.93	1135.58
2	1611.86	1134.97
3	1618.57	1130.61
4	1625.28	1126.26
5	1676.24	1162.39
6	1680.60	1169.10
7	1681.27	1170.13

```
************************************************************
**     Factor of safety calculation for surface #   194    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  51.1258    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.95	1138.10
2	1619.54	1135.12
3	1626.24	1130.76
4	1680.05	1168.46
5	1681.13	1170.11

```
************************************************************
**     Factor of safety calculation for surface #   197    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.8761    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1615.96	1138.73
2	1621.93	1134.85
3	1677.05	1159.03
4	1681.40	1165.74
5	1684.46	1170.45

```
************************************************************
**     Factor of safety calculation for surface #   198    **
**     failed to converge within FIFTY iterations          **
**                                                         **
```

```
**    The last calculated value of the FOS was   5.9406    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1617.24	1139.52
2	1623.01	1135.77
3	1676.30	1160.51
4	1680.65	1167.22
5	1682.63	1170.26

```
************************************************************
**     Factor of safety calculation for surface #   202    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.7419    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1621.56	1142.22
2	1625.86	1139.43
3	1681.48	1159.99
4	1685.84	1166.70
5	1688.54	1170.85

```
************************************************************
**     Factor of safety calculation for surface #   203    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  26.2672    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.20	1137.63
2	1620.60	1133.47
3	1627.31	1129.11
4	1682.94	1168.58
5	1684.13	1170.41

```
************************************************************
**     Factor of safety calculation for surface #   218    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.3004    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point	x-surf	y-surf

No.	(ft)	(ft)
1	1619.22	1140.77
2	1622.41	1138.69
3	1682.08	1161.45
4	1686.44	1168.16
5	1688.17	1170.82

```
************************************************************
**     Factor of safety calculation for surface #   226    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   4.9279    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1617.35	1139.59
2	1621.58	1136.85
3	1677.47	1162.05
4	1681.83	1168.76
5	1682.82	1170.28

```
************************************************************
**     Factor of safety calculation for surface #   237    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.0733    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1612.88	1136.80
2	1618.51	1133.14
3	1675.40	1158.24
4	1679.76	1164.95
5	1683.25	1170.32

```
************************************************************
**     Factor of safety calculation for surface #   238    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.2448    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1598.14	1135.00
2	1604.74	1130.71
3	1611.45	1126.36
4	1677.17	1159.28
5	1681.53	1165.99
6	1684.42	1170.44

```
************************************************************
**     Factor of safety calculation for surface #   240    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  61.1188    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1613.40	1137.13
2	1614.34	1136.52
3	1621.05	1132.17
4	1627.76	1127.81
5	1678.25	1166.28
6	1680.71	1170.07

```
************************************************************
**     Factor of safety calculation for surface #   245    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.9651    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1619.79	1141.12
2	1620.90	1140.40
3	1627.61	1136.04
4	1675.45	1161.01
5	1679.80	1167.72
6	1681.37	1170.14

```
************************************************************
**     Factor of safety calculation for surface #   252    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.8258    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1587.64	1135.59
2	1591.27	1133.23
3	1597.98	1128.88
4	1604.69	1124.52
5	1611.40	1120.16
6	1678.32	1160.44
7	1682.68	1167.15
8	1684.84	1170.48

```
************************************************************
```

```
**     Factor of safety calculation for surface #   254     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was   5.0866     **
**    This will be ignored for final summary of results     **
*************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1616.21	1138.88
2	1619.96	1136.44
3	1626.67	1132.09
4	1676.64	1159.94
5	1680.99	1166.65
6	1683.39	1170.34

```
*************************************************************
**     Factor of safety calculation for surface #   282     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was   5.4906     **
**    This will be ignored for final summary of results     **
*************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1613.81	1137.38
2	1620.46	1133.07
3	1627.17	1128.71
4	1675.67	1158.85
5	1680.03	1165.56
6	1683.12	1170.31

```
*************************************************************
**     Factor of safety calculation for surface #   295     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  48.6455     **
**    This will be ignored for final summary of results     **
*************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1616.91	1139.32
2	1621.25	1136.50
3	1627.96	1132.14
4	1675.43	1165.91
5	1677.56	1169.19

```
*************************************************************
**     Factor of safety calculation for surface #   305     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  95.3742     **
**    This will be ignored for final summary of results     **
*************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1594.72	1135.00
2	1601.28	1130.74
3	1607.99	1126.39
4	1614.70	1122.03
5	1677.70	1166.49
6	1679.97	1169.99

```
************************************************************
**     Factor of safety calculation for surface #   312    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.1316    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1621.50	1142.19
2	1622.89	1141.29
3	1629.60	1136.93
4	1678.69	1161.25
5	1683.04	1167.96
6	1684.67	1170.47

```
************************************************************
**     Factor of safety calculation for surface #   324    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.4132    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1618.46	1140.29
2	1621.24	1138.48
3	1685.56	1160.22
4	1689.91	1166.93
5	1692.74	1171.27

```
************************************************************
**     Factor of safety calculation for surface #   338    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  32.4553    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1609.93	1135.00
2	1616.56	1130.70
3	1623.27	1126.34
4	1675.25	1164.41
5	1678.58	1169.53

```
************************************************************
**     Factor of safety calculation for surface #   345    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was 111.6593    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1587.84	1135.54
2	1591.15	1133.39
3	1597.86	1129.03
4	1604.57	1124.68
5	1611.28	1120.32
6	1676.05	1165.70
7	1678.52	1169.51

```
************************************************************
**     Factor of safety calculation for surface #   381    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.5902    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1622.95	1143.09
2	1626.20	1140.98
3	1679.67	1160.59
4	1684.03	1167.30
5	1686.18	1170.62

```
************************************************************
**     Factor of safety calculation for surface #   393    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.0926    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1621.31	1142.07
2	1627.18	1138.27
3	1677.47	1163.15
4	1681.83	1169.86
5	1682.06	1170.21

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1609.24	1135.00
2	1611.78	1133.35
3	1690.55	1167.57
4	1692.97	1171.30

** Corrected JANBU FOS = 3.068 ** (Fo factor = 1.013)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.95	1135.60
2	1612.05	1134.88
3	1689.77	1166.73
4	1692.72	1171.27

** Corrected JANBU FOS = 3.182 ** (Fo factor = 1.016)

Failure surface No. 3 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.86	1135.54
2	1612.75	1134.31
3	1678.75	1168.03
4	1680.03	1170.00

** Corrected JANBU FOS = 3.215 ** (Fo factor = 1.012)

Failure surface No. 4 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1608.88	1135.00
2	1610.05	1134.24
3	1687.09	1167.05
4	1689.64	1170.96

** Corrected JANBU FOS = 3.223 ** (Fo factor = 1.014)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1608.17	1135.00
2	1611.30	1132.97

3	1618.01	1128.61
4	1690.59	1168.55
5	1692.33	1171.23

** Corrected JANBU FOS = 3.317 ** (Fo factor = 1.045)

Failure surface No. 6 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1606.74	1135.00
2	1612.78	1131.07
3	1684.57	1168.84
4	1685.69	1170.57

** Corrected JANBU FOS = 3.332 ** (Fo factor = 1.032)

Failure surface No. 7 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1609.90	1135.00
2	1611.15	1134.19
3	1684.10	1166.28
4	1686.97	1170.70

** Corrected JANBU FOS = 3.337 ** (Fo factor = 1.016)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.36	1135.23
2	1611.99	1134.17
3	1618.70	1129.81
4	1687.37	1167.66
5	1689.50	1170.95

** Corrected JANBU FOS = 3.353 ** (Fo factor = 1.042)

Failure surface No. 9 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.83	1135.52
2	1615.06	1132.77
3	1685.34	1166.55
4	1688.11	1170.81

** Corrected JANBU FOS = 3.374 ** (Fo factor = 1.023)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1606.96	1135.00
2	1608.81	1133.80
3	1615.52	1129.44
4	1689.29	1167.88
5	1691.41	1171.14

** Corrected JANBU FOS = 3.412 ** (Fo factor = 1.040)

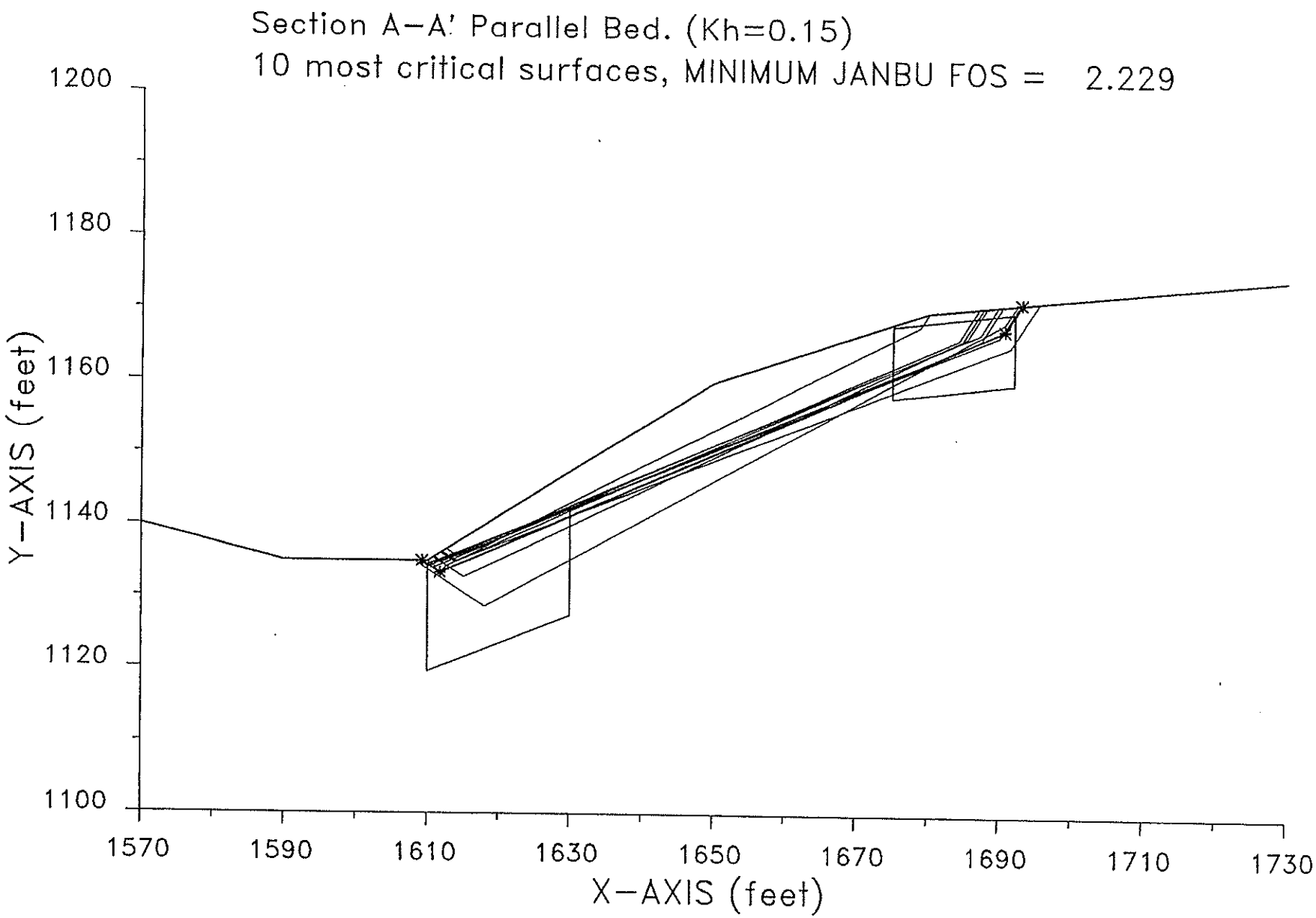
```
*****************************************************************
**                                                             **
** Out of the    400 surfaces generated and analyzed by XSTABL, **
**       54 surfaces were found to have MISLEADING FOS values. **
**                                                             **
*****************************************************************
```

The following is a summary of the TEN most critical surfaces

Problem Description : Section A-A' Parallel Bedding

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	3.068	1.013	1609.24	1692.97	7.083E+04
2.	3.182	1.016	1610.95	1692.72	6.382E+04
3.	3.215	1.012	1610.86	1680.03	4.431E+04
4.	3.223	1.014	1608.88	1689.64	5.786E+04
5.	3.317	1.045	1608.17	1692.33	1.226E+05
6.	3.332	1.032	1606.74	1685.69	7.878E+04
7.	3.337	1.016	1609.90	1686.97	5.930E+04
8.	3.353	1.042	1610.36	1689.50	1.114E+05
9.	3.374	1.023	1610.83	1688.11	8.198E+04
10.	3.412	1.040	1606.96	1691.41	1.129E+05

* * * END OF FILE * * *


Section A-A' Parallel Bed. (Kh=0.15)
10 most critical surfaces, MINIMUM JANBU FOS = 2.229
1200
1180
1160
1140
1120
1100
Y-AXIS (feet)
1570
1590
1610
1630
1650
1670
1690
1710
1730
X-AXIS (feet)

XSTABL File: SECTA-AE 10-05-** 9:46

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section A-A' Parallel Bed. (Kh=0.15)

SEGMENT BOUNDARY COORDINATES
---

5 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1570.0	1140.0	1590.0	1135.0	1
2	1590.0	1135.0	1610.0	1135.0	1
3	1610.0	1135.0	1650.0	1160.0	1
4	1650.0	1160.0	1680.0	1170.0	1
5	1680.0	1170.0	1730.0	1175.0	1

:

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 4

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-25.00	4000.0	28.00
2	10.00	4000.0	28.00
3	35.00	150.0	24.00

4	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

400 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 8.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1610.0	1127.0	1630.0	1135.0	15.0
2	1675.0	1163.0	1692.0	1165.0	10.0

```
************************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter. In such
cases, this effect can only be eliminated by reducing the "c" value.
************************************************************************
```

USER SELECTED option to maintain strength greater than zero

```
*************************************************************
**     Factor of safety calculation for surface #    18    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.0902    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1622.88	1143.05
2	1628.40	1139.47

3	1675.21	1158.08
4	1679.57	1164.79
5	1683.16	1170.32

```
************************************************************
**     Factor of safety calculation for surface #    25    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  46.8439    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1611.26	1135.79
2	1612.63	1134.90
3	1619.34	1130.54
4	1626.04	1126.19
5	1682.31	1168.26
6	1683.67	1170.37

```
************************************************************
**     Factor of safety calculation for surface #    50    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  24.0928    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1607.35	1135.00
2	1607.80	1134.70
3	1614.51	1130.35
4	1621.22	1125.99
5	1678.05	1167.71
6	1679.41	1169.80

```
************************************************************
**     Factor of safety calculation for surface #    70    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  17.1430    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.56	1137.85
2	1614.61	1137.81
3	1621.32	1133.45
4	1628.03	1129.10
5	1676.91	1164.87
6	1680.26	1170.03

```
************************************************************
**     Factor of safety calculation for surface #    72    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was 130.8873    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1599.63	1135.00
2	1603.37	1132.57
3	1610.08	1128.22
4	1616.79	1123.86
5	1677.24	1168.01
6	1678.12	1169.37

```
************************************************************
**     Factor of safety calculation for surface #    87    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  20.7710    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.44	1137.78
2	1619.63	1134.41
3	1626.34	1130.05
4	1677.33	1168.21
5	1678.07	1169.36

```
************************************************************
**     Factor of safety calculation for surface #   104    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was 208.5059    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1613.07	1136.92
2	1618.90	1133.14
3	1625.61	1128.78
4	1676.67	1165.24
5	1679.70	1169.90

```
************************************************************
**     Factor of safety calculation for surface #   113    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  19.8388    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1612.32	1136.45
2	1613.25	1135.84
3	1619.96	1131.48
4	1626.67	1127.13
5	1679.56	1165.36
6	1682.75	1170.28

```
************************************************************
**     Factor of safety calculation for surface #   122    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  21.7402    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.39	1137.74
2	1616.31	1136.49
3	1623.02	1132.13
4	1629.73	1127.78
5	1684.15	1166.69
6	1686.74	1170.67

```
************************************************************
**     Factor of safety calculation for surface #   144    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  15.1305    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1612.34	1136.46
2	1613.21	1135.89
3	1619.92	1131.54
4	1626.63	1127.18
5	1684.47	1167.78
6	1686.32	1170.63

```
************************************************************
**     Factor of safety calculation for surface #   173    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -84.1415    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point	x-surf	y-surf

No.	(ft)	(ft)
1	1613.57	1137.23
2	1613.68	1137.17
3	1620.39	1132.81
4	1627.10	1128.45
5	1676.15	1166.84
6	1677.70	1169.23

```
************************************************************
**     Factor of safety calculation for surface #   189    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  23.8775    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.93	1135.58
2	1611.86	1134.97
3	1618.57	1130.61
4	1625.28	1126.26
5	1676.24	1162.39
6	1680.60	1169.10
7	1681.27	1170.13

```
************************************************************
**     Factor of safety calculation for surface #   194    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  44.9831    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.95	1138.10
2	1619.54	1135.12
3	1626.24	1130.76
4	1680.05	1168.46
5	1681.13	1170.11

```
************************************************************
**     Factor of safety calculation for surface #   203    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  17.6501    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1614.20	1137.63
2	1620.60	1133.47
3	1627.31	1129.11

4	1682.94	1168.58
5	1684.13	1170.41

```
************************************************************
**     Factor of safety calculation for surface #   240    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  42.3897    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1613.40	1137.13
2	1614.34	1136.52
3	1621.05	1132.17
4	1627.76	1127.81
5	1678.25	1166.28
6	1680.71	1170.07

```
************************************************************
**     Factor of safety calculation for surface #   295    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  38.6112    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1616.91	1139.32
2	1621.25	1136.50
3	1627.96	1132.14
4	1675.43	1165.91
5	1677.56	1169.19

```
************************************************************
**     Factor of safety calculation for surface #   305    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was 150.9895    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1594.72	1135.00
2	1601.28	1130.74
3	1607.99	1126.39
4	1614.70	1122.03
5	1677.70	1166.49
6	1679.97	1169.99

```
************************************************************
**     Factor of safety calculation for surface #   338    **
```

```
**      failed to converge within FIFTY iterations          **
**                                                          **
**    The last calculated value of the FOS was  27.6815     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1609.93	1135.00
2	1616.56	1130.70
3	1623.27	1126.34
4	1675.25	1164.41
5	1678.58	1169.53

```
************************************************************
**     Factor of safety calculation for surface #   345    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  68.2778    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1587.84	1135.54
2	1591.15	1133.39
3	1597.86	1129.03
4	1604.57	1124.68
5	1611.28	1120.32
6	1676.05	1165.70
7	1678.52	1169.51

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1609.24	1135.00
2	1611.78	1133.35
3	1690.55	1167.57
4	1692.97	1171.30

** Corrected JANBU FOS = 2.229 ** (Fo factor = 1.013)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.95	1135.60

2	1612.05	1134.88
3	1689.77	1166.73
4	1692.72	1171.27

** Corrected JANBU FOS = 2.259 ** (Fo factor = 1.016)

Failure surface No. 3 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1608.88	1135.00
2	1610.05	1134.24
3	1687.09	1167.05
4	1689.64	1170.96

** Corrected JANBU FOS = 2.316 ** (Fo factor = 1.014)

Failure surface No. 4 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1609.90	1135.00
2	1611.15	1134.19
3	1684.10	1166.28
4	1686.97	1170.70

** Corrected JANBU FOS = 2.421 ** (Fo factor = 1.016)

Failure surface No. 5 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.86	1135.54
2	1612.75	1134.31
3	1678.75	1168.03
4	1680.03	1170.00

** Corrected JANBU FOS = 2.435 ** (Fo factor = 1.012)

Failure surface No. 6 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1612.70	1136.69
2	1614.16	1135.74
3	1687.06	1165.99
4	1690.34	1171.03

** Corrected JANBU FOS = 2.489 ** (Fo factor = 1.018)

Failure surface No. 7 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1612.10	1136.31
2	1614.06	1135.04
3	1691.32	1165.28
4	1695.39	1171.54

** Corrected JANBU FOS = 2.490 ** (Fo factor = 1.022)

Failure surface No. 8 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1610.83	1135.52
2	1615.06	1132.77
3	1685.34	1166.55
4	1688.11	1170.81

** Corrected JANBU FOS = 2.514 ** (Fo factor = 1.023)

Failure surface No. 9 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1611.90	1136.19
2	1613.91	1134.89
3	1684.62	1166.11
4	1687.64	1170.76

** Corrected JANBU FOS = 2.523 ** (Fo factor = 1.017)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1608.17	1135.00
2	1611.30	1132.97
3	1618.01	1128.61
4	1690.59	1168.55
5	1692.33	1171.23

** Corrected JANBU FOS = 2.528 ** (Fo factor = 1.045)

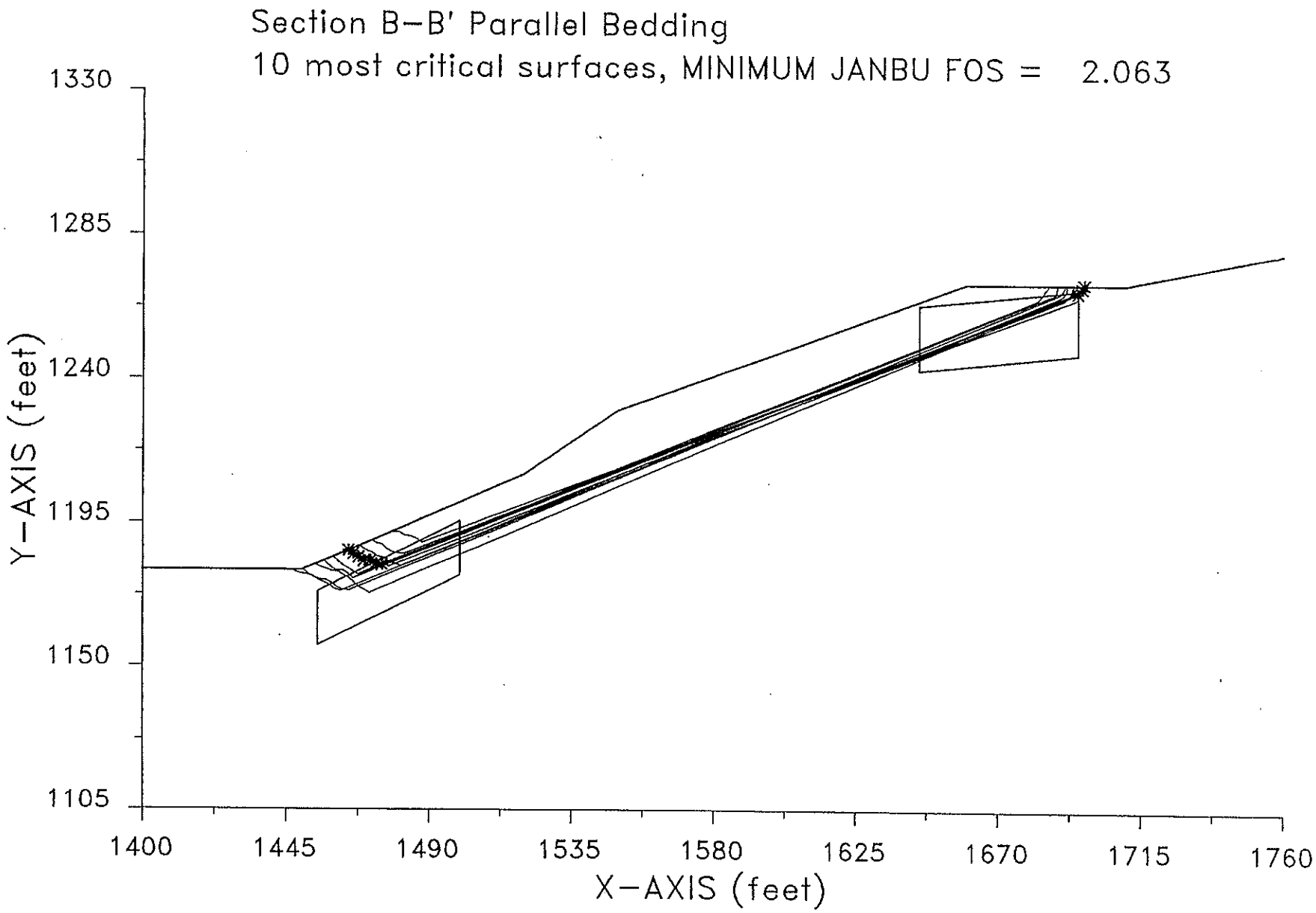
```
*********************************************************************
**                                                                 **
**  Out of the    400 surfaces generated and analyzed by XSTABL,   **
**       19 surfaces were found to have MISLEADING FOS values.     **
**                                                                 **
*********************************************************************
```

The following is a summary of the TEN most critical surfaces

Problem Description : Section A-A' Parallel Bed. (Kh=0.15)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	2.229	1.013	1609.24	1692.97	6.954E+04
2.	2.259	1.016	1610.95	1692.72	6.187E+04
3.	2.316	1.014	1608.88	1689.64	5.627E+04
4.	2.421	1.016	1609.90	1686.97	5.765E+04
5.	2.435	1.012	1610.86	1680.03	4.371E+04
6.	2.489	1.018	1612.70	1690.34	6.415E+04
7.	2.490	1.022	1612.10	1695.39	7.964E+04
8.	2.514	1.023	1610.83	1688.11	8.103E+04
9.	2.523	1.017	1611.90	1687.64	6.438E+04
10.	2.528	1.045	1608.17	1692.33	1.230E+05

* * * END OF FILE * * *


Section B-B' Parallel Bedding
10 most critical surfaces, MINIMUM JANBU FOS = 2.063
1330
1285
1240
1195
1150
1105
Y-AXIS (feet)
1400
1445
1490
1535
1580
1625
1670
1715
1760
X-AXIS (feet)

XSTABL File: SECTB-BX 10-05-** 9:57

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section B-B' Parallel Bedding

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1400.0	1180.0	1450.0	1180.0	1
2	1450.0	1180.0	1520.0	1210.0	1
3	1520.0	1210.0	1550.0	1230.0	1
4	1550.0	1230.0	1660.0	1270.0	1
5	1660.0	1270.0	1710.0	1270.0	1
6	1710.0	1270.0	1760.0	1280.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	15.00	4000.0	28.00
2	45.00	150.0	24.00

3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

1500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 2.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1455.0	1165.0	1500.0	1187.0	17.0
2	1645.0	1253.0	1695.0	1258.0	20.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1464.70	1186.30
2	1466.19	1185.18
3	1467.91	1184.16
4	1469.57	1183.05
5	1471.57	1183.05
6	1473.37	1182.17
7	1475.34	1181.82
8	1694.90	1267.35
9	1696.29	1268.78
10	1696.94	1270.00

** Corrected JANBU FOS = 2.063 ** (Fo factor = 1.015)

Failure surface No. 2 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1447.32	1180.00
2	1447.74	1179.57
3	1449.65	1178.96
4	1451.64	1178.79
5	1453.56	1178.22
6	1455.15	1177.01
7	1457.04	1176.35
8	1458.76	1175.33
9	1460.38	1174.16
10	1462.33	1173.69
11	1694.75	1267.63
12	1696.08	1269.13
13	1696.21	1270.00

** Corrected JANBU FOS = 2.112 ** (Fo factor = 1.020)

Failure surface No. 3 specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1468.03	1187.73
2	1468.71	1187.39
3	1470.46	1186.40
4	1472.29	1185.60
5	1473.85	1184.35
6	1475.83	1184.08
7	1477.40	1182.84
8	1479.28	1182.16
9	1481.16	1181.47
10	1689.05	1266.96
11	1690.39	1268.45
12	1691.13	1270.00

** Corrected JANBU FOS = 2.144 ** (Fo factor = 1.021)

Failure surface No. 4 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1472.31	1189.56
2	1473.22	1188.71
3	1475.17	1188.25
4	1476.71	1186.98
5	1478.37	1185.86
6	1480.34	1185.51
7	1482.33	1185.31
8	1691.69	1266.05
9	1692.77	1267.74
10	1693.56	1269.57
11	1693.88	1270.00

** Corrected JANBU FOS = 2.159 ** (Fo factor = 1.015)

Failure surface No. 5 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1457.12	1183.05
2	1457.83	1182.35
3	1459.32	1181.03
4	1461.01	1179.95
5	1463.01	1179.89

6	1464.72	1178.86
7	1466.14	1177.45
8	1687.78	1266.91
9	1688.34	1268.83
10	1688.55	1270.00

** Corrected JANBU FOS = 2.166 ** (Fo factor = 1.016)

Failure surface No. 6 specified by 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1454.36	1181.87
2	1455.62	1181.06
3	1457.53	1180.46
4	1459.43	1179.84
5	1461.42	1179.64
6	1463.11	1178.57
7	1464.91	1177.70
8	1466.38	1176.35
9	1467.80	1174.93
10	1469.62	1174.10
11	1471.32	1173.05
12	1692.66	1266.67
13	1693.88	1268.26
14	1694.68	1270.00

** Corrected JANBU FOS = 2.167 ** (Fo factor = 1.025)

Failure surface No. 7 specified by 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1450.58	1180.25
2	1450.59	1180.25
3	1452.02	1178.85
4	1453.74	1177.83
5	1455.65	1177.24
6	1457.61	1176.84
7	1459.48	1176.13
8	1460.92	1174.75
9	1462.81	1174.07
10	1464.79	1173.81
11	1689.84	1266.15
12	1691.16	1267.66
13	1691.50	1269.63
14	1691.84	1270.00

** Corrected JANBU FOS = 2.169 ** (Fo factor = 1.020)

Failure surface No. 8 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1459.96	1184.27
2	1461.06	1183.18
3	1462.57	1181.86
4	1464.30	1180.86
5	1465.98	1179.78
6	1467.68	1178.73
7	1682.23	1265.18
8	1683.62	1266.61
9	1684.67	1268.32
10	1686.02	1269.79
11	1686.04	1270.00

** Corrected JANBU FOS = 2.172 ** (Fo factor = 1.016)

Failure surface No. 9 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1465.73	1186.74
2	1466.84	1186.19
3	1468.68	1185.39
4	1470.28	1184.19
5	1472.27	1183.99
6	1473.71	1182.60
7	1475.66	1182.17
8	1477.43	1181.23
9	1690.71	1265.20
10	1692.13	1266.62
11	1693.38	1268.17
12	1694.78	1269.60
13	1695.05	1270.00

** Corrected JANBU FOS = 2.175 ** (Fo factor = 1.018)

Failure surface No.10 specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1478.72	1192.31
2	1478.79	1192.24
3	1480.79	1192.21
4	1482.52	1191.23
5	1484.50	1190.90
6	1486.31	1190.05
7	1487.99	1188.96
8	1694.12	1265.24
9	1695.53	1266.65
10	1696.82	1268.18
11	1697.77	1269.94
12	1697.83	1270.00

** Corrected JANBU FOS = 2.176 ** (Fo factor = 1.013)

The following is a summary of the TEN most critical surfaces

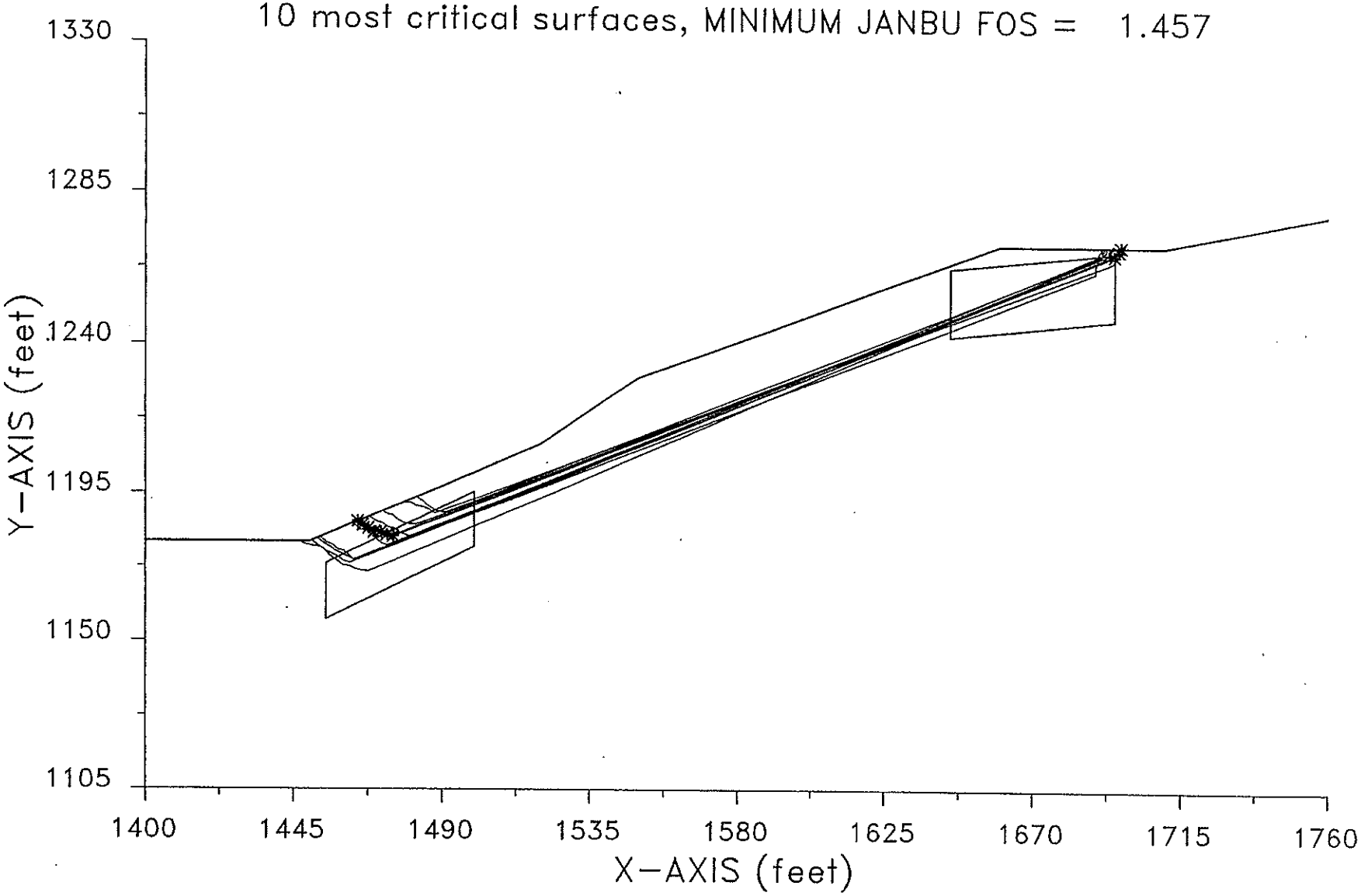
Problem Description : Section B-B' Parallel Bedding

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	2.063	1.015	1464.70	1696.94	2.680E+05
2.	2.112	1.020	1447.32	1696.21	3.144E+05
3.	2.144	1.021	1468.03	1691.13	2.845E+05
4.	2.159	1.015	1472.31	1693.88	2.587E+05
5.	2.166	1.016	1457.12	1688.55	2.586E+05
6.	2.167	1.025	1454.36	1694.68	3.581E+05
7.	2.169	1.020	1450.58	1691.84	3.171E+05
8.	2.172	1.016	1459.96	1686.04	2.546E+05
9.	2.175	1.018	1465.73	1695.05	2.959E+05
10.	2.176	1.013	1478.72	1697.83	2.558E+05

* * * END OF FILE * * *

Section B-B' Kh=0.15

10 most critical surfaces, MINIMUM JANBU FOS = 1.457



XSTABL File: SECTB-BE 10-05-** 9:58

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
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*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section B-B' Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1400.0	1180.0	1450.0	1180.0	1
2	1450.0	1180.0	1520.0	1210.0	1
3	1520.0	1210.0	1550.0	1230.0	1
4	1550.0	1230.0	1660.0	1270.0	1
5	1660.0	1270.0	1710.0	1270.0	1
6	1710.0	1270.0	1760.0	1280.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	15.00	4000.0	28.00
2	45.00	150.0	24.00

3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

3000 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 2.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1455.0	1165.0	1500.0	1187.0	17.0
2	1645.0	1253.0	1695.0	1258.0	20.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1464.70	1186.30
2	1466.19	1185.18
3	1467.91	1184.16
4	1469.57	1183.05
5	1471.57	1183.05
6	1473.37	1182.17
7	1475.34	1181.82
8	1694.90	1267.35

9	1696.29	1268.78
10	1696.94	1270.00

** Corrected JANBU FOS = 1.457 ** (Fo factor = 1.015)

Failure surface No. 2 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1447.32	1180.00
2	1447.74	1179.57
3	1449.65	1178.96
4	1451.64	1178.79
5	1453.56	1178.22
6	1455.15	1177.01
7	1457.04	1176.35
8	1458.76	1175.33
9	1460.38	1174.16
10	1462.33	1173.69
11	1694.75	1267.63
12	1696.08	1269.13
13	1696.21	1270.00

** Corrected JANBU FOS = 1.503 ** (Fo factor = 1.020)

Failure surface No. 3 specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1478.72	1192.31
2	1478.79	1192.24
3	1480.79	1192.21
4	1482.52	1191.23
5	1484.50	1190.90
6	1486.31	1190.05
7	1487.99	1188.96
8	1694.12	1265.24
9	1695.53	1266.65
10	1696.82	1268.18
11	1697.77	1269.94
12	1697.83	1270.00

** Corrected JANBU FOS = 1.507 ** (Fo factor = 1.013)

Failure surface No. 4 specified by 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1452.60	1181.11
2	1453.01	1180.72
3	1454.58	1179.48
4	1456.30	1178.45
5	1457.93	1177.29
6	1459.75	1176.47
7	1461.55	1175.60
8	1463.34	1174.70
9	1689.05	1262.17
10	1689.09	1264.17
11	1689.80	1266.04
12	1691.19	1267.47
13	1691.74	1269.40
14	1692.34	1270.00

** Corrected JANBU FOS = 1.511 ** (Fo factor = 1.018)

Failure surface No. 5 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1472.31	1189.56
2	1473.22	1188.71
3	1475.17	1188.25
4	1476.71	1186.98
5	1478.37	1185.86
6	1480.34	1185.51
7	1482.33	1185.31
8	1691.69	1266.05
9	1692.77	1267.74
10	1693.56	1269.57
11	1693.88	1270.00

** Corrected JANBU FOS = 1.519 ** (Fo factor = 1.015)

Failure surface No. 6 specified by 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1450.74	1180.32
2	1450.84	1180.25
3	1452.45	1179.06
4	1454.08	1177.91
5	1455.50	1176.50
6	1457.01	1175.19
7	1458.64	1174.03
8	1460.24	1172.83
9	1462.23	1172.62
10	1463.98	1171.65
11	1465.93	1171.22
12	1467.93	1171.07
13	1691.08	1267.57
14	1691.12	1269.57
15	1691.52	1270.00

** Corrected JANBU FOS = 1.523 ** (Fo factor = 1.026)

Failure surface No. 7 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1463.22	1185.67
2	1463.70	1185.22
3	1465.16	1183.86
4	1467.12	1183.48
5	1468.64	1182.19
6	1470.28	1181.04
7	1471.71	1179.63
8	1473.63	1179.07
9	1693.16	1267.76
10	1694.01	1269.57
11	1694.44	1270.00

** Corrected JANBU FOS = 1.524 ** (Fo factor = 1.019)

Failure surface No. 8 specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1453.09	1181.32
2	1453.76	1181.08
3	1455.23	1179.72
4	1457.12	1179.06
5	1458.54	1177.65
6	1460.48	1177.15
7	1462.06	1175.93

8	1463.48	1174.52
9	1691.56	1266.40
10	1692.81	1267.96
11	1694.22	1269.37
12	1694.70	1270.00

** Corrected JANBU FOS = 1.532 ** (Fo factor = 1.018)

Failure surface No. 9 specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1468.03	1187.73
2	1468.71	1187.39
3	1470.46	1186.40
4	1472.29	1185.60
5	1473.85	1184.35
6	1475.83	1184.08
7	1477.40	1182.84
8	1479.28	1182.16
9	1481.16	1181.47
10	1689.05	1266.96
11	1690.39	1268.45
12	1691.13	1270.00

** Corrected JANBU FOS = 1.535 ** (Fo factor = 1.021)

Failure surface No.10 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1482.34	1193.86
2	1482.76	1193.78
3	1484.43	1192.68
4	1485.86	1191.28
5	1487.56	1190.23
6	1489.35	1189.35
7	1491.35	1189.28
8	1690.91	1267.25
9	1692.31	1268.67
10	1692.53	1270.00

** Corrected JANBU FOS = 1.541 ** (Fo factor = 1.016)

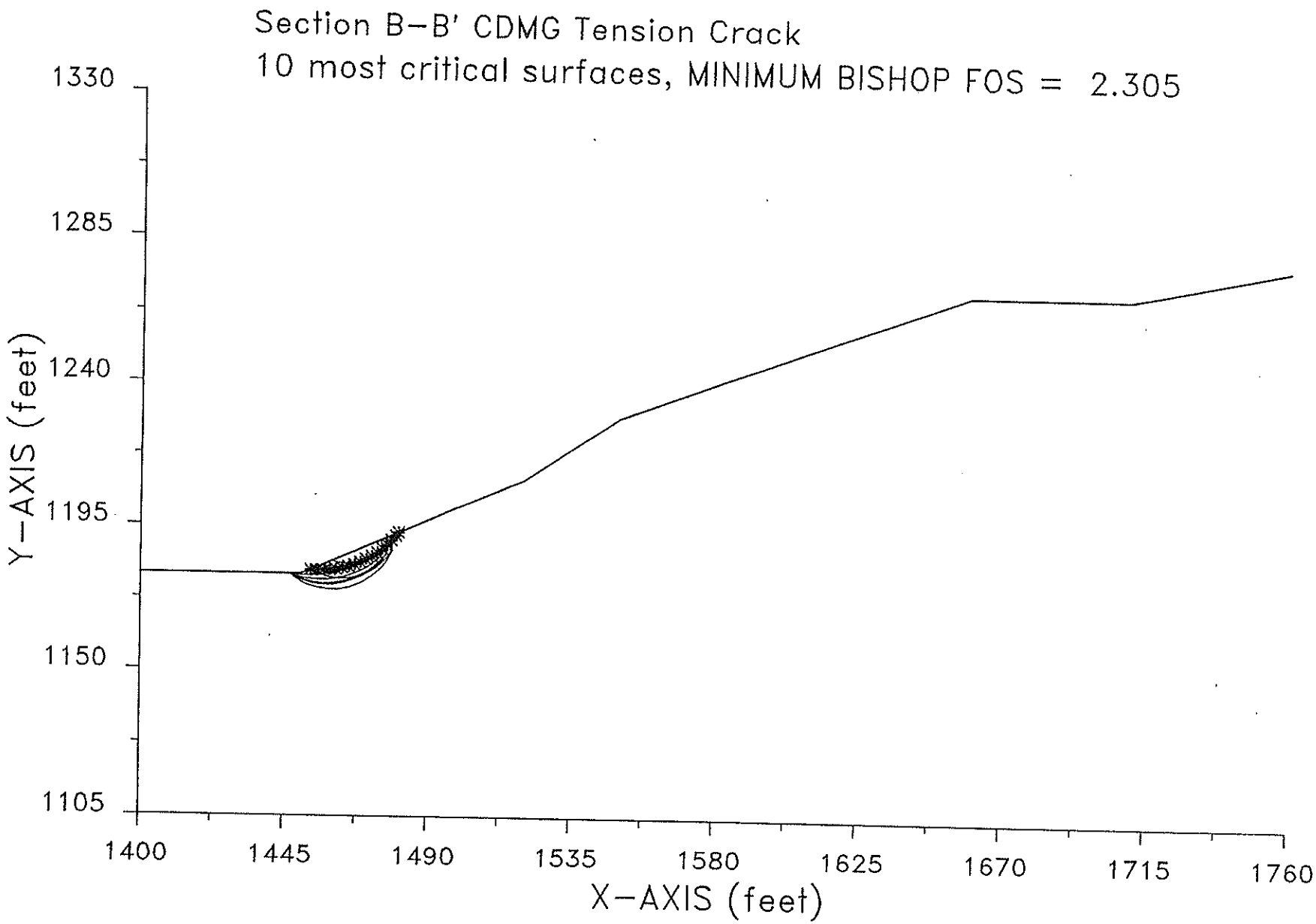
The following is a summary of the TEN most critical surfaces

Problem Description : Section B-B' Kh=0.15

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.457	1.015	1464.70	1696.94	2.645E+05
2.	1.503	1.020	1447.32	1696.21	3.116E+05
3.	1.507	1.013	1478.72	1697.83	2.507E+05
4.	1.511	1.018	1452.60	1692.34	3.172E+05
5.	1.519	1.015	1472.31	1693.88	2.552E+05
6.	1.523	1.026	1450.74	1691.52	3.524E+05
7.	1.524	1.019	1463.22	1694.44	2.809E+05
8.	1.532	1.018	1453.09	1694.70	3.033E+05
9.	1.535	1.021	1468.03	1691.13	2.821E+05
10.	1.541	1.016	1482.34	1692.53	2.334E+05

* * * END OF FILE * * *

SLOTB-BT 10-05-** 10:00



XSTABL File: SECTB-BT 10-05-** 10:00

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section B-B' CDMG Tension Crack

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1400.0	1180.0	1450.0	1180.0	1
2	1450.0	1180.0	1520.0	1210.0	1
3	1520.0	1210.0	1550.0	1230.0	1
4	1550.0	1230.0	1660.0	1270.0	1
5	1660.0	1270.0	1710.0	1270.0	1
6	1710.0	1270.0	1760.0	1280.0	1

A CRACKED ZONE HAS BEEN SPECIFIED

Depth of crack below ground surface = 5.00 (feet)
Maximum depth of water in crack = 4.00 (feet)
Unit weight of water in crack = 62.40 (pcf)

Failure surfaces will have a vertical side equal to the specified depth of crack and be affected by a hydrostatic force according to the specified depth of water in the crack

---
ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

A critical failure surface searching method, using a random

technique for generating CIRCULAR surfaces has been specified.

100 trial surfaces will be generated and analyzed.

10 Surfaces initiate from each of 10 points equally spaced
along the ground surface between x = 1400.0 ft
and x = 1460.0 ft

Each surface terminates between x = 1480.0 ft
and x = 1481.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

2.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

```
************************************************************
**     Factor of safety calculation for surface #     2    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -20.1735    **
**    This will be ignored for final summary of results    **
************************************************************
```

Circular surface (FOS=-20.1735) is defined by: xcenter = 1430.54
ycenter = 1247.61 Init. Pt. = 1400.00 Seg. Length = 2.00

```
************************************************************
**     Factor of safety calculation for surface #    10    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -21.8172    **
**    This will be ignored for final summary of results    **
************************************************************
```

Circular surface (FOS=-21.8172) is defined by: xcenter = 1430.46
ycenter = 1244.04 Init. Pt. = 1400.00 Seg. Length = 2.00

```
**********************************************************************
    -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
**********************************************************************
```

Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter. In such

cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1453.33	1181.43
2	1455.33	1181.29
3	1457.33	1181.29
4	1459.32	1181.41
5	1461.31	1181.66
6	1463.27	1182.04
7	1465.21	1182.55
8	1467.11	1183.17
9	1468.96	1183.92
10	1470.77	1184.79
11	1472.51	1185.77
12	1474.19	1186.86
13	1475.79	1188.05
14	1477.31	1189.35
15	1478.75	1190.74
16	1480.09	1192.22
17	1480.91	1193.25

**** Simplified BISHOP FOS = 2.305 ****

****
** **
** Out of the 100 surfaces generated and analyzed by XSTABL, **
** 2 surfaces were found to have MISLEADING FOS values. **
** **
****
The following is a summary of the TEN most critical surfaces

Problem Description : Section B-B' CDMG Tension Crack

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	2.305	1456.41	1214.18	32.90	1453.33	1480.91	2.832E+05
2.	2.329	1457.61	1200.47	23.21	1446.67	1476.67	3.355E+05
3.	2.350	1458.44	1200.34	23.51	1446.67	1477.10	3.609E+05
4.	2.353	1452.29	1217.61	38.03	1446.67	1480.55	4.031E+05
5.	2.361	1464.67	1201.60	17.93	1460.00	1480.62	1.189E+05
6.	2.412	1456.40	1207.16	28.85	1446.67	1475.32	3.412E+05
7.	2.427	1452.23	1217.17	37.59	1446.67	1481.01	4.073E+05
8.	2.430	1453.90	1218.57	37.15	1453.33	1480.97	2.913E+05
9.	2.436	1459.68	1196.32	20.87	1446.67	1478.79	4.045E+05
10.	2.460	1463.13	1197.70	19.00	1453.33	1478.28	2.432E+05

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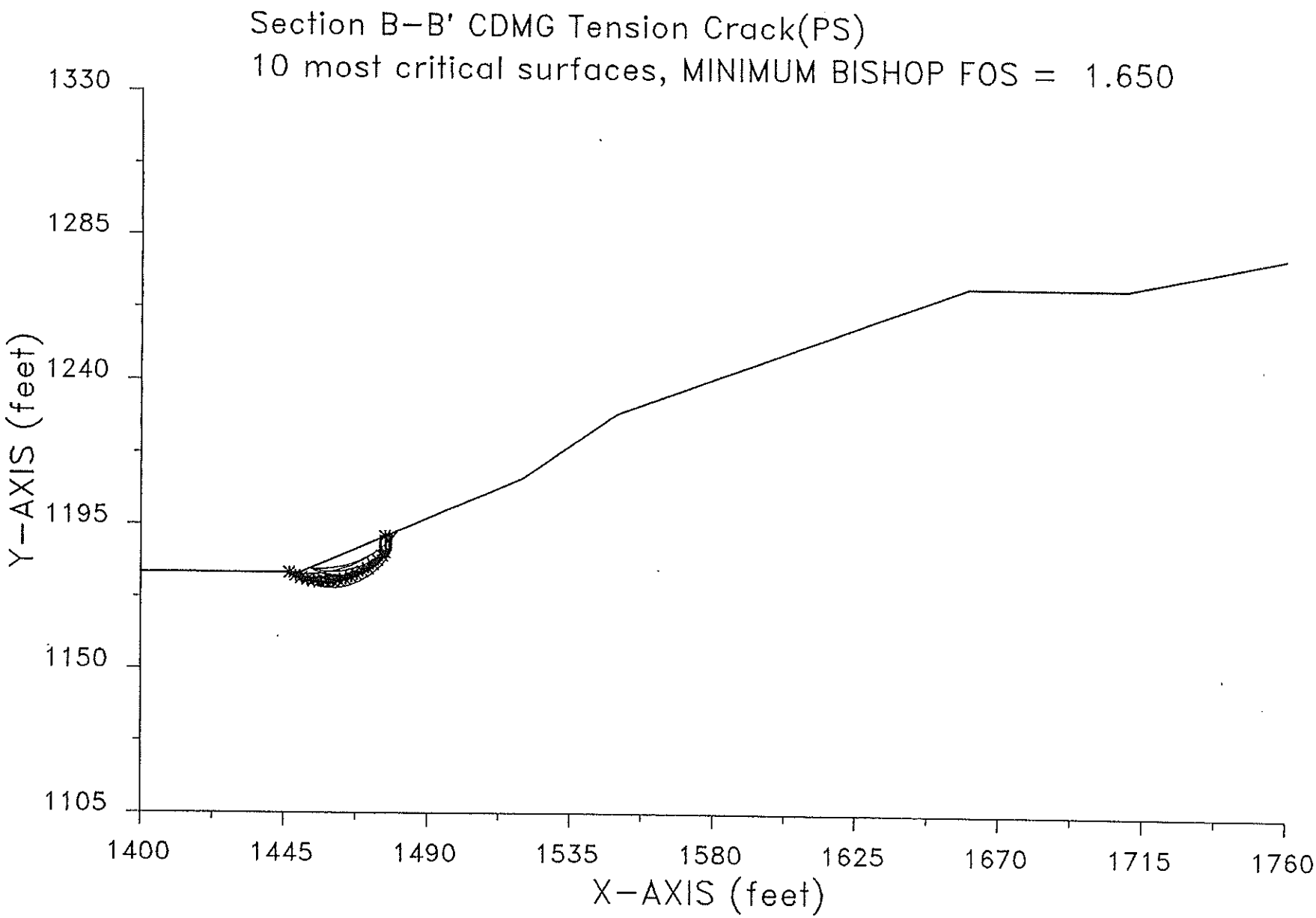
Section B-B' CDMG Tension Crack(PS)
10 most critical surfaces, MINIMUM BISHOP FOS = 1.650
1330
1285
1240
1195
1150
1105
Y-AXIS (feet)
1400
1445
1490
1535
1580
1625
1670
1715
1760
X-AXIS (feet)

XSTABL File: SECB-BTE 10-06-** 9:06

```
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```

Problem Description : Section B-B' CDMG Tension Crack(PS)

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1400.0	1180.0	1450.0	1180.0	1
2	1450.0	1180.0	1520.0	1210.0	1
3	1520.0	1210.0	1550.0	1230.0	1
4	1550.0	1230.0	1660.0	1270.0	1
5	1660.0	1270.0	1710.0	1270.0	1
6	1710.0	1270.0	1760.0	1280.0	1

A CRACKED ZONE HAS BEEN SPECIFIED

Depth of crack below ground surface = 5.00 (feet)
Maximum depth of water in crack = 4.00 (feet)
Unit weight of water in crack = 62.40 (pcf)

Failure surfaces will have a vertical side equal to the specified depth of crack and be affected by a hydrostatic force according to the specified depth of water in the crack

---
ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

A horizontal earthquake loading coefficient

of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

100 trial surfaces will be generated and analyzed.

10 Surfaces initiate from each of 10 points equally spaced
along the ground surface between x = 1400.0 ft
and x = 1460.0 ft

Each surface terminates between x = 1480.0 ft
and x = 1481.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

2.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1446.67	1180.00
2	1448.47	1179.14
3	1450.34	1178.43
4	1452.27	1177.88
5	1454.23	1177.50
6	1456.22	1177.28
7	1458.21	1177.22
8	1460.21	1177.34
9	1462.19	1177.62
10	1464.14	1178.06
11	1466.05	1178.67
12	1467.90	1179.44
13	1469.67	1180.35
14	1471.37	1181.41
15	1472.97	1182.61
16	1474.46	1183.94
17	1475.84	1185.39
18	1476.67	1186.43
19	1476.67	1191.43

**** Simplified BISHOP FOS = 1.650 ****

The following is a summary of the TEN most critical surfaces

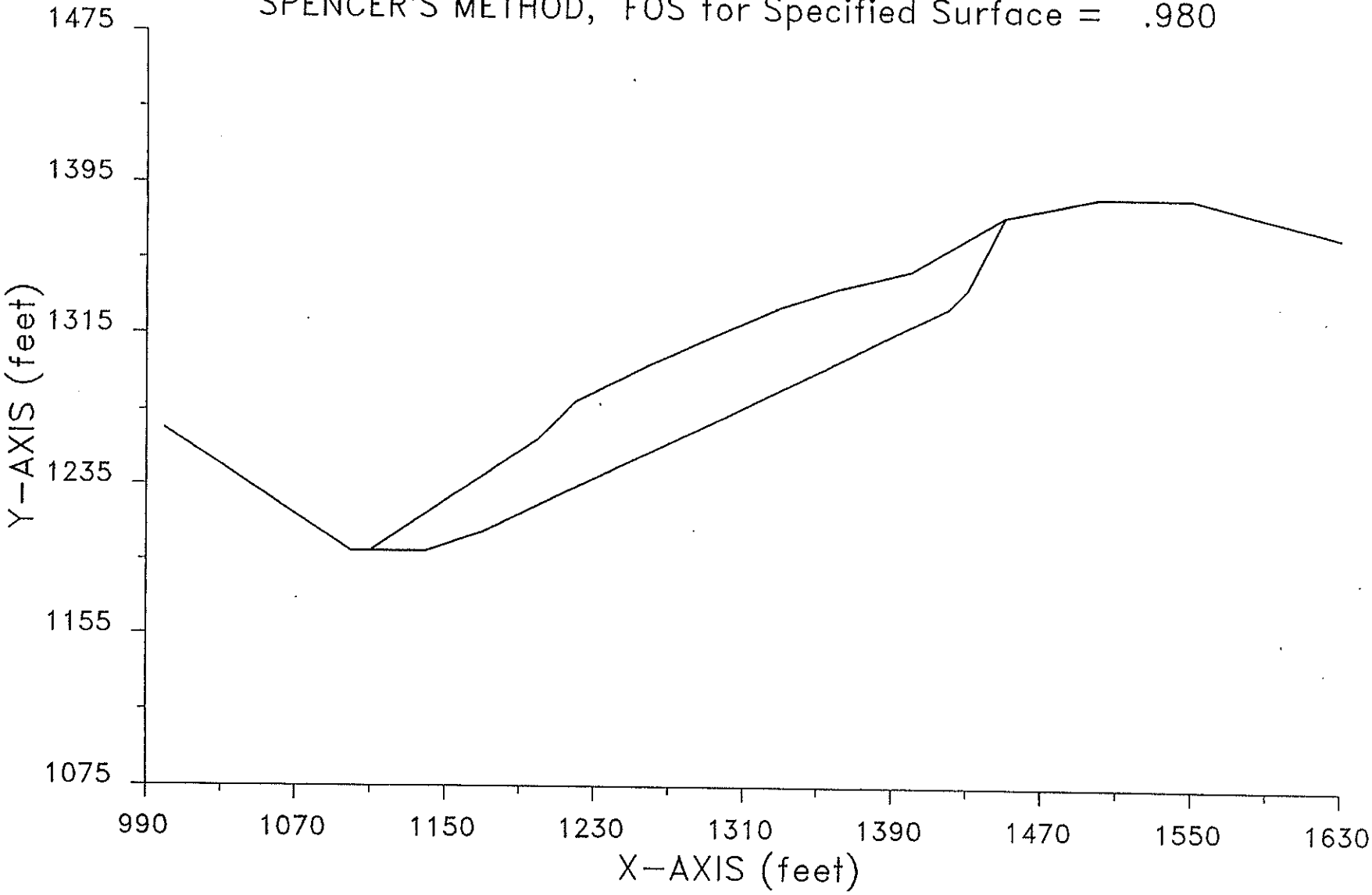
Problem Description : Section B-B' CDMG Tension Crack(PS)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.650	1457.61	1200.47	23.21	1446.67	1476.67	3.288E+05
2.	1.667	1458.44	1200.34	23.51	1446.67	1477.10	3.538E+05
3.	1.679	1456.40	1207.16	28.85	1446.67	1475.32	3.344E+05
4.	1.700	1456.41	1214.18	32.90	1453.33	1480.91	2.758E+05
5.	1.724	1452.29	1217.61	38.03	1446.67	1480.55	3.931E+05
6.	1.745	1459.68	1196.32	20.87	1446.67	1478.79	3.968E+05
7.	1.745	1460.11	1202.47	22.09	1453.33	1474.91	1.852E+05
8.	1.753	1462.70	1197.20	18.35	1453.33	1477.97	2.237E+05
9.	1.755	1463.13	1197.70	19.00	1453.33	1478.28	2.387E+05
10.	1.756	1462.24	1198.24	19.03	1453.33	1477.80	2.204E+05

* * * END OF FILE * * *

SECC-C 10-08-** 14:28

Section C-C (SF)
SPENCER'S METHOD, FOS for Specified Surface = .980



XSTABL File: SECC-C 10-08-** 14:07

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```

Problem Description : Section C-C (SF)

SEGMENT BOUNDARY COORDINATES
---

15 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1265.0	1100.0	1200.0	1
2	1100.0	1200.0	1110.0	1200.0	1
3	1110.0	1200.0	1140.0	1220.0	2
4	1140.0	1220.0	1170.0	1240.0	2
5	1170.0	1240.0	1200.0	1260.0	2
6	1200.0	1260.0	1220.0	1280.0	2
7	1220.0	1280.0	1240.0	1290.0	2
8	1240.0	1290.0	1260.0	1300.0	2
9	1260.0	1300.0	1330.0	1330.0	2
10	1330.0	1330.0	1360.0	1340.0	2
11	1360.0	1340.0	1400.0	1350.0	2
12	1400.0	1350.0	1450.0	1380.0	2
13	1450.0	1380.0	1500.0	1390.0	1
14	1500.0	1390.0	1550.0	1390.0	1
15	1550.0	1390.0	1630.0	1370.0	1

5 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1110.0	1200.0	1140.0	1200.0	1
2	1140.0	1200.0	1170.0	1210.0	1
3	1170.0	1210.0	1420.0	1330.0	1
4	1420.0	1330.0	1430.0	1340.0	1
5	1430.0	1340.0	1450.0	1380.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	.0	25.00	.000	.0	0
2	120.0	130.0	.0	25.00	.000	.0	0

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 6 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1110.00	1200.00
2	1140.00	1200.00
3	1170.00	1210.00
4	1420.00	1330.00
5	1430.00	1340.00
6	1450.00	1380.00

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1125.00	1200.00	10.00	30.00	.00	33.69	36000.
2	1155.00	1205.00	25.00	30.00	18.43	33.69	90000.
3	1185.00	1217.20	32.80	30.00	25.64	33.69	118080.
4	1210.00	1229.20	40.80	20.00	25.64	45.00	97920.
5	1230.00	1238.80	46.20	20.00	25.64	26.57	110880.
6	1250.00	1248.40	46.60	20.00	25.64	26.57	111840.
7	1295.00	1270.00	45.00	70.00	25.64	23.20	378000.
8	1345.00	1294.00	41.00	30.00	25.64	18.43	147600.
9	1380.00	1310.80	34.20	40.00	25.64	14.04	164160.
10	1410.00	1325.20	30.80	20.00	25.64	30.96	73920.
11	1425.00	1335.00	30.00	10.00	45.00	30.96	36000.
12	1440.00	1360.00	14.00	20.00	63.43	30.96	33600.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	26.2039	.9804	.9823
3	26.2678	.9805	.9804

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	1568.1	.0	25.00	0.	0.	0.	.00
2	2756.5	.0	25.00	0.	0.	0.	.00
3	3198.8	.0	25.00	0.	0.	0.	.00
4	3979.0	.0	25.00	0.	0.	0.	.00
5	4505.6	.0	25.00	0.	0.	0.	.00
6	4544.6	.0	25.00	0.	0.	0.	.00

7	4388.6	.0	25.00	0.	0.	0.	.00
8	3998.5	.0	25.00	0.	0.	0.	.00
9	3335.3	.0	25.00	0.	0.	0.	.00
10	3003.8	.0	25.00	0.	0.	0.	.00
11	2075.6	.0	25.00	0.	0.	0.	.00
12	621.5	.0	25.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	1125.00	1568.1	1200.0	.0	745.7
2	1155.00	2756.5	3000.0	.0	1311.0
3	1185.00	3198.8	3936.0	.0	1521.3
4	1210.00	3979.0	4896.0	.0	1892.4
5	1230.00	4505.6	5544.0	.0	2142.8
6	1250.00	4544.6	5592.0	.0	2161.4
7	1295.00	4388.6	5400.0	.0	2087.2
8	1345.00	3998.5	4920.0	.0	1901.6
9	1380.00	3335.3	4104.0	.0	1586.3
10	1410.00	3003.8	3696.0	.0	1428.6
11	1425.00	2075.6	3600.0	.0	987.2
12	1440.00	621.5	1680.0	.0	295.6

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	1140.00	26.27	24949.	7.40	20.00	.370
2	1170.00	26.27	38068.	8.83	30.00	.294
3	1200.00	26.27	37596.	9.35	35.60	.263
4	1220.00	26.27	37204.	9.72	46.00	.211
5	1240.00	26.27	36761.	10.10	46.40	.218
6	1260.00	26.27	36314.	10.50	46.80	.224
7	1330.00	26.27	34803.	11.92	43.20	.276
8	1360.00	26.27	34214.	12.53	38.80	.323
9	1400.00	26.27	33558.	13.32	29.60	.450
10	1420.00	26.27	33262.	13.71	32.00	.428
11	1430.00	26.27	21124.	15.06	28.00	.538
12	1450.00	.00	-5.	-.58	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 3205.91 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 1524.70 (psf)

Total Length of failure surface = 397.79 feet

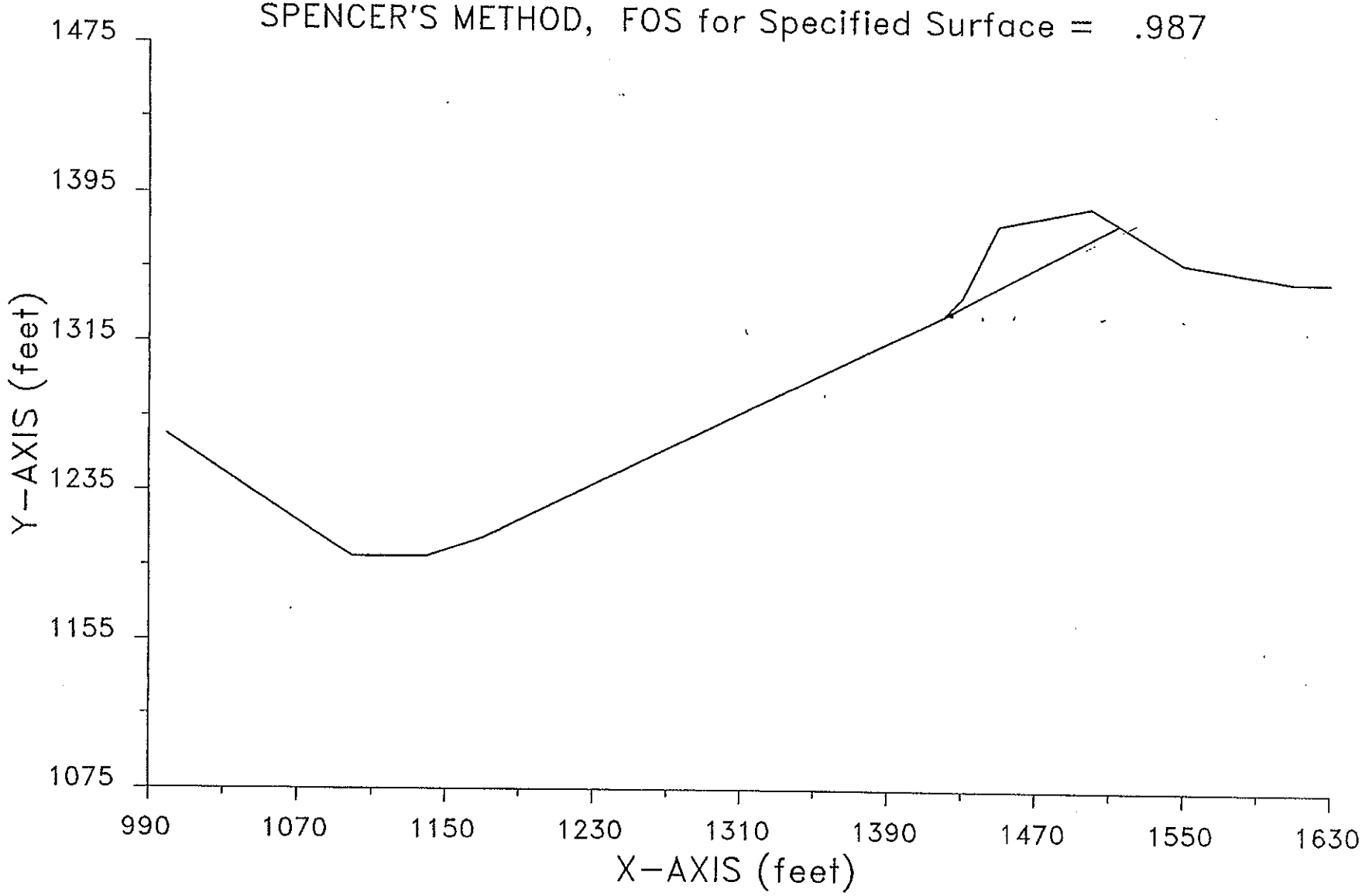
For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = .980

Total shear strength available
along specified failure surface = 594.68E+03 lb

Section C-C

SPENCER'S METHOD, FOS for Specified Surface = .987



XSTABL File: SIVA 10-08-** 15:13

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```

Problem Description : Section C-C

SEGMENT BOUNDARY COORDINATES
---

11 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1265.0	1100.0	1200.0	1
2	1100.0	1200.0	1110.0	1200.0	1
3	1110.0	1200.0	1140.0	1200.0	1
4	1140.0	1200.0	1170.0	1210.0	1
5	1170.0	1210.0	1420.0	1330.0	1
6	1420.0	1330.0	1430.0	1340.0	1
7	1430.0	1340.0	1450.0	1380.0	1
8	1450.0	1380.0	1500.0	1390.0	1
9	1500.0	1390.0	1550.0	1360.0	1
10	1550.0	1360.0	1610.0	1350.0	1
11	1610.0	1350.0	1630.0	1350.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	26.00	4000.0	28.00
2	30.00	150.0	24.00
3	90.00	4000.0	28.00

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 2 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1420.00	1330.00
2	1515.00	1381.00

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1425.00	1332.68	2.32	10.00	28.23	45.00	2779.
2	1440.00	1340.74	19.26	20.00	28.23	63.43	46232.
3	1475.00	1359.53	25.47	50.00	28.23	11.31	152842.
4	1507.50	1376.97	8.53	15.00	28.23	-30.96	15347.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	28.2288	.9868	.9868

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	215.7	150.0	24.00	0.	0.	0.	.00
2	1794.4	150.0	24.00	0.	0.	0.	.00
3	2373.0	150.0	24.00	0.	0.	0.	.00
4	794.3	150.0	24.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	1425.00	215.7	277.9	.0	249.3
2	1440.00	1794.4	2311.6	.0	961.6

3	1475.00	2373.0	3056.8	.0	1222.7
4	1507.50	794.3	1023.2	.0	510.4

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	1430.00	28.23	1516.	.00	4.63	.000
2	1450.00	28.23	1477.	.00	33.89	.000
3	1500.00	28.23	-1430.	.00	17.05	.000
4	1515.00	.00	0.	-.17	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 1774.81 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 952.79 (psf)

Total Length of failure surface = 107.82 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

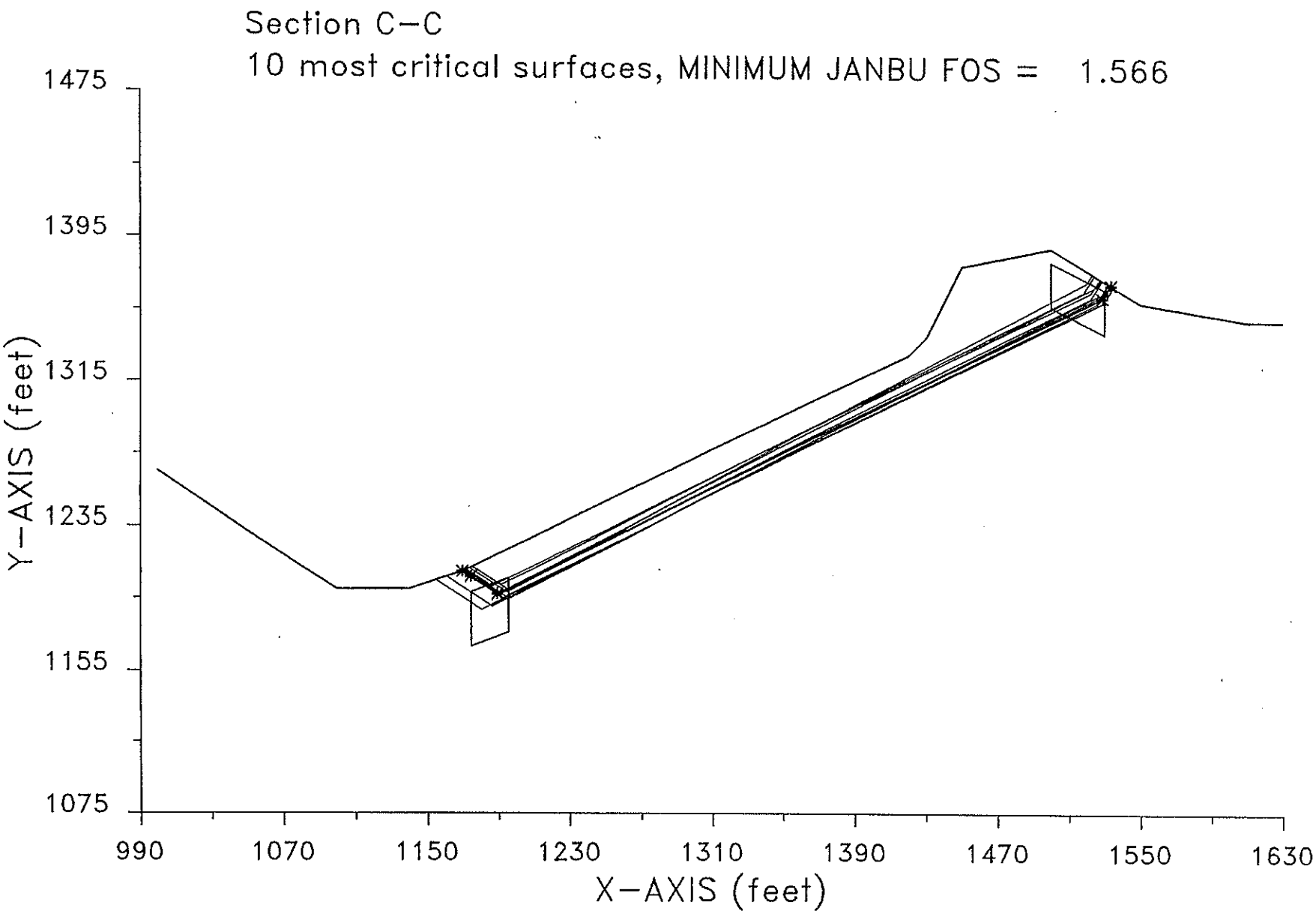
FACTOR OF SAFETY = .987

Total shear strength available along specified failure surface = 101.38E+03 lb

****
For the specified surface, the analysis computed the following:

Negative (tensile) Normal Effective Force = 0 slices
Negative (tensile) Interslice Force = 1 slices
Unreasonable Location of Interslice Force = 0 slices

In view of these errors, the computed FOS may be UNREASONABLE!
****


Section C-C
10 most critical surfaces, MINIMUM JANBU FOS = 1.566
1475
1395
1315
1235
1155
1075
Y-AXIS (feet)
990
1070
1150
1230
1310
1390
1470
1550
1630
X-AXIS (feet)

XSTABL File: SESC-C 10-09-** 12:43

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*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section C-C

SEGMENT BOUNDARY COORDINATES
---

11 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1265.0	1100.0	1200.0	1
2	1100.0	1200.0	1110.0	1200.0	1
3	1110.0	1200.0	1140.0	1200.0	1
4	1140.0	1200.0	1170.0	1210.0	1
5	1170.0	1210.0	1420.0	1330.0	1
6	1420.0	1330.0	1430.0	1340.0	1
7	1430.0	1340.0	1450.0	1380.0	1
8	1450.0	1380.0	1500.0	1390.0	1
9	1500.0	1390.0	1550.0	1360.0	1
10	1550.0	1360.0	1610.0	1350.0	1
11	1610.0	1350.0	1630.0	1350.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	26.00	4000.0	28.00
2	30.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

300 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 18.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1175.0	1183.0	1196.0	1191.0	30.0
2	1500.0	1370.0	1530.0	1355.0	25.0

```
************************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
************************************************************************
```

USER SELECTED option to maintain strength greater than zero

```
*************************************************************
**     Factor of safety calculation for surface #    55    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-385.1009    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1164.70	1208.23
2	1174.64	1201.78
3	1189.74	1191.97
4	1501.54	1379.81
5	1505.87	1386.48

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1169.83	1209.94
2	1174.50	1206.91
3	1189.60	1197.11
4	1528.79	1362.82
5	1533.42	1369.95

** Corrected JANBU FOS = 1.566 ** (Fo factor = 1.023)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1175.49	1212.64
2	1180.03	1209.69
3	1195.13	1199.89
4	1525.58	1369.62
5	1527.93	1373.24

** Corrected JANBU FOS = 1.569 ** (Fo factor = 1.024)

Failure surface No. 3 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1172.01	1210.96
2	1186.64	1201.46
3	1522.29	1365.96
4	1527.28	1373.63

** Corrected JANBU FOS = 1.570 ** (Fo factor = 1.018)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1170.12	1210.06
2	1180.10	1203.57
3	1195.20	1193.77
4	1528.18	1365.28
5	1531.83	1370.90

** Corrected JANBU FOS = 1.597 ** (Fo factor = 1.029)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1171.42	1210.68
2	1179.24	1205.60
3	1194.34	1195.80
4	1529.12	1360.25
5	1534.86	1369.09

** Corrected JANBU FOS = 1.597 ** (Fo factor = 1.026)

Failure surface No. 6 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1161.00	1207.00
2	1171.76	1200.01
3	1186.86	1190.21
4	1527.65	1363.60
5	1532.24	1370.66

** Corrected JANBU FOS = 1.614 ** (Fo factor = 1.029)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1171.03	1210.50
2	1176.73	1206.80
3	1191.82	1197.00
4	1522.02	1362.68
5	1528.62	1372.83

** Corrected JANBU FOS = 1.618 ** (Fo factor = 1.025)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1175.22	1212.50
2	1176.31	1211.79
3	1191.41	1201.99
4	1517.93	1366.10
5	1524.07	1375.56

** Corrected JANBU FOS = 1.623 ** (Fo factor = 1.020)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1173.82	1211.84
2	1180.13	1207.74
3	1195.23	1197.94
4	1519.78	1371.46
5	1522.89	1376.26

** Corrected JANBU FOS = 1.632 ** (Fo factor = 1.026)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1155.14	1205.05
2	1165.55	1198.29
3	1180.64	1188.49
4	1526.16	1359.94
5	1532.88	1370.27

** Corrected JANBU FOS = 1.635 ** (Fo factor = 1.028)

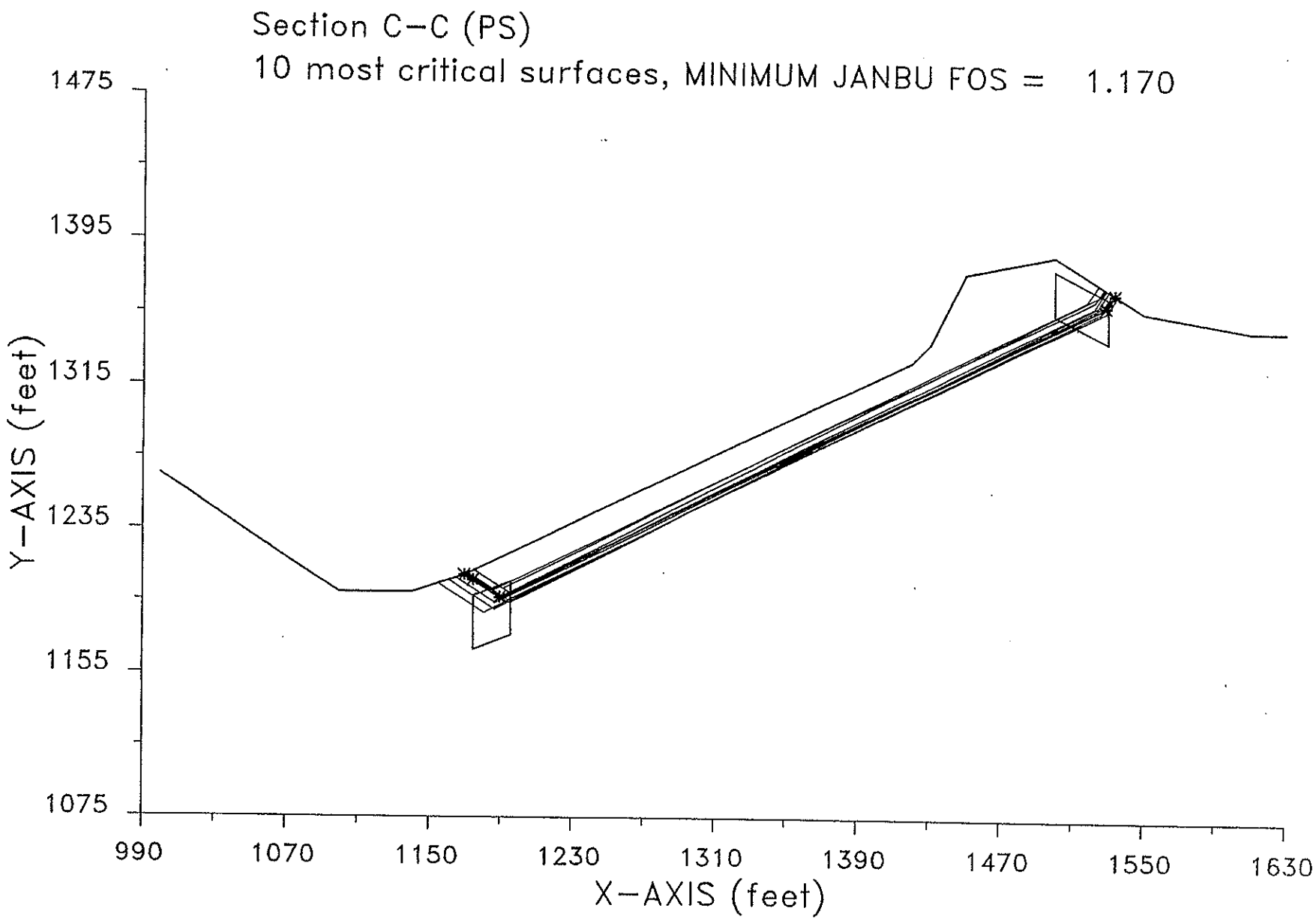
```
*****************************************************************
**                                                             **
**  Out of the    300 surfaces generated and analyzed by XSTABL,  **
**        1 surfaces were found to have MISLEADING FOS values.   **
**                                                             **
*****************************************************************
```

The following is a summary of the TEN most critical surfaces

Problem Description : Section C-C

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.566	1.023	1169.83	1533.42	6.911E+05
2.	1.569	1.024	1175.49	1527.93	5.972E+05
3.	1.570	1.018	1172.01	1527.28	5.447E+05
4.	1.597	1.029	1170.12	1531.83	7.552E+05
5.	1.597	1.026	1171.42	1534.86	7.745E+05
6.	1.614	1.029	1161.00	1532.24	7.837E+05
7.	1.618	1.025	1171.03	1528.62	6.874E+05
8.	1.623	1.020	1175.22	1524.07	5.527E+05
9.	1.632	1.026	1173.82	1522.89	5.908E+05
10.	1.635	1.028	1155.14	1532.88	8.132E+05

* * * END OF FILE * * *


Section C-C (PS)
10 most critical surfaces, MINIMUM JANBU FOS = 1.170
1475
1395
1315
1235
1155
1075
Y-AXIS (feet)
990
1070
1150
1230
1310
1390
1470
1550
1630
X-AXIS (feet)

XSTABL File: SESC-CE 10-09-** 12:43

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section C-C (PS)

SEGMENT BOUNDARY COORDINATES
---

11 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1265.0	1100.0	1200.0	1
2	1100.0	1200.0	1110.0	1200.0	1
3	1110.0	1200.0	1140.0	1200.0	1
4	1140.0	1200.0	1170.0	1210.0	1
5	1170.0	1210.0	1420.0	1330.0	1
6	1420.0	1330.0	1430.0	1340.0	1
7	1430.0	1340.0	1450.0	1380.0	1
8	1450.0	1380.0	1500.0	1390.0	1
9	1500.0	1390.0	1550.0	1360.0	1
10	1550.0	1360.0	1610.0	1350.0	1
11	1610.0	1350.0	1630.0	1350.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	i-value (degrees)
1	26.00	4000.0	28.00
2	30.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

300 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 18.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1175.0	1183.0	1196.0	1191.0	30.0
2	1500.0	1370.0	1530.0	1355.0	25.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero.

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1169.83	1209.94
2	1174.50	1206.91
3	1189.60	1197.11
4	1528.79	1362.82
5	1533.42	1369.95

** Corrected JANBU FOS = 1.170 ** (Fo factor = 1.023)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1172.01	1210.96
2	1186.64	1201.46
3	1522.29	1365.96
4	1527.28	1373.63

** Corrected JANBU FOS = 1.173 ** (Fo factor = 1.018)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1175.49	1212.64
2	1180.03	1209.69
3	1195.13	1199.89
4	1525.58	1369.62
5	1527.93	1373.24

** Corrected JANBU FOS = 1.189 ** (Fo factor = 1.024)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1171.42	1210.68
2	1179.24	1205.60
3	1194.34	1195.80
4	1529.12	1360.25
5	1534.86	1369.09

** Corrected JANBU FOS = 1.193 ** (Fo factor = 1.026)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1170.12	1210.06
2	1180.10	1203.57
3	1195.20	1193.77
4	1528.18	1365.28
5	1531.83	1370.90

** Corrected JANBU FOS = 1.206 ** (Fo factor = 1.029)

Failure surface No. 6 specified by 5 coordinate points

Point	x-surf	y-surf

No.	(ft)	(ft)
1	1171.03	1210.50
2	1176.73	1206.80
3	1191.82	1197.00
4	1522.02	1362.68
5	1528.62	1372.83

** Corrected JANBU FOS = 1.214 ** (Fo factor = 1.025)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1161.00	1207.00
2	1171.76	1200.01
3	1186.86	1190.21
4	1527.65	1363.60
5	1532.24	1370.66

** Corrected JANBU FOS = 1.216 ** (Fo factor = 1.029)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1175.22	1212.50
2	1176.31	1211.79
3	1191.41	1201.99
4	1517.93	1366.10
5	1524.07	1375.56

** Corrected JANBU FOS = 1.220 ** (Fo factor = 1.020)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1155.14	1205.05
2	1165.55	1198.29
3	1180.64	1188.49
4	1526.16	1359.94
5	1532.88	1370.27

** Corrected JANBU FOS = 1.224 ** (Fo factor = 1.028)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1165.03	1208.34
2	1171.99	1203.82
3	1187.09	1194.02
4	1521.43	1358.80
5	1530.00	1372.00

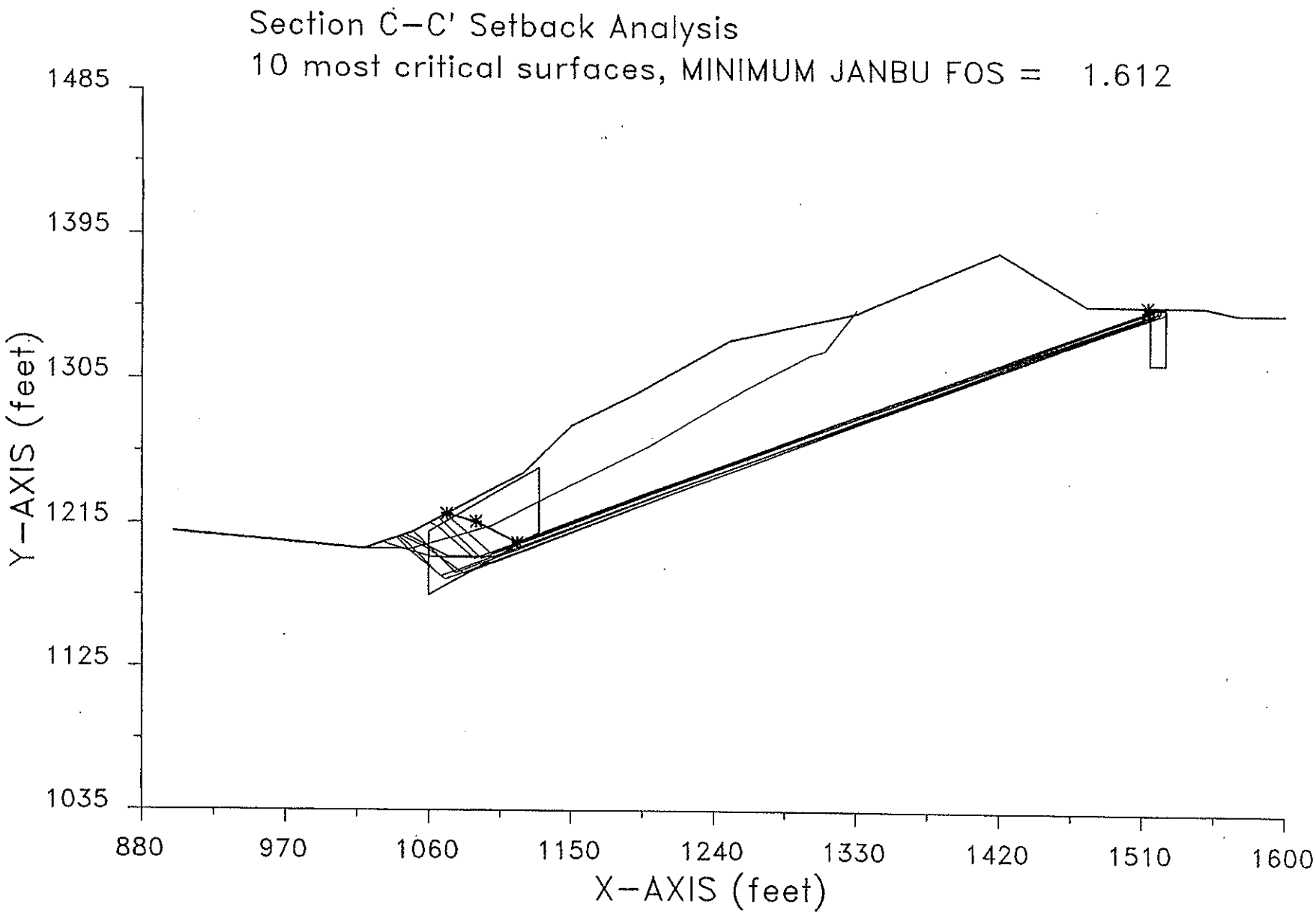
** Corrected JANBU FOS = 1.225 ** (Fo factor = 1.025)

The following is a summary of the TEN most critical surfaces

Problem Description : Section C-C (PS)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.170	1.023	1169.83	1533.42	6.831E+05
2.	1.173	1.018	1172.01	1527.28	5.362E+05
3.	1.189	1.024	1175.49	1527.93	5.929E+05
4.	1.193	1.026	1171.42	1534.86	7.664E+05
5.	1.206	1.029	1170.12	1531.83	7.507E+05
6.	1.214	1.025	1171.03	1528.62	6.794E+05
7.	1.216	1.029	1161.00	1532.24	7.783E+05
8.	1.220	1.020	1175.22	1524.07	5.448E+05
9.	1.224	1.028	1155.14	1532.88	8.055E+05
10.	1.225	1.025	1165.03	1530.00	7.413E+05

* * * END OF FILE * * *


Section C-C' Setback Analysis
10 most critical surfaces, MINIMUM JANBU FOS = 1.612
1485
1395
1305
1215
1125
1035
Y-AXIS (feet)
880
970
1060
1150
1240
1330
1420
1510
1600
X-AXIS (feet)

XSTABL File: SECTC-C3 10-05-** 7:53

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section C-C' Setback Analysis

SEGMENT BOUNDARY COORDINATES
---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	900.0	1210.0	1020.0	1200.0	2
2	1020.0	1200.0	1050.0	1210.0	1
3	1050.0	1210.0	1120.0	1247.0	1
4	1120.0	1247.0	1150.0	1276.0	1
5	1150.0	1276.0	1190.0	1296.0	1
6	1190.0	1296.0	1250.0	1330.0	1
7	1250.0	1330.0	1330.0	1348.0	2
8	1330.0	1348.0	1420.0	1387.0	2
9	1420.0	1387.0	1475.0	1354.0	2
10	1475.0	1354.0	1550.0	1354.0	2
11	1550.0	1354.0	1570.0	1350.0	2
12	1570.0	1350.0	1600.0	1350.0	2

7 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1020.0	1200.0	1050.0	1200.0	2
2	1050.0	1200.0	1100.0	1214.0	2
3	1100.0	1214.0	1200.0	1264.0	2
4	1200.0	1264.0	1260.0	1300.0	2
5	1260.0	1300.0	1300.0	1321.0	2
6	1300.0	1321.0	1310.0	1324.0	2
7	1310.0	1324.0	1330.0	1350.0	2

A CRACKED ZONE HAS BEEN SPECIFIED

Depth of crack below ground surface = 3.00 (feet)
Maximum depth of water in crack = 3.00 (feet)
Unit weight of water in crack = 62.40 (pcf)

Failure surfaces will have a vertical side equal to the specified depth of crack and be affected by a hydrostatic

force according to the specified depth of water in the crack

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	i-value (degrees)
1	20.00	4000.0	28.00
2	24.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

750 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 29.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1060.0	1190.0	1130.0	1230.0	40.0
2	1515.0	1335.0	1525.0	1335.0	35.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such

cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1071.55	1221.39
2	1089.91	1216.48
3	1115.96	1203.74
4	1513.41	1351.00
5	1513.41	1354.00

** Corrected JANBU FOS = 1.612 ** (Fo factor = 1.029)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1060.98	1215.81
2	1066.89	1212.32
3	1089.04	1193.61
4	1514.14	1351.00
5	1514.14	1354.00

** Corrected JANBU FOS = 1.635 ** (Fo factor = 1.028)

Failure surface No. 3 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1031.93	1203.98
2	1033.55	1202.87
3	1061.42	1194.86
4	1090.41	1194.01
5	1519.82	1350.86
6	1519.84	1351.00
7	1519.84	1354.00

** Corrected JANBU FOS = 1.636 ** (Fo factor = 1.024)

Failure surface No. 4 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1042.96	1207.65
2	1058.76	1200.22
3	1082.70	1183.86
4	1521.52	1350.77

5	1521.61	1351.00
6	1521.61	1354.00

** Corrected JANBU FOS = 1.644 ** (Fo factor = 1.031)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1070.98	1221.09
2	1077.46	1215.36
3	1099.58	1196.61
4	1512.22	1351.00
5	1512.22	1354.00

** Corrected JANBU FOS = 1.654 ** (Fo factor = 1.031)

Failure surface No. 6 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1045.67	1208.56
2	1046.17	1208.10
3	1072.11	1195.14
4	1101.11	1194.83
5	1523.43	1349.60
6	1524.81	1351.00
7	1524.81	1354.00

** Corrected JANBU FOS = 1.663 ** (Fo factor = 1.027)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1066.42	1218.68
2	1072.01	1213.60
3	1093.03	1193.62
4	1516.58	1351.00
5	1516.58	1354.00

** Corrected JANBU FOS = 1.679 ** (Fo factor = 1.030)

Failure surface No. 8 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1039.95	1206.65
2	1047.95	1198.67
3	1070.47	1180.40
4	1520.59	1348.93
5	1521.23	1351.00
6	1521.23	1354.00

** Corrected JANBU FOS = 1.685 ** (Fo factor = 1.031)

Failure surface No. 9 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1050.61	1210.32

2	1056.28	1204.86
3	1077.05	1184.62
4	1515.99	1349.40
5	1517.47	1351.00
6	1517.47	1354.00

** Corrected JANBU FOS = 1.692 ** (Fo factor = 1.030)

Failure surface No.10 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1041.52	1207.17
2	1047.08	1202.71
3	1067.69	1182.31
4	1516.49	1347.76
5	1519.63	1351.00
6	1519.63	1354.00

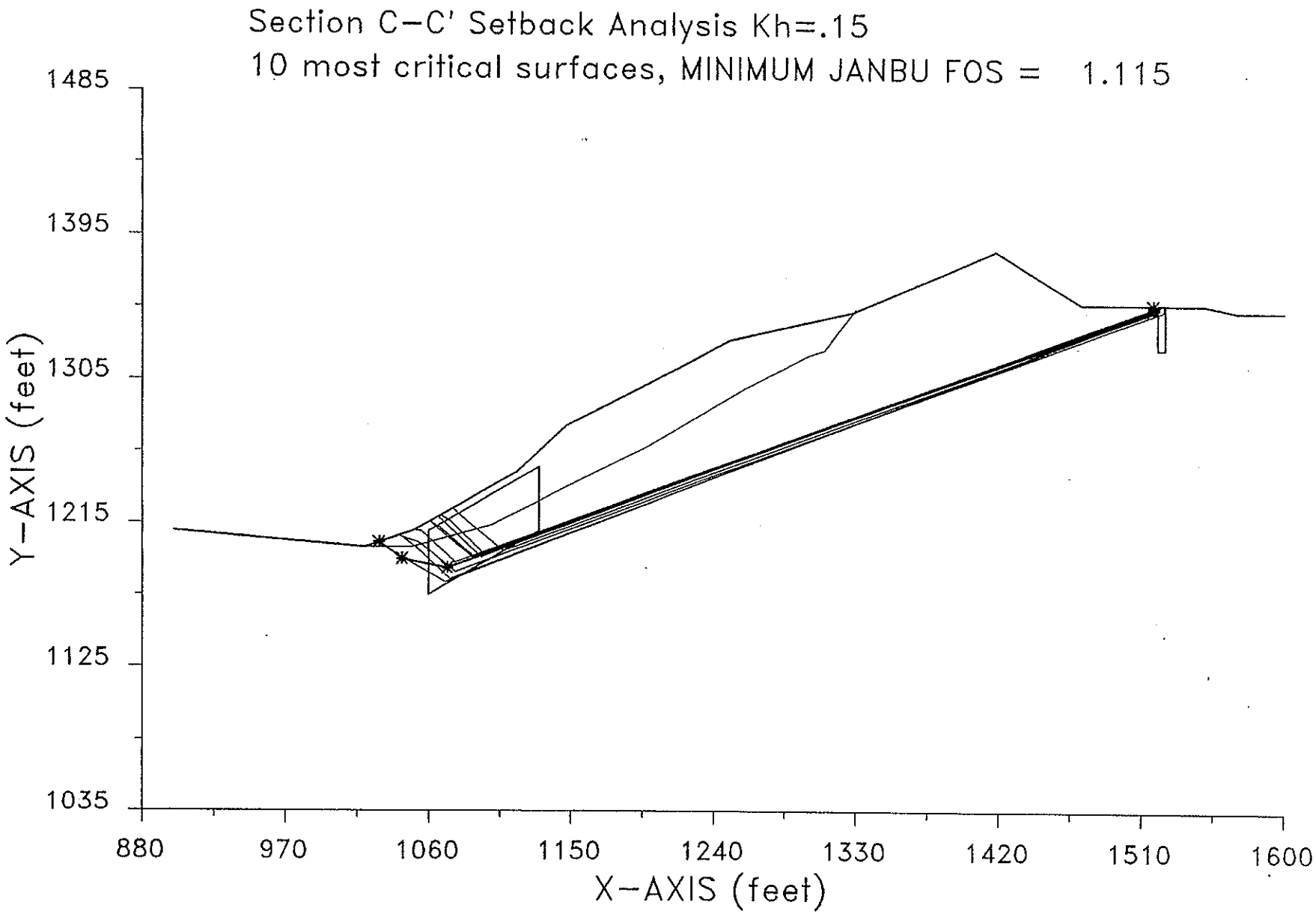
** Corrected JANBU FOS = 1.698 ** (Fo factor = 1.029)

The following is a summary of the TEN most critical surfaces

Problem Description : Section C-C' Setback Analysis

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.612	1.029	1071.55	1513.41	1.425E+06
2.	1.635	1.028	1060.98	1514.14	1.484E+06
3.	1.636	1.024	1031.93	1519.84	1.611E+06
4.	1.644	1.031	1042.96	1521.61	1.689E+06
5.	1.654	1.031	1070.98	1512.22	1.474E+06
6.	1.663	1.027	1045.67	1524.81	1.669E+06
7.	1.679	1.030	1066.42	1516.58	1.522E+06
8.	1.685	1.031	1039.95	1521.23	1.721E+06
9.	1.692	1.030	1050.61	1517.47	1.643E+06
10.	1.698	1.029	1041.52	1519.63	1.668E+06

* * * END OF FILE * * *


Section C-C' Setback Analysis Kh=.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.115
1485
1395
1305
1215
1125
1035
Y-AXIS (feet)
880
970
1060
1150
1240
1330
1420
1510
1600
X-AXIS (feet)

XSTABL File: SECTC-C4 10-04-** 15:23

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section C-C' Setback Analysis Kh=.15

SEGMENT BOUNDARY COORDINATES

---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	900.0	1210.0	1020.0	1200.0	2
2	1020.0	1200.0	1050.0	1210.0	1
3	1050.0	1210.0	1116.0	1247.0	1
4	1116.0	1247.0	1147.0	1276.0	1
5	1147.0	1276.0	1186.0	1296.0	1
6	1186.0	1296.0	1250.0	1330.0	1
7	1250.0	1330.0	1328.0	1348.0	2
8	1328.0	1348.0	1418.0	1387.0	2
9	1418.0	1387.0	1472.0	1354.0	2
10	1472.0	1354.0	1550.0	1354.0	2
11	1550.0	1354.0	1570.0	1350.0	2
12	1570.0	1350.0	1600.0	1350.0	2

7 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1020.0	1200.0	1050.0	1200.0	2
2	1050.0	1200.0	1100.0	1214.0	2
3	1100.0	1214.0	1200.0	1264.0	2
4	1200.0	1264.0	1260.0	1300.0	2
5	1260.0	1300.0	1300.0	1321.0	2
6	1300.0	1321.0	1310.0	1324.0	2
7	1310.0	1324.0	1330.0	1350.0	2

A CRACKED ZONE HAS BEEN SPECIFIED

Depth of crack below ground surface = 3.00 (feet)
Maximum depth of water in crack = 3.00 (feet)
Unit weight of water in crack = 62.40 (pcf)

Failure surfaces will have a vertical side equal to the specified depth of crack and be affected by a hydrostatic force according to the specified depth of water in the crack

---

ISOTROPIC Soil Parameters

---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	20.00	4000.0	28.00
2	24.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

750 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *
Length of line segments for active and passive portions of sliding block is 29.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1060.0	1190.0	1130.0	1230.0	40.0
2	1520.0	1340.0	1525.0	1340.0	28.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1029.19	1203.06
2	1043.33	1192.43
3	1071.75	1186.68

4	1517.41	1351.00
5	1517.41	1354.00

** Corrected JANBU FOS = 1.115 ** (Fo factor = 1.025)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1060.68	1215.99
2	1066.89	1212.32
3	1089.04	1193.61
4	1514.10	1351.00
5	1514.10	1354.00

** Corrected JANBU FOS = 1.137 ** (Fo factor = 1.029)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1060.92	1216.12
2	1066.00	1211.52
3	1088.26	1192.94
4	1516.99	1351.00
5	1516.99	1354.00

** Corrected JANBU FOS = 1.141 ** (Fo factor = 1.029)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1050.87	1210.49
2	1055.64	1209.97
3	1076.81	1190.15
4	1517.56	1351.00
5	1517.56	1354.00

** Corrected JANBU FOS = 1.142 ** (Fo factor = 1.026)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1028.58	1202.86
2	1045.39	1192.07
3	1070.74	1177.99
4	1518.57	1351.00
5	1518.57	1354.00

** Corrected JANBU FOS = 1.146 ** (Fo factor = 1.032)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1041.16	1207.05
2	1054.42	1202.60
3	1076.89	1184.26
4	1523.43	1349.92
5	1524.17	1351.00
6	1524.17	1354.00

** Corrected JANBU FOS = 1.155 ** (Fo factor = 1.029)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1066.06	1219.00
2	1072.01	1213.60
3	1093.03	1193.62
4	1515.14	1351.00
5	1515.14	1354.00

** Corrected JANBU FOS = 1.180 ** (Fo factor = 1.031)

Failure surface No. 8 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1075.29	1224.18
2	1084.95	1215.69
3	1107.50	1197.46
4	1520.24	1350.25
5	1520.95	1351.00
6	1520.95	1354.00

** Corrected JANBU FOS = 1.182 ** (Fo factor = 1.033)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1067.64	1219.89
2	1073.97	1216.36
3	1094.47	1195.85
4	1520.51	1351.00
5	1520.51	1354.00

** Corrected JANBU FOS = 1.186 ** (Fo factor = 1.030)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1042.16	1207.39
2	1052.35	1199.39
3	1073.67	1179.74
4	1521.36	1351.00
5	1521.36	1354.00

** Corrected JANBU FOS = 1.190 ** (Fo factor = 1.032)

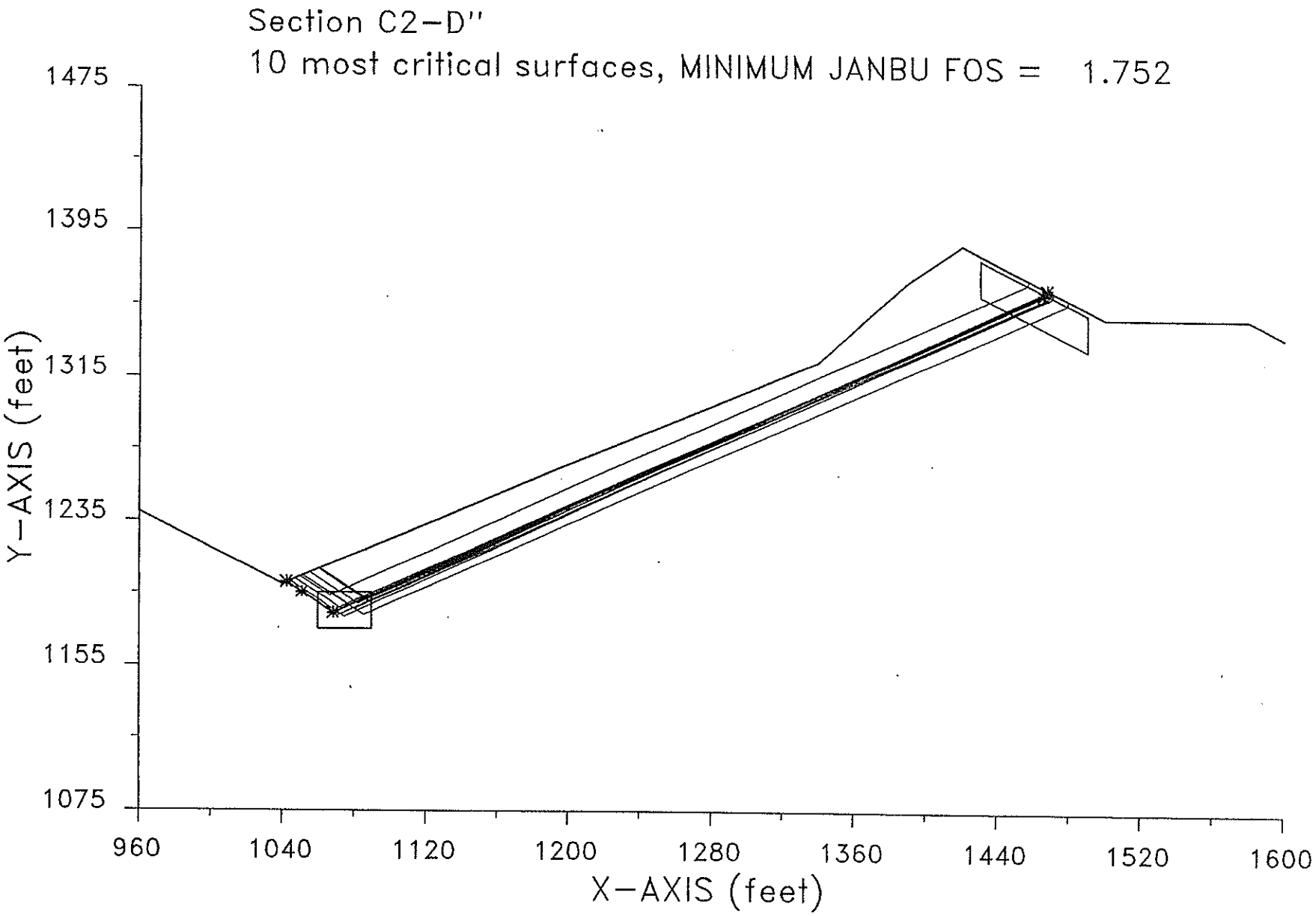
The following is a summary of the TEN most critical surfaces

Problem Description : Section C-C' Setback Analysis Kh=.15

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.115	1.025	1029.19	1517.41	1.596E+06
2.	1.137	1.029	1060.68	1514.10	1.488E+06
3.	1.141	1.029	1060.92	1516.99	1.511E+06
4.	1.142	1.026	1050.87	1517.56	1.513E+06
5.	1.146	1.032	1028.58	1518.57	1.758E+06
6.	1.155	1.029	1041.16	1524.17	1.671E+06
7.	1.180	1.031	1066.06	1515.14	1.533E+06
8.	1.182	1.033	1075.29	1520.95	1.554E+06
9.	1.186	1.030	1067.64	1520.51	1.521E+06
10.	1.190	1.032	1042.16	1521.36	1.743E+06

* * * END OF FILE * * *

SLC2D2 10-09-** 0:38



XSTABL File: SEC2D2 10-09-** 0:38

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*        Moscow, ID 83843, U.S.A.       *
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*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section C2-D"

SEGMENT BOUNDARY COORDINATES
---

7 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	960.0	1240.0	1040.0	1200.0	1
2	1040.0	1200.0	1340.0	1325.0	1
3	1340.0	1325.0	1390.0	1370.0	1
4	1390.0	1370.0	1420.0	1390.0	1
5	1420.0	1390.0	1500.0	1350.0	1
6	1500.0	1350.0	1580.0	1350.0	1
7	1580.0	1350.0	1600.0	1340.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	24.00	4000.0	28.00

2	28.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 21.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1060.0	1185.0	1090.0	1185.0	20.0
2	1430.0	1372.0	1490.0	1342.0	20.0

```
************************************************************
**     Factor of safety calculation for surface #    55    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-936.4468    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1053.04	1205.43
2	1063.44	1198.68
3	1081.05	1187.24
4	1433.09	1378.92
5	1435.31	1382.34

```
************************************************************
**     Factor of safety calculation for surface #    62    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  11.9964    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1036.30	1201.85
2	1051.35	1192.08

3	1068.96	1180.64
4	1434.35	1377.95
5	1436.74	1381.63

```
*********************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
*********************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*********************************************************************
```

```
   ------------------------------------------------------------
   USER SELECTED option to maintain strength greater than zero
   ------------------------------------------------------------

   ************************************************************
   **     Factor of safety calculation for surface #   341    **
   **     failed to converge within FIFTY iterations          **
   **                                                         **
   **    The last calculated value of the FOS was  16.8598    **
   **    This will be ignored for final summary of results    **
   ************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1053.50	1205.63
2	1061.82	1200.22
3	1079.43	1188.79
4	1432.29	1379.46
5	1434.45	1382.78

```
   ************************************************************
   **     Factor of safety calculation for surface #   345    **
   **     failed to converge within FIFTY iterations          **
   **                                                         **
   **    The last calculated value of the FOS was -33.7756    **
   **    This will be ignored for final summary of results    **
   ************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	970.68	1234.66
2	973.86	1232.60
3	991.47	1221.16
4	1009.08	1209.72
5	1026.69	1198.28
6	1044.31	1186.85
7	1061.92	1175.41
8	1433.71	1375.30
9	1437.56	1381.22

```
   ************************************************************
   **     Factor of safety calculation for surface #   433    **
   **     failed to converge within FIFTY iterations          **
   **                                                         **
   **    The last calculated value of the FOS was-633.5565    **
   **    This will be ignored for final summary of results    **
```

****

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1057.07	1207.11
2	1067.47	1200.36
3	1085.08	1188.92
4	1435.14	1377.58
5	1437.52	1381.24

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1042.35	1200.98
2	1050.93	1195.41
3	1068.54	1183.97
4	1465.17	1363.09
5	1467.29	1366.36

** Corrected JANBU FOS = 1.752 ** (Fo factor = 1.026)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1061.02	1208.76
2	1070.17	1202.81
3	1087.78	1191.37
4	1467.77	1361.68
5	1469.95	1365.03

** Corrected JANBU FOS = 1.764 ** (Fo factor = 1.027)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1060.24	1208.43
2	1071.29	1201.26
3	1088.90	1189.82
4	1469.56	1361.31
5	1471.48	1364.26

** Corrected JANBU FOS = 1.767 ** (Fo factor = 1.029)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1042.20	1200.92
2	1053.06	1193.86
3	1070.67	1182.43
4	1464.98	1362.38
5	1467.50	1366.25

** Corrected JANBU FOS = 1.769 ** (Fo factor = 1.028)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1047.17	1202.99
2	1054.35	1198.32
3	1071.97	1186.88
4	1462.47	1361.95
5	1465.81	1367.09

** Corrected JANBU FOS = 1.769 ** (Fo factor = 1.025)

Failure surface No. 6 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1055.44	1206.43
2	1064.64	1200.46
3	1082.25	1189.02
4	1464.71	1363.52
5	1466.73	1366.64

** Corrected JANBU FOS = 1.770 ** (Fo factor = 1.027)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1051.63	1204.85
2	1067.96	1194.24
3	1085.57	1182.81
4	1477.46	1357.41
5	1479.35	1360.32

** Corrected JANBU FOS = 1.774 ** (Fo factor = 1.032)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1044.21	1201.76
2	1057.19	1193.33
3	1074.81	1181.89
4	1466.82	1361.00
5	1469.56	1365.22

** Corrected JANBU FOS = 1.777 ** (Fo factor = 1.029)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1051.56	1204.82
2	1062.74	1197.56
3	1080.35	1186.12
4	1464.46	1364.16
5	1466.23	1366.89

** Corrected JANBU FOS = 1.778 ** (Fo factor = 1.029)

Failure surface No.10 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1050.02	1204.17
2	1066.60	1193.40
3	1455.63	1368.74
4	1457.32	1371.34

** Corrected JANBU FOS = 1.779 ** (Fo factor = 1.018)

```
*******************************************************************
**                                                               **
**  Out of the    500 surfaces generated and analyzed by XSTABL,  **
**        5 surfaces were found to have MISLEADING FOS values.   **
**                                                               **
*******************************************************************
```

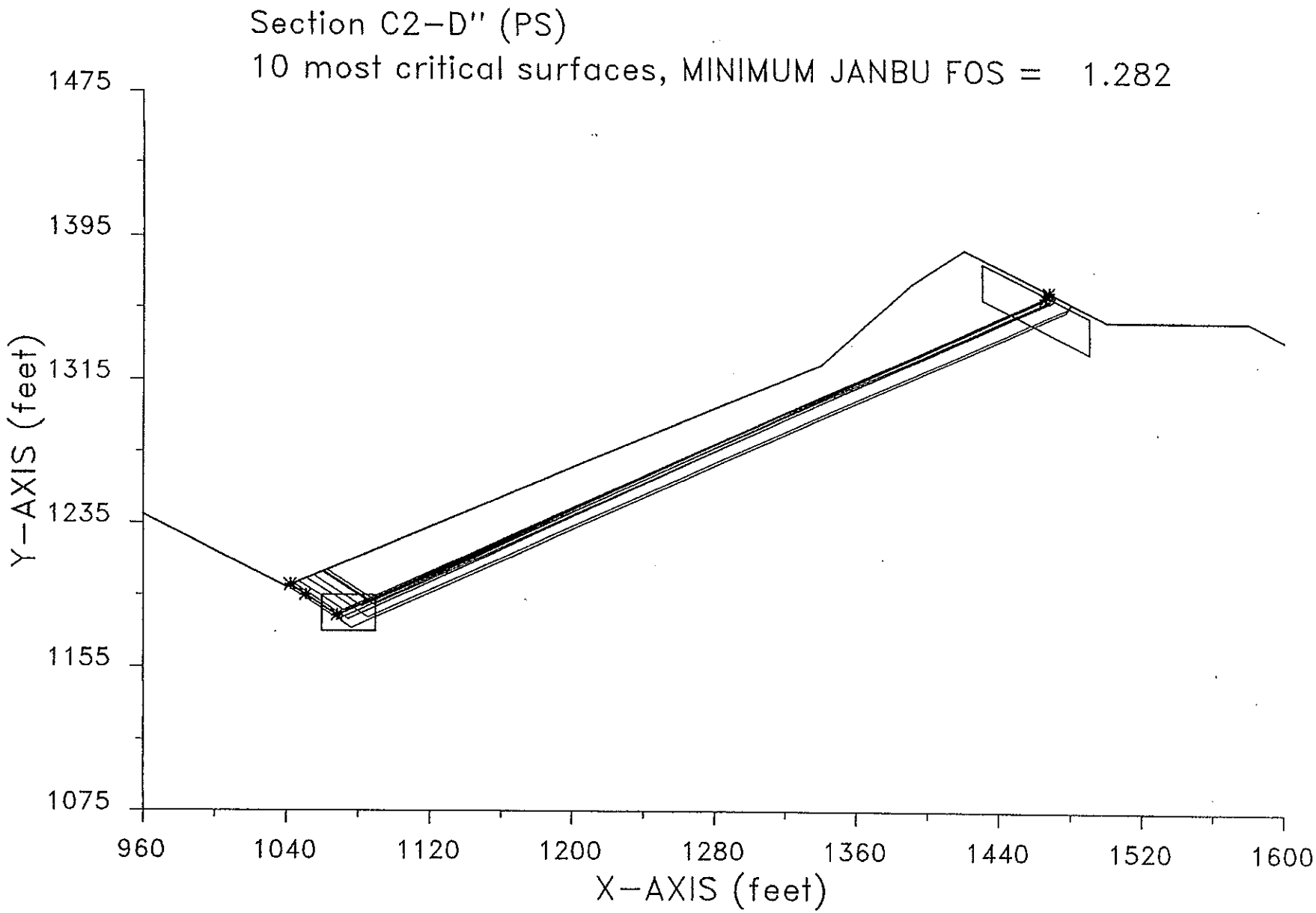
The following is a summary of the TEN most critical surfaces

Problem Description : Section C2-D"

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.752	1.026	1042.35	1467.29	7.990E+05
2.	1.764	1.027	1061.02	1469.95	8.129E+05
3.	1.767	1.029	1060.24	1471.48	8.593E+05
4.	1.769	1.028	1042.20	1467.50	8.505E+05
5.	1.769	1.025	1047.17	1465.81	7.721E+05
6.	1.770	1.027	1055.44	1466.73	7.874E+05
7.	1.774	1.032	1051.63	1479.35	1.047E+06
8.	1.777	1.029	1044.21	1469.56	9.121E+05
9.	1.778	1.029	1051.56	1466.23	8.201E+05
10.	1.779	1.018	1050.02	1457.32	5.094E+05

* * * END OF FILE * * *

SEC2D2E 10-09-** 0:39



XSTABL File: SEC2D2E 10-09-** 0:39

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section C2-D" (PS)

SEGMENT BOUNDARY COORDINATES
---

7 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	960.0	1240.0	1040.0	1200.0	1
2	1040.0	1200.0	1340.0	1325.0	1
3	1340.0	1325.0	1390.0	1370.0	1
4	1390.0	1370.0	1420.0	1390.0	1
5	1420.0	1390.0	1500.0	1350.0	1
6	1500.0	1350.0	1580.0	1350.0	1
7	1580.0	1350.0	1600.0	1340.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	24.00	4000.0	28.00

2	28.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 21.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1060.0	1185.0	1090.0	1185.0	20.0
2	1430.0	1372.0	1490.0	1342.0	20.0

```
************************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
************************************************************************
```

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1042.35	1200.98
2	1050.93	1195.41
3	1068.54	1183.97
4	1465.17	1363.09
5	1467.29	1366.36

** Corrected JANBU FOS = 1.282 ** (Fo factor = 1.026)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1061.02	1208.76
2	1070.17	1202.81
3	1087.78	1191.37
4	1467.77	1361.68
5	1469.95	1365.03

** Corrected JANBU FOS = 1.287 ** (Fo factor = 1.027)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1051.63	1204.85
2	1067.96	1194.24
3	1085.57	1182.81
4	1477.46	1357.41
5	1479.35	1360.32

** Corrected JANBU FOS = 1.288 ** (Fo factor = 1.032)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1060.24	1208.43
2	1071.29	1201.26
3	1088.90	1189.82
4	1469.56	1361.31
5	1471.48	1364.26

** Corrected JANBU FOS = 1.290 ** (Fo factor = 1.029)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1047.17	1202.99
2	1054.35	1198.32
3	1071.97	1186.88
4	1462.47	1361.95
5	1465.81	1367.09

** Corrected JANBU FOS = 1.292 ** (Fo factor = 1.025)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1040.57	1200.24

2	1041.29	1199.77
3	1058.90	1188.34
4	1076.51	1176.90
5	1476.79	1355.43
6	1479.81	1360.09

** Corrected JANBU FOS = 1.294 ** (Fo factor = 1.033)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1042.20	1200.92
2	1053.06	1193.86
3	1070.67	1182.43
4	1464.98	1362.38
5	1467.50	1366.25

** Corrected JANBU FOS = 1.295 ** (Fo factor = 1.028)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1055.44	1206.43
2	1064.64	1200.46
3	1082.25	1189.02
4	1464.71	1363.52
5	1466.73	1366.64

** Corrected JANBU FOS = 1.298 ** (Fo factor = 1.027)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1044.21	1201.76
2	1057.19	1193.33
3	1074.81	1181.89
4	1466.82	1361.00
5	1469.56	1365.22

** Corrected JANBU FOS = 1.300 ** (Fo factor = 1.029)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1062.74	1209.48
2	1070.58	1204.38
3	1088.20	1192.95
4	1463.04	1361.54
5	1466.44	1366.78

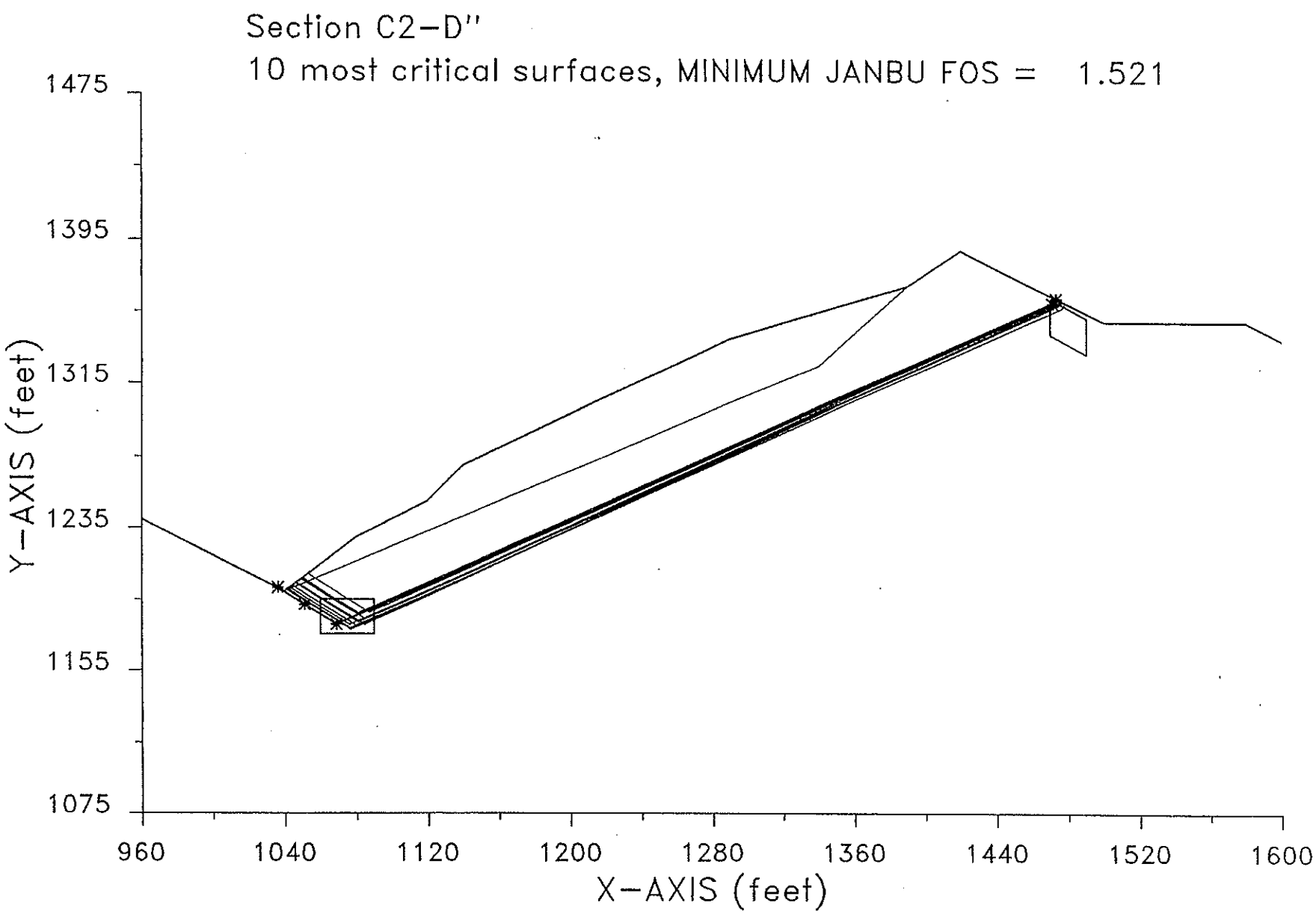
** Corrected JANBU FOS = 1.304 ** (Fo factor = 1.026)

The following is a summary of the TEN most critical surfaces

Problem Description : Section C2-D" (PS)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.282	1.026	1042.35	1467.29	7.953E+05
2.	1.287	1.027	1061.02	1469.95	8.094E+05
3.	1.288	1.032	1051.63	1479.35	1.044E+06
4.	1.290	1.029	1060.24	1471.48	8.564E+05
5.	1.292	1.025	1047.17	1465.81	7.673E+05
6.	1.294	1.033	1040.57	1479.81	1.124E+06
7.	1.295	1.028	1042.20	1467.50	8.472E+05
8.	1.298	1.027	1055.44	1466.73	7.845E+05
9.	1.300	1.029	1044.21	1469.56	9.090E+05
10.	1.304	1.026	1062.74	1466.44	7.681E+05

* * * END OF FILE * * *


Section C2-D''
10 most critical surfaces, MINIMUM JANBU FOS = 1.521
1475
1395
1315
1235
1155
1075
Y-AXIS (feet)
960
1040
1120
1200
1280
1360
1440
1520
1600
X-AXIS (feet)

XSTABL File: SECC2D2F 10-09-** 0:18

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section C2-D"

SEGMENT BOUNDARY COORDINATES
---

10 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	960.0	1240.0	1040.0	1200.0	1
2	1040.0	1200.0	1080.0	1230.0	2
3	1080.0	1230.0	1120.0	1250.0	2
4	1120.0	1250.0	1140.0	1270.0	2
5	1140.0	1270.0	1290.0	1340.0	2
6	1290.0	1340.0	1390.0	1370.0	2
7	1390.0	1370.0	1420.0	1390.0	1
8	1420.0	1390.0	1500.0	1350.0	1
9	1500.0	1350.0	1580.0	1350.0	1
10	1580.0	1350.0	1600.0	1340.0	1

2 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1040.0	1200.0	1340.0	1325.0	1
2	1340.0	1325.0	1390.0	1370.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	.0	25.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	24.00	4000.0	28.00
2	28.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 21.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1060.0	1185.0	1090.0	1185.0	20.0
2	1470.0	1353.0	1490.0	1342.0	20.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1036.30	1201.85
2	1051.35	1192.08
3	1068.96	1180.64
4	1471.45	1360.33
5	1473.39	1363.31

** Corrected JANBU FOS = 1.521 ** (Fo factor = 1.030)

Failure surface No. 2 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1049.90	1207.43
2	1053.04	1205.43
3	1063.44	1198.68
4	1081.05	1187.24
5	1471.03	1360.90
6	1472.79	1363.61

** Corrected JANBU FOS = 1.524 ** (Fo factor = 1.030)

Failure surface No. 3 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1041.13	1200.85
2	1041.49	1200.62
3	1041.61	1200.54
4	1059.22	1189.10
5	1076.83	1177.67
6	1473.59	1359.73
7	1475.29	1362.36

** Corrected JANBU FOS = 1.540 ** (Fo factor = 1.033)

Failure surface No. 4 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1042.80	1202.10
2	1043.69	1201.54
3	1058.53	1191.90
4	1076.14	1180.46
5	1470.75	1357.27
6	1474.36	1362.82

** Corrected JANBU FOS = 1.548 ** (Fo factor = 1.031)

Failure surface No. 5 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1041.78	1201.33
2	1042.34	1200.98
3	1059.08	1190.10
4	1076.70	1178.67
5	1476.79	1357.82
6	1478.64	1360.68

** Corrected JANBU FOS = 1.548 ** (Fo factor = 1.032)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1046.19	1204.64
2	1048.15	1203.40
3	1063.63	1193.34
4	1081.25	1181.90
5	1474.68	1359.30
6	1476.33	1361.84

** Corrected JANBU FOS = 1.551 ** (Fo factor = 1.033)

Failure surface No. 7 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1053.08	1209.81
2	1057.22	1207.18
3	1069.59	1199.14
4	1087.20	1187.71
5	1472.31	1360.07
6	1474.16	1362.92

** Corrected JANBU FOS = 1.557 ** (Fo factor = 1.033)

Failure surface No. 8 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1046.60	1204.95
2	1048.68	1203.62
3	1049.28	1203.23
4	1066.89	1191.79
5	1084.51	1180.35
6	1472.74	1361.37
7	1473.85	1363.08

** Corrected JANBU FOS = 1.558 ** (Fo factor = 1.035)

Failure surface No. 9 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1044.19	1203.14
2	1045.52	1202.30
3	1045.63	1202.22
4	1063.25	1190.79
5	1080.86	1179.35
6	1474.27	1359.04
7	1476.14	1361.93

** Corrected JANBU FOS = 1.559 ** (Fo factor = 1.034)

Failure surface No.10 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1049.21	1206.91
2	1052.12	1205.05
3	1067.20	1195.26
4	1084.81	1183.82
5	1470.57	1359.21
6	1473.27	1363.36

** Corrected JANBU FOS = 1.566 ** (Fo factor = 1.034)

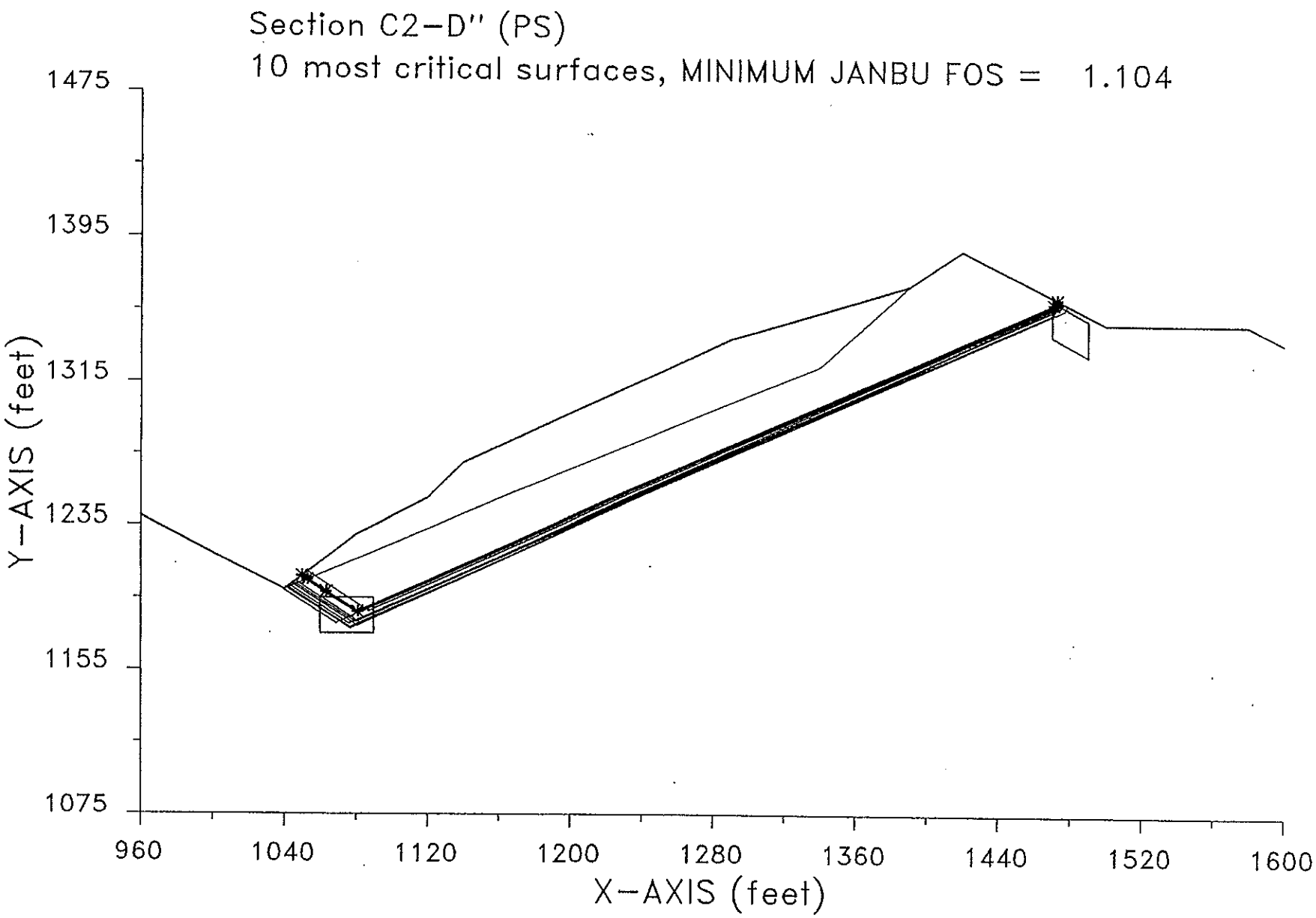
The following is a summary of the TEN most critical surfaces

Problem Description : Section C2-D"

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.521	1.030	1036.30	1473.39	1.387E+06
2.	1.524	1.030	1049.90	1472.79	1.316E+06
3.	1.540	1.033	1041.13	1475.29	1.498E+06
4.	1.548	1.031	1042.80	1474.36	1.458E+06
5.	1.548	1.032	1041.78	1478.64	1.513E+06
6.	1.551	1.033	1046.19	1476.33	1.455E+06
7.	1.557	1.033	1053.08	1474.16	1.365E+06
8.	1.558	1.035	1046.60	1473.85	1.477E+06
9.	1.559	1.034	1044.19	1476.14	1.505E+06
10.	1.566	1.034	1049.21	1473.27	1.429E+06

* * * END OF FILE * * *

SEC2D2FE 10-09-** 0:19



XSTABL File: SEC2D2FE 10-09-** 0:19

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section C2-D" (PS)

SEGMENT BOUNDARY COORDINATES
---

10 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	960.0	1240.0	1040.0	1200.0	1
2	1040.0	1200.0	1080.0	1230.0	2
3	1080.0	1230.0	1120.0	1250.0	2
4	1120.0	1250.0	1140.0	1270.0	2
5	1140.0	1270.0	1290.0	1340.0	2
6	1290.0	1340.0	1390.0	1370.0	2
7	1390.0	1370.0	1420.0	1390.0	1
8	1420.0	1390.0	1500.0	1350.0	1
9	1500.0	1350.0	1580.0	1350.0	1
10	1580.0	1350.0	1600.0	1340.0	1

2 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1040.0	1200.0	1340.0	1325.0	1
2	1340.0	1325.0	1390.0	1370.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	.0	25.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	24.00	4000.0	28.00
2	28.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 21.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1060.0	1185.0	1090.0	1185.0	20.0
2	1470.0	1353.0	1490.0	1342.0	20.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1049.90	1207.43
2	1053.04	1205.43
3	1063.44	1198.68
4	1081.05	1187.24
5	1471.03	1360.90
6	1472.79	1363.61

** Corrected JANBU FOS = 1.104 ** (Fo factor = 1.030)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1036.30	1201.85
2	1051.35	1192.08
3	1068.96	1180.64
4	1471.45	1360.33
5	1473.39	1363.31

** Corrected JANBU FOS = 1.108 ** (Fo factor = 1.030)

Failure surface No. 3 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1042.80	1202.10
2	1043.69	1201.54
3	1058.53	1191.90
4	1076.14	1180.46
5	1470.75	1357.27
6	1474.36	1362.82

** Corrected JANBU FOS = 1.122 ** (Fo factor = 1.031)

Failure surface No. 4 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1041.78	1201.33
2	1042.34	1200.98
3	1059.08	1190.10
4	1076.70	1178.67
5	1476.79	1357.82
6	1478.64	1360.68

** Corrected JANBU FOS = 1.123 ** (Fo factor = 1.032)

Failure surface No. 5 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1041.13	1200.85
2	1041.49	1200.62
3	1041.61	1200.54
4	1059.22	1189.10
5	1076.83	1177.67
6	1473.59	1359.73
7	1475.29	1362.36

** Corrected JANBU FOS = 1.124 ** (Fo factor = 1.033)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1046.19	1204.64
2	1048.15	1203.40
3	1063.63	1193.34
4	1081.25	1181.90
5	1474.68	1359.30
6	1476.33	1361.84

** Corrected JANBU FOS = 1.126 ** (Fo factor = 1.033)

Failure surface No. 7 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1053.08	1209.81
2	1057.22	1207.18
3	1069.59	1199.14
4	1087.20	1187.71
5	1472.31	1360.07
6	1474.16	1362.92

** Corrected JANBU FOS = 1.127 ** (Fo factor = 1.033)

Failure surface No. 8 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1044.19	1203.14
2	1045.52	1202.30
3	1045.63	1202.22
4	1063.25	1190.79
5	1080.86	1179.35
6	1474.27	1359.04
7	1476.14	1361.93

** Corrected JANBU FOS = 1.135 ** (Fo factor = 1.034)

Failure surface No. 9 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1045.17	1203.88
2	1046.80	1202.83
3	1062.06	1192.92
4	1079.67	1181.49
5	1470.44	1355.80
6	1474.84	1362.58

** Corrected JANBU FOS = 1.137 ** (Fo factor = 1.032)

Failure surface No.10 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1049.21	1206.91
2	1052.12	1205.05
3	1067.20	1195.26
4	1084.81	1183.82
5	1470.57	1359.21
6	1473.27	1363.36

** Corrected JANBU FOS = 1.137 ** (Fo factor = 1.034)

The following is a summary of the TEN most critical surfaces

Problem Description : Section C2-D" (PS)

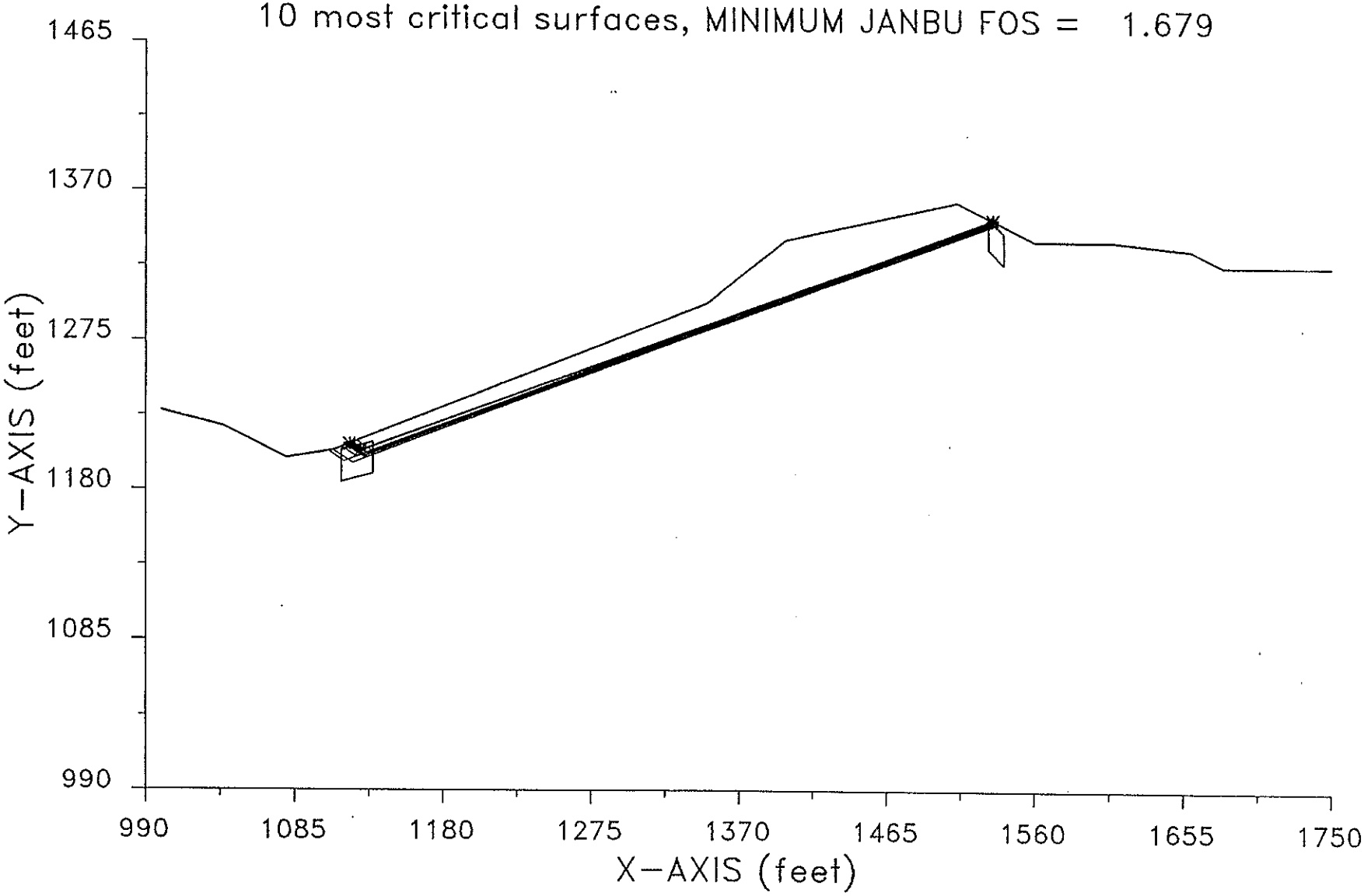
	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.104	1.030	1049.90	1472.79	1.301E+06
2.	1.108	1.030	1036.30	1473.39	1.373E+06
3.	1.122	1.031	1042.80	1474.36	1.442E+06
4.	1.123	1.032	1041.78	1478.64	1.498E+06
5.	1.124	1.033	1041.13	1475.29	1.485E+06
6.	1.126	1.033	1046.19	1476.33	1.441E+06
7.	1.127	1.033	1053.08	1474.16	1.351E+06
8.	1.135	1.034	1044.19	1476.14	1.492E+06
9.	1.137	1.032	1045.17	1474.84	1.465E+06
10.	1.137	1.034	1049.21	1473.27	1.416E+06

* * * END OF FILE * * *

SLOPE20 10-09-** 8:03

Section D-D''

10 most critical surfaces, MINIMUM JANBU FOS = 1.679



XSTABL File: SECDD2O 10-09-** 8:03

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*        Moscow, ID 83843, U.S.A.       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section D-D"

SEGMENT BOUNDARY COORDINATES

11 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1230.0	1040.0	1220.0	1
2	1040.0	1220.0	1080.0	1200.0	1
3	1080.0	1200.0	1110.0	1205.0	1
4	1110.0	1205.0	1350.0	1300.0	1
5	1350.0	1300.0	1400.0	1340.0	1
6	1400.0	1340.0	1510.0	1365.0	1
7	1510.0	1365.0	1560.0	1340.0	1
8	1560.0	1340.0	1610.0	1340.0	1
9	1610.0	1340.0	1660.0	1335.0	1
10	1660.0	1335.0	1680.0	1325.0	1
11	1680.0	1325.0	1750.0	1325.0	1

ISOTROPIC Soil Parameters

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	20.00	4000.0	28.00
2	25.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 20.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1115.0	1195.0	1135.0	1200.0	20.0
2	1530.0	1345.0	1540.0	1335.0	20.0

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1120.05	1208.98
2	1126.78	1204.61
3	1532.18	1352.41
4	1532.92	1353.54

** Corrected JANBU FOS = 1.679 ** (Fo factor = 1.007)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1118.31	1208.29
2	1127.95	1202.03
3	1530.38	1353.22
4	1531.16	1354.42

** Corrected JANBU FOS = 1.709 ** (Fo factor = 1.010)

Failure surface No. 3 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1115.24	1207.08
2	1124.41	1201.12
3	1533.24	1350.71
4	1534.55	1352.73

** Corrected JANBU FOS = 1.710 ** (Fo factor = 1.009)

Failure surface No. 4 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1121.68	1209.62
2	1131.72	1203.10
3	1530.86	1352.29
4	1531.97	1354.01

** Corrected JANBU FOS = 1.721 ** (Fo factor = 1.011)

Failure surface No. 5 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1117.76	1208.07
2	1129.04	1200.75
3	1530.51	1352.95
4	1531.39	1354.30

** Corrected JANBU FOS = 1.724 ** (Fo factor = 1.012)

Failure surface No. 6 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1109.83	1204.97
2	1122.14	1196.98
3	1533.03	1351.43
4	1534.04	1352.98

** Corrected JANBU FOS = 1.724 ** (Fo factor = 1.012)

Failure surface No. 7 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1124.72	1210.83
2	1134.38	1204.56
3	1533.09	1350.44
4	1534.57	1352.71

** Corrected JANBU FOS = 1.726 ** (Fo factor = 1.010)

Failure surface No. 8 specified by 4 coordinate points

Point	x-surf	y-surf

No.	(ft)	(ft)
1	1118.37	1208.31
2	1129.25	1201.24
3	1534.18	1350.17
4	1535.52	1352.24

** Corrected JANBU FOS = 1.726 ** (Fo factor = 1.011)

Failure surface No. 9 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1106.52	1204.42
2	1116.56	1197.90
3	1531.46	1351.08
4	1533.03	1353.49

** Corrected JANBU FOS = 1.731 ** (Fo factor = 1.010)

Failure surface No.10 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1121.73	1209.64
2	1133.13	1202.24
3	1531.16	1352.18
4	1532.25	1353.87

** Corrected JANBU FOS = 1.731 ** (Fo factor = 1.012)

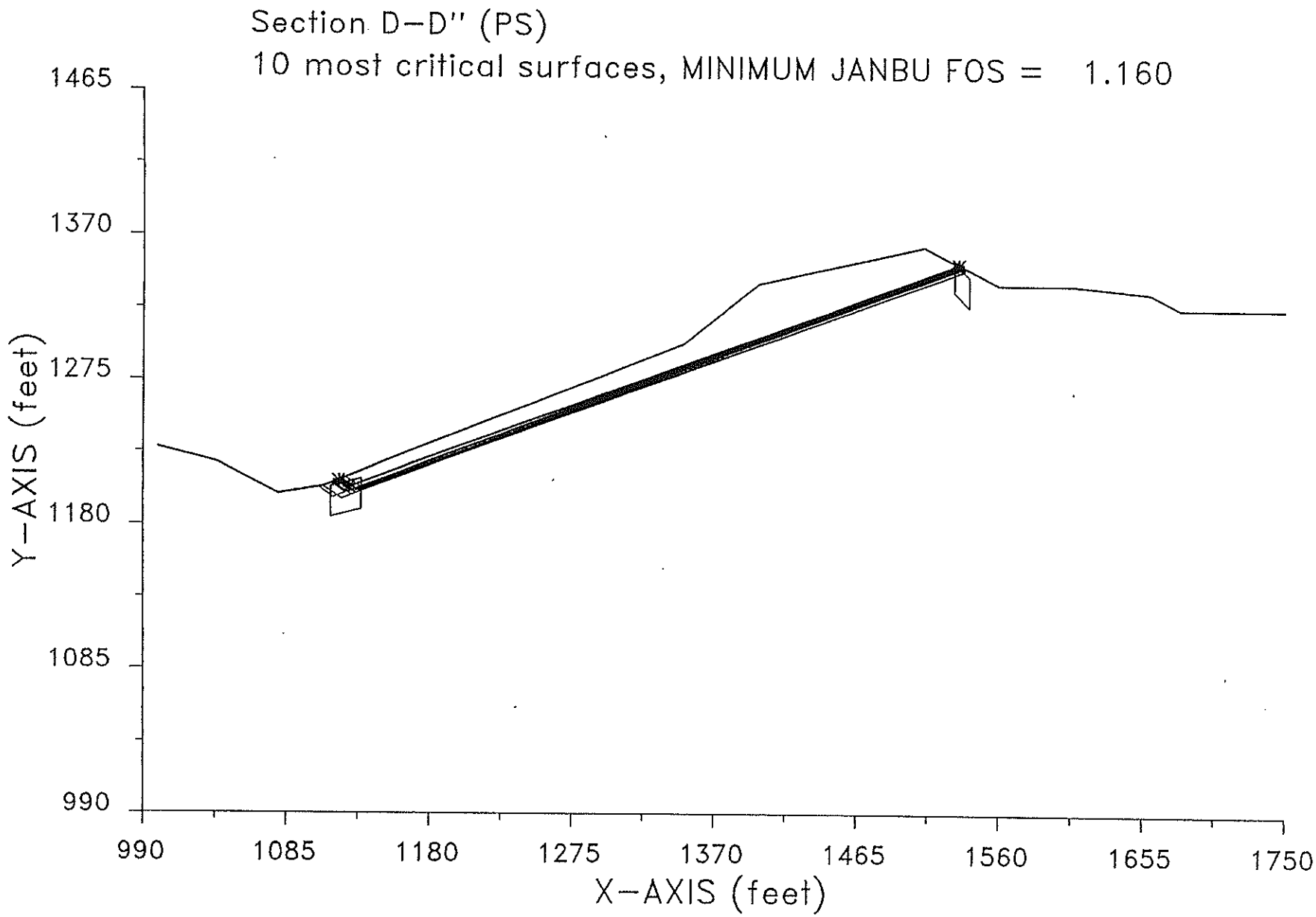
The following is a summary of the TEN most critical surfaces

Problem Description : Section D-D"

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.679	1.007	1120.05	1532.92	4.652E+05
2.	1.709	1.010	1118.31	1531.16	5.012E+05
3.	1.710	1.009	1115.24	1534.55	5.366E+05
4.	1.721	1.011	1121.68	1531.97	5.184E+05
5.	1.724	1.012	1117.76	1531.39	5.337E+05
6.	1.724	1.012	1109.83	1534.04	5.860E+05
7.	1.726	1.010	1124.72	1534.57	5.390E+05
8.	1.726	1.011	1118.37	1535.52	5.728E+05
9.	1.731	1.010	1106.52	1533.03	5.410E+05
10.	1.731	1.012	1121.73	1532.25	5.438E+05

* * * END OF FILE * * *

SECDD20E 10-09-** 8:03



XSTABL File: SECDD2OE 10-09-** 8:03

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*        Moscow, ID 83843, U.S.A.       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section D-D" (PS)

SEGMENT BOUNDARY COORDINATES
---

11 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1230.0	1040.0	1220.0	1
2	1040.0	1220.0	1080.0	1200.0	1
3	1080.0	1200.0	1110.0	1205.0	1
4	1110.0	1205.0	1350.0	1300.0	1
5	1350.0	1300.0	1400.0	1340.0	1
6	1400.0	1340.0	1510.0	1365.0	1
7	1510.0	1365.0	1560.0	1340.0	1
8	1560.0	1340.0	1610.0	1340.0	1
9	1610.0	1340.0	1660.0	1335.0	1
10	1660.0	1335.0	1680.0	1325.0	1
11	1680.0	1325.0	1750.0	1325.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	20.00	4000.0	28.00
2	25.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 20.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1115.0	1195.0	1135.0	1200.0	20.0
2	1530.0	1345.0	1540.0	1335.0	20.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1120.05	1208.98
2	1126.78	1204.61
3	1532.18	1352.41
4	1532.92	1353.54

** Corrected JANBU FOS = 1.160 ** (Fo factor = 1.007)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1115.24	1207.08
2	1124.41	1201.12
3	1533.24	1350.71
4	1534.55	1352.73

** Corrected JANBU FOS = 1.184 ** (Fo factor = 1.009)

Failure surface No. 3 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1118.31	1208.29
2	1127.95	1202.03
3	1530.38	1353.22
4	1531.16	1354.42

** Corrected JANBU FOS = 1.195 ** (Fo factor = 1.010)

Failure surface No. 4 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1124.72	1210.83
2	1134.38	1204.56
3	1533.09	1350.44
4	1534.57	1352.71

** Corrected JANBU FOS = 1.195 ** (Fo factor = 1.010)

Failure surface No. 5 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1118.37	1208.31
2	1129.25	1201.24
3	1534.18	1350.17
4	1535.52	1352.24

** Corrected JANBU FOS = 1.198 ** (Fo factor = 1.011)

Failure surface No. 6 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1121.68	1209.62
2	1131.72	1203.10

3	1530.86	1352.29
4	1531.97	1354.01

** Corrected JANBU FOS = 1.201 ** (Fo factor = 1.011)

Failure surface No. 7 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1106.52	1204.42
2	1116.56	1197.90
3	1531.46	1351.08
4	1533.03	1353.49

** Corrected JANBU FOS = 1.203 ** (Fo factor = 1.010)

Failure surface No. 8 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1109.83	1204.97
2	1122.14	1196.98
3	1533.03	1351.43
4	1534.04	1352.98

** Corrected JANBU FOS = 1.206 ** (Fo factor = 1.012)

Failure surface No. 9 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1116.28	1207.49
2	1128.56	1199.51
3	1535.74	1348.64
4	1537.45	1351.27

** Corrected JANBU FOS = 1.208 ** (Fo factor = 1.012)

Failure surface No.10 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1122.03	1209.76
2	1133.36	1202.41
3	1534.49	1348.74
4	1536.46	1351.77

** Corrected JANBU FOS = 1.209 ** (Fo factor = 1.012)

The following is a summary of the TEN most critical surfaces

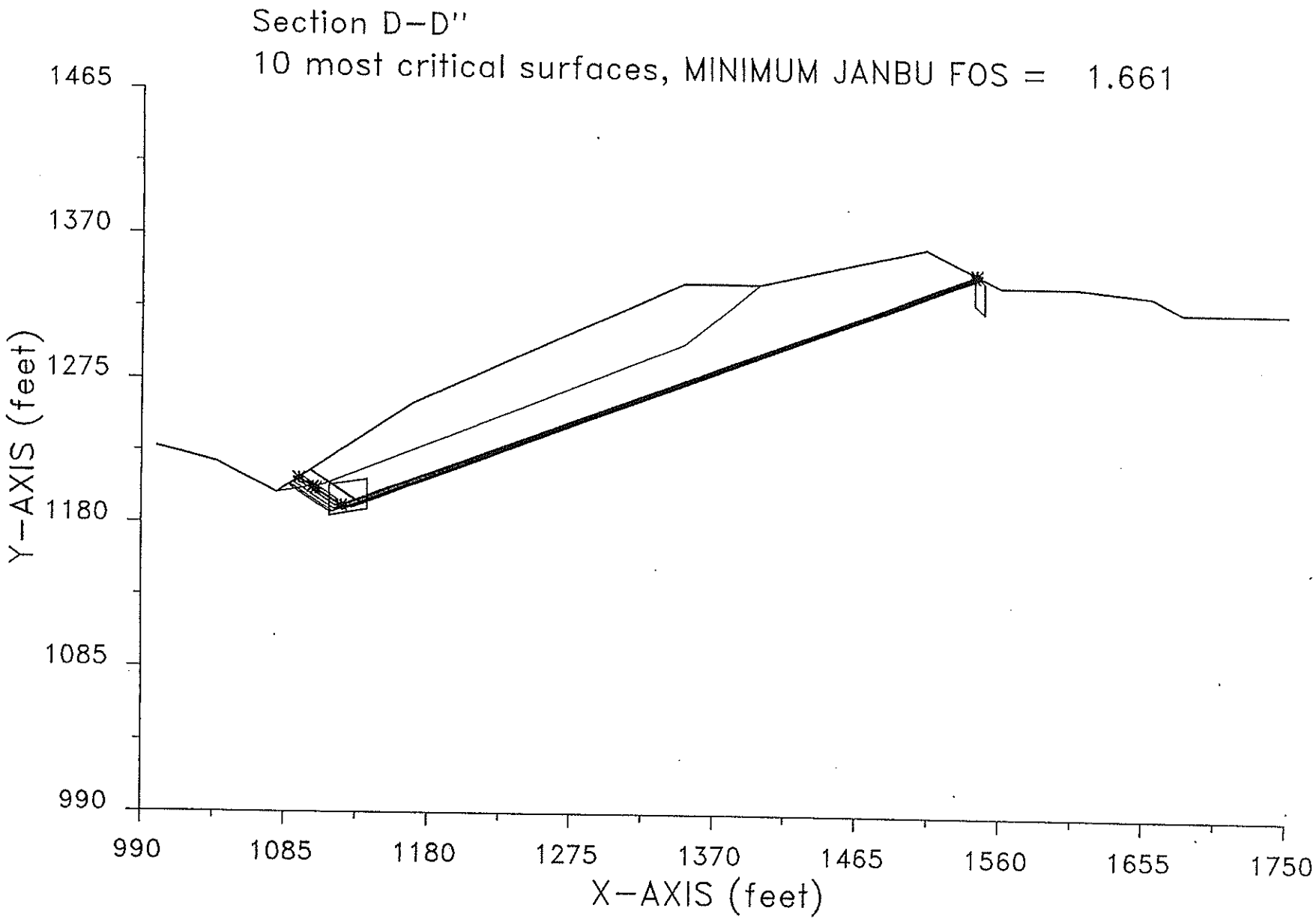
Problem Description : Section D-D" (PS)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.160	1.007	1120.05	1532.92	4.544E+05
2.	1.184	1.009	1115.24	1534.55	5.257E+05

3.	1.195	1.010	1118.31	1531.16	4.922E+05
4.	1.195	1.010	1124.72	1534.57	5.286E+05
5.	1.198	1.011	1118.37	1535.52	5.626E+05
6.	1.201	1.011	1121.68	1531.97	5.091E+05
7.	1.203	1.010	1106.52	1533.03	5.307E+05
8.	1.206	1.012	1109.83	1534.04	5.768E+05
9.	1.208	1.012	1116.28	1537.45	6.130E+05
10.	1.209	1.012	1122.03	1536.46	5.853E+05

* * * END OF FILE * * *

SLOPE21 10-09-** 8:22



XSTABL File: SECDD21 10-09-** 8:22

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*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section D-D"

SEGMENT BOUNDARY COORDINATES
---

11 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1230.0	1040.0	1220.0	1
2	1040.0	1220.0	1080.0	1200.0	1
3	1080.0	1200.0	1170.0	1260.0	2
4	1170.0	1260.0	1350.0	1340.0	2
5	1350.0	1340.0	1400.0	1340.0	2
6	1400.0	1340.0	1510.0	1365.0	1
7	1510.0	1365.0	1560.0	1340.0	1
8	1560.0	1340.0	1610.0	1340.0	1
9	1610.0	1340.0	1660.0	1335.0	1
10	1660.0	1335.0	1680.0	1325.0	1
11	1680.0	1325.0	1750.0	1325.0	1

3 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1080.0	1200.0	1110.0	1205.0	1
2	1110.0	1205.0	1350.0	1300.0	1
3	1350.0	1300.0	1400.0	1340.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	.0	25.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	20.00	4000.0	28.00
2	25.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 20.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1115.0	1195.0	1140.0	1199.0	20.0
2	1542.0	1339.0	1549.0	1333.0	20.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined

are displayed below - the most critical first

Failure surface No. 1 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1094.67	1209.78
2	1103.79	1203.96
3	1105.69	1202.73
4	1122.47	1191.84
5	1542.51	1346.69
6	1543.52	1348.24

** Corrected JANBU FOS = 1.661 ** (Fo factor = 1.025)

Failure surface No. 2 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1088.61	1205.74
2	1093.96	1202.33
3	1100.21	1198.26
4	1116.99	1187.37
5	1543.48	1347.20
6	1544.00	1348.00

** Corrected JANBU FOS = 1.663 ** (Fo factor = 1.025)

Failure surface No. 3 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1087.51	1205.01
2	1092.18	1202.03
3	1098.43	1197.97
4	1115.20	1187.08
5	1544.36	1345.95
6	1545.28	1347.36

** Corrected JANBU FOS = 1.672 ** (Fo factor = 1.024)

Failure surface No. 4 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1092.68	1208.45
2	1100.57	1203.43
3	1106.71	1199.44
4	1123.48	1188.55
5	1542.92	1347.70
6	1543.33	1348.33

** Corrected JANBU FOS = 1.673 ** (Fo factor = 1.027)

Failure surface No. 5 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1090.51	1207.01
2	1097.05	1202.84
3	1100.97	1200.29
4	1117.75	1189.40

5	1543.04	1345.40
6	1544.55	1347.73

** Corrected JANBU FOS = 1.674 ** (Fo factor = 1.024)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1101.89	1214.59
2	1114.29	1206.70
3	1115.93	1205.63
4	1132.70	1194.74
5	1543.64	1346.47
6	1544.48	1347.76

** Corrected JANBU FOS = 1.693 ** (Fo factor = 1.028)

Failure surface No. 7 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1092.94	1208.63
2	1100.99	1203.50
3	1106.99	1199.60
4	1123.76	1188.71
5	1545.26	1345.59
6	1546.13	1346.94

** Corrected JANBU FOS = 1.695 ** (Fo factor = 1.027)

Failure surface No. 8 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1094.21	1209.48
2	1103.06	1203.84
3	1108.25	1200.47
4	1125.02	1189.58
5	1545.37	1345.50
6	1546.26	1346.87

** Corrected JANBU FOS = 1.695 ** (Fo factor = 1.027)

Failure surface No. 9 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1102.38	1214.92
2	1114.91	1206.94
3	1118.65	1204.52
4	1135.42	1193.62
5	1542.96	1348.06
6	1543.19	1348.41

** Corrected JANBU FOS = 1.696 ** (Fo factor = 1.030)

Failure surface No.10 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1096.43	1210.95
2	1106.65	1204.44
3	1112.25	1200.80
4	1129.03	1189.91
5	1543.26	1346.63
6	1544.11	1347.95

** Corrected JANBU FOS = 1.697 ** (Fo factor = 1.029)

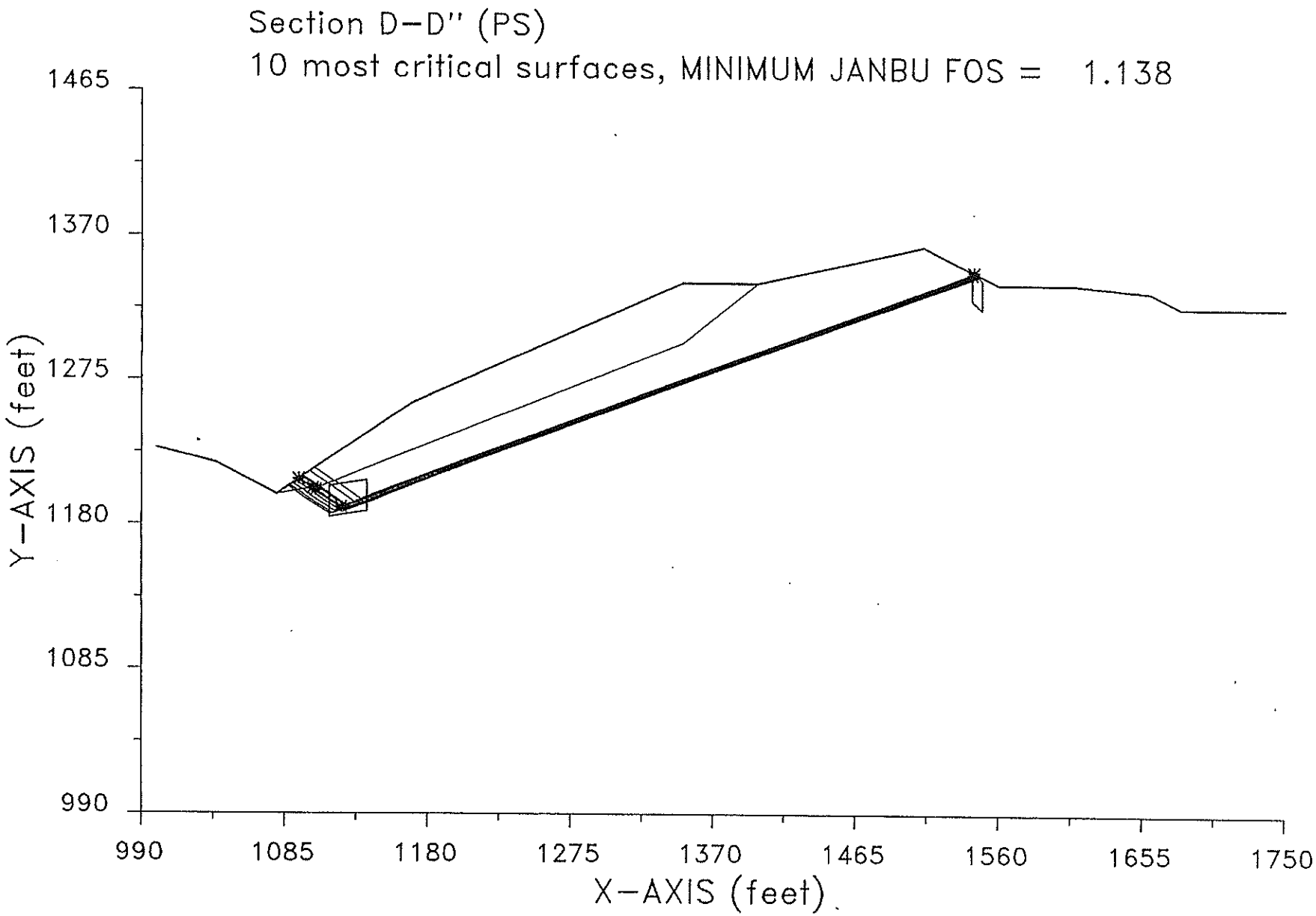
The following is a summary of the TEN most critical surfaces

Problem Description : Section D-D"

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.661	1.025	1094.67	1543.52	1.255E+06
2.	1.663	1.025	1088.61	1544.00	1.319E+06
3.	1.672	1.024	1087.51	1545.28	1.335E+06
4.	1.673	1.027	1092.68	1543.33	1.319E+06
5.	1.674	1.024	1090.51	1544.55	1.302E+06
6.	1.693	1.028	1101.89	1544.48	1.259E+06
7.	1.695	1.027	1092.94	1546.13	1.352E+06
8.	1.695	1.027	1094.21	1546.26	1.341E+06
9.	1.696	1.030	1102.38	1543.19	1.275E+06
10.	1.697	1.029	1096.43	1544.11	1.333E+06

* * * END OF FILE * * *

SECUD2E1 10-09-** 8:19



XSTABL File: SECDD2E1 10-09-** 8:19

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section D-D" (PS)

SEGMENT BOUNDARY COORDINATES
---

11 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1230.0	1040.0	1220.0	1
2	1040.0	1220.0	1080.0	1200.0	1
3	1080.0	1200.0	1170.0	1260.0	2
4	1170.0	1260.0	1350.0	1340.0	2
5	1350.0	1340.0	1400.0	1340.0	2
6	1400.0	1340.0	1510.0	1365.0	1
7	1510.0	1365.0	1560.0	1340.0	1
8	1560.0	1340.0	1610.0	1340.0	1
9	1610.0	1340.0	1660.0	1335.0	1
10	1660.0	1335.0	1680.0	1325.0	1
11	1680.0	1325.0	1750.0	1325.0	1

3 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1080.0	1200.0	1110.0	1205.0	1
2	1110.0	1205.0	1350.0	1300.0	1
3	1350.0	1300.0	1400.0	1340.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	.0	25.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ĩ-value (degrees)
1	20.00	4000.0	28.00
2	25.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 20.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1115.0	1195.0	1140.0	1199.0	20.0
2	1542.0	1339.0	1549.0	1333.0	20.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1094.67	1209.78
2	1103.79	1203.96
3	1105.69	1202.73
4	1122.47	1191.84
5	1542.51	1346.69
6	1543.52	1348.24

** Corrected JANBU FOS = 1.138 ** (Fo factor = 1.025)

Failure surface No. 2 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1090.51	1207.01
2	1097.05	1202.84
3	1100.97	1200.29
4	1117.75	1189.40
5	1543.04	1345.40
6	1544.55	1347.73

** Corrected JANBU FOS = 1.148 ** (Fo factor = 1.024)

Failure surface No. 3 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1088.61	1205.74
2	1093.96	1202.33
3	1100.21	1198.26
4	1116.99	1187.37
5	1543.48	1347.20
6	1544.00	1348.00

** Corrected JANBU FOS = 1.149 ** (Fo factor = 1.025)

Failure surface No. 4 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1087.51	1205.01
2	1092.18	1202.03
3	1098.43	1197.97
4	1115.20	1187.08
5	1544.36	1345.95
6	1545.28	1347.36

** Corrected JANBU FOS = 1.152 ** (Fo factor = 1.024)

Failure surface No. 5 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1101.89	1214.59
2	1114.29	1206.70
3	1115.93	1205.63
4	1132.70	1194.74
5	1543.64	1346.47
6	1544.48	1347.76

** Corrected JANBU FOS = 1.156 ** (Fo factor = 1.028)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1092.68	1208.45
2	1100.57	1203.43
3	1106.71	1199.44
4	1123.48	1188.55
5	1542.92	1347.70
6	1543.33	1348.33

** Corrected JANBU FOS = 1.157 ** (Fo factor = 1.027)

Failure surface No. 7 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1097.54	1211.69
2	1108.45	1204.74
3	1111.60	1202.69
4	1128.37	1191.80
5	1545.61	1344.98
6	1546.70	1346.65

** Corrected JANBU FOS = 1.161 ** (Fo factor = 1.027)

Failure surface No. 8 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1096.71	1211.14
2	1107.10	1204.52
3	1110.38	1202.39
4	1127.15	1191.50
5	1543.94	1344.71
6	1545.56	1347.22

** Corrected JANBU FOS = 1.162 ** (Fo factor = 1.027)

Failure surface No. 9 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1094.21	1209.48
2	1103.06	1203.84
3	1108.25	1200.47
4	1125.02	1189.58
5	1545.37	1345.50
6	1546.26	1346.87

** Corrected JANBU FOS = 1.163 ** (Fo factor = 1.027)

Failure surface No.10 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1105.17	1216.78
2	1118.42	1208.33
3	1118.90	1208.02
4	1135.68	1197.13
5	1542.20	1345.35
6	1543.94	1348.03

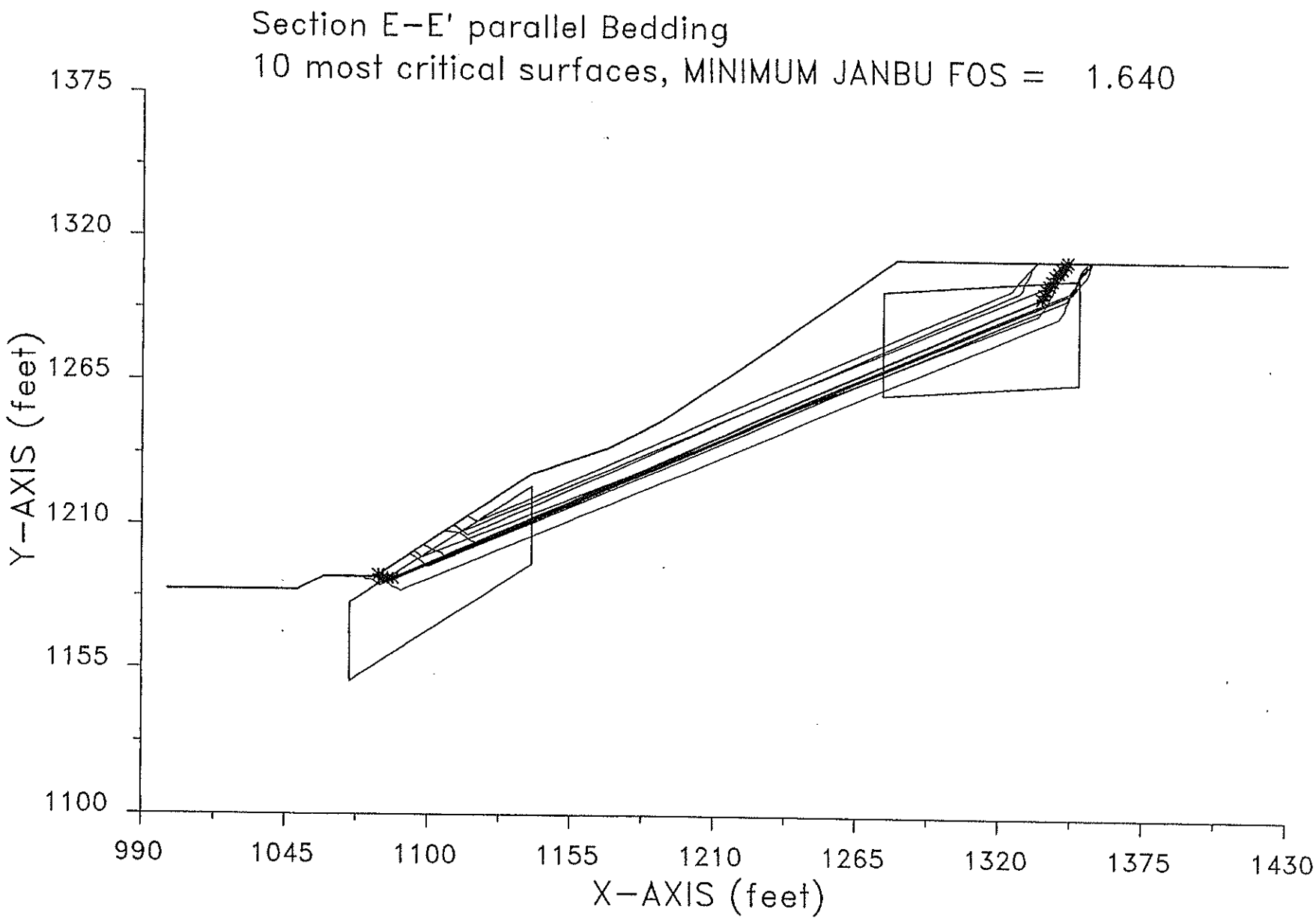
** Corrected JANBU FOS = 1.164 ** (Fo factor = 1.028)

The following is a summary of the TEN most critical surfaces

Problem Description : Section D-D" (PS)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.138	1.025	1094.67	1543.52	1.233E+06
2.	1.148	1.024	1090.51	1544.55	1.280E+06
3.	1.149	1.025	1088.61	1544.00	1.300E+06
4.	1.152	1.024	1087.51	1545.28	1.315E+06
5.	1.156	1.028	1101.89	1544.48	1.238E+06
6.	1.157	1.027	1092.68	1543.33	1.300E+06
7.	1.161	1.027	1097.54	1546.70	1.297E+06
8.	1.162	1.027	1096.71	1545.56	1.295E+06
9.	1.163	1.027	1094.21	1546.26	1.321E+06
10.	1.164	1.028	1105.17	1543.94	1.219E+06

* * * END OF FILE * * *


Section E-E' parallel Bedding
10 most critical surfaces, MINIMUM JANBU FOS = 1.640
1375
1320
1265
1210
1155
1100
Y-AXIS (feet)
990
1045
1100
1155
1210
1265
1320
1375
1430
X-AXIS (feet)

XSTABL File: SECTE-E 10-05-** 9:06

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section E-E' parallel Bedding

SEGMENT BOUNDARY COORDINATES
---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1185.0	1050.0	1185.0	1
2	1050.0	1185.0	1060.0	1190.0	1
3	1060.0	1190.0	1080.0	1190.0	1
4	1080.0	1190.0	1110.0	1210.0	1
5	1110.0	1210.0	1140.0	1230.0	1
6	1140.0	1230.0	1170.0	1240.0	1
7	1170.0	1240.0	1190.0	1250.0	1
8	1190.0	1250.0	1220.0	1270.0	1
9	1220.0	1270.0	1280.0	1312.0	1
10	1280.0	1312.0	1320.0	1312.0	1
11	1320.0	1312.0	1360.0	1312.0	1
12	1360.0	1312.0	1430.0	1312.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	20.00	4000.0	28.00
2	24.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

750 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 2.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1070.0	1165.0	1140.0	1210.0	30.0
2	1275.0	1280.0	1350.0	1285.0	40.0

```
*********************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
*********************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*********************************************************************
```

```
-------------------------------------------------------------
USER SELECTED option to maintain strength greater than zero
-------------------------------------------------------------

*************************************************************
**     Factor of safety calculation for surface #    14    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -22.8122    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is defined by the following 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1104.06	1206.04
2	1104.49	1205.61
3	1106.32	1204.80
4	1107.89	1203.55
5	1109.76	1202.87
6	1111.22	1201.49
7	1291.36	1300.28
8	1292.18	1302.10
9	1292.98	1303.94
10	1293.09	1305.93
11	1294.44	1307.41

12	1295.85	1308.83
13	1296.12	1310.81
14	1296.23	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    29    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.2347    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 31 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1050.04	1185.02
2	1050.90	1184.18
3	1052.45	1182.92
4	1054.17	1181.90
5	1056.16	1181.70
6	1057.90	1180.71
7	1059.52	1179.54
8	1061.02	1178.22
9	1062.86	1177.42
10	1064.28	1176.02
11	1066.18	1175.40
12	1068.11	1174.87
13	1069.55	1173.48
14	1071.24	1172.41
15	1072.97	1171.40
16	1074.81	1170.62
17	1076.25	1169.24
18	1077.68	1167.83
19	1079.26	1166.60
20	1275.76	1293.39
21	1277.06	1294.91
22	1278.27	1296.51
23	1279.15	1298.30
24	1280.55	1299.73
25	1281.50	1301.48
26	1281.60	1303.48
27	1282.31	1305.35
28	1283.61	1306.87
29	1283.83	1308.86
30	1284.70	1310.66
31	1285.73	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    65    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.1505    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1094.59	1199.73
2	1094.75	1199.57
3	1096.70	1199.11
4	1098.17	1197.75
5	1099.95	1196.84

6	1101.38	1195.44
7	1280.34	1288.54
8	1280.68	1290.51
9	1281.99	1292.01
10	1282.85	1293.82
11	1284.26	1295.24
12	1285.49	1296.82
13	1286.73	1298.39
14	1287.65	1300.16
15	1288.76	1301.83
16	1290.10	1303.31
17	1290.24	1305.31
18	1291.35	1306.97
19	1292.25	1308.76
20	1292.48	1310.74
21	1292.90	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    66    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  15.3075    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1093.31	1198.87
2	1093.62	1198.83
3	1095.05	1197.44
4	1096.47	1196.03
5	1098.38	1195.42
6	1287.92	1298.46
7	1289.14	1300.04
8	1290.45	1301.55
9	1291.82	1303.01
10	1292.97	1304.65
11	1294.21	1306.22
12	1294.26	1308.22
13	1295.63	1309.67
14	1296.36	1311.53
15	1296.81	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    78    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  14.1814    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1097.58	1201.72
2	1098.63	1201.59
3	1100.15	1200.29
4	1101.68	1199.00
5	1285.41	1290.35
6	1286.77	1291.82
7	1288.17	1293.25
8	1289.43	1294.80

9	1290.53	1296.47
10	1290.68	1298.46
11	1290.84	1300.46
12	1291.89	1302.16
13	1292.72	1303.98
14	1294.14	1305.40
15	1295.49	1306.87
16	1296.36	1308.67
17	1297.43	1310.36
18	1297.59	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    81    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was 128.0506    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1059.57	1189.78
2	1060.46	1188.92
3	1061.92	1187.55
4	1063.39	1186.20
5	1065.34	1185.75
6	1066.97	1184.59
7	1068.49	1183.30
8	1070.22	1182.28
9	1071.64	1180.87
10	1073.47	1180.06
11	1293.90	1298.27
12	1295.22	1299.77
13	1295.97	1301.62
14	1297.27	1303.15
15	1297.70	1305.10
16	1298.09	1307.06
17	1298.71	1308.96
18	1299.26	1310.89
19	1300.37	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    89    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was 683.7710    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1085.82	1193.88
2	1086.29	1193.52
3	1087.71	1192.11
4	1089.13	1190.71
5	1275.82	1288.12
6	1276.75	1289.89
7	1278.14	1291.33
8	1279.50	1292.80
9	1279.75	1294.79
10	1281.15	1296.22

11	1282.16	1297.95
12	1282.59	1299.90
13	1283.86	1301.44
14	1285.16	1302.96
15	1285.72	1304.88
16	1286.45	1306.74
17	1286.98	1308.67
18	1287.87	1310.46
19	1288.70	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   106    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  14.3534    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1057.14	1188.57
2	1057.22	1188.55
3	1058.86	1187.41
4	1060.29	1186.01
5	1061.82	1184.72
6	1063.51	1183.65
7	1064.92	1182.23
8	1066.87	1181.78
9	1068.87	1181.69
10	1070.31	1180.31
11	1071.72	1178.89
12	1290.33	1298.17
13	1291.59	1299.72
14	1292.96	1301.18
15	1294.33	1302.64
16	1295.73	1304.07
17	1296.78	1305.77
18	1297.22	1307.72
19	1298.54	1309.22
20	1298.81	1311.20
21	1299.21	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   145    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  16.8790    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1107.59	1208.39
2	1107.62	1208.39
3	1109.62	1208.38
4	1111.17	1207.12
5	1112.70	1205.82
6	1295.20	1300.69
7	1295.66	1302.63
8	1297.07	1304.05
9	1297.75	1305.93

10	1299.15	1307.36
11	1299.33	1309.35
12	1300.74	1310.76
13	1300.79	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   149    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.5913    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 31 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1116.37	1214.24
2	1117.18	1214.22
3	1119.16	1213.98
4	1121.13	1213.63
5	1123.06	1213.09
6	1124.68	1211.93
7	1126.28	1210.73
8	1127.72	1209.34
9	1129.69	1209.00
10	1131.56	1208.29
11	1133.34	1207.37
12	1134.87	1206.08
13	1136.47	1204.89
14	1138.03	1203.63
15	1139.62	1202.42
16	1275.30	1285.74
17	1275.36	1287.74
18	1276.25	1289.53
19	1277.29	1291.24
20	1278.70	1292.66
21	1279.80	1294.33
22	1280.16	1296.30
23	1281.56	1297.73
24	1281.89	1299.70
25	1282.33	1301.65
26	1283.60	1303.20
27	1284.45	1305.00
28	1284.94	1306.94
29	1285.59	1308.84
30	1286.96	1310.29
31	1287.68	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   199    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -70.1614    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1134.06	1226.04
2	1135.20	1225.05
3	1137.11	1224.48
4	1139.08	1224.10

5	1296.45	1299.23
6	1297.10	1301.13
7	1298.27	1302.74
8	1299.50	1304.33
9	1300.54	1306.03
10	1301.49	1307.79
11	1302.88	1309.23
12	1303.84	1310.98
13	1304.82	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   224    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  49.7469    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1095.51	1200.34
2	1096.52	1200.18
3	1097.98	1198.82
4	1099.57	1197.61
5	1283.29	1299.11
6	1283.61	1301.09
7	1284.80	1302.70
8	1285.77	1304.44
9	1287.11	1305.93
10	1288.49	1307.38
11	1288.71	1309.37
12	1289.03	1311.34
13	1289.58	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   240    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  13.3478    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1112.91	1211.94
2	1114.31	1210.54
3	1115.81	1209.22
4	1117.62	1208.37
5	1119.54	1207.80
6	1120.96	1206.39
7	1280.34	1292.94
8	1281.73	1294.39
9	1282.44	1296.25
10	1283.31	1298.06
11	1284.16	1299.86
12	1285.46	1301.39
13	1286.87	1302.81
14	1288.28	1304.23
15	1289.47	1305.83
16	1290.88	1307.25
17	1291.62	1309.11

18	1291.83	1311.10
19	1292.72	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   241    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.8971    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 26 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1085.37	1193.58
2	1086.72	1192.25
3	1088.20	1190.89
4	1090.02	1190.08
5	1092.00	1189.75
6	1093.42	1188.35
7	1095.04	1187.17
8	1096.97	1186.66
9	1098.39	1185.24
10	1100.13	1184.26
11	1101.54	1182.85
12	1103.23	1181.78
13	1104.72	1180.44
14	1106.14	1179.04
15	1278.95	1293.47
16	1279.74	1295.30
17	1281.09	1296.78
18	1281.59	1298.72
19	1282.87	1300.25
20	1283.96	1301.93
21	1284.14	1303.92
22	1284.15	1305.92
23	1284.34	1307.91
24	1284.86	1309.85
25	1285.90	1311.55
26	1285.99	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   244    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was*********    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1081.15	1190.76
2	1082.59	1190.19
3	1084.11	1188.89
4	1085.87	1187.95
5	1087.56	1186.88
6	1285.29	1294.27
7	1286.02	1296.14
8	1287.43	1297.55
9	1288.74	1299.07
10	1289.17	1301.02
11	1289.34	1303.01

12	1290.22	1304.81
13	1290.60	1306.77
14	1291.88	1308.31
15	1292.79	1310.09
16	1294.17	1311.53
17	1294.63	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   264    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.3578    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1063.90	1190.00
2	1064.74	1189.18
3	1066.69	1188.76
4	1068.61	1188.17
5	1070.56	1187.73
6	1072.48	1187.18
7	1073.96	1185.83
8	1075.71	1184.86
9	1077.14	1183.47
10	1079.14	1183.33
11	1081.13	1183.28
12	1083.13	1183.24
13	1084.85	1182.22
14	1086.29	1180.82
15	1288.61	1300.02
16	1289.75	1301.66
17	1290.59	1303.48
18	1291.92	1304.97
19	1292.74	1306.79
20	1294.13	1308.23
21	1294.93	1310.06
22	1296.26	1311.55
23	1296.50	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   300    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.2373    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 29 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1116.34	1214.23
2	1117.14	1213.97
3	1118.61	1212.62
4	1120.59	1212.34
5	1122.18	1211.12
6	1123.61	1209.73
7	1125.20	1208.51
8	1126.70	1207.19
9	1128.55	1206.42
10	1130.15	1205.22

11	1131.57	1203.81
12	1132.98	1202.40
13	1134.72	1201.41
14	1136.67	1200.96
15	1275.44	1289.20
16	1276.01	1291.12
17	1277.30	1292.65
18	1278.60	1294.17
19	1279.78	1295.78
20	1281.07	1297.31
21	1282.35	1298.84
22	1283.06	1300.72
23	1284.06	1302.45
24	1284.70	1304.34
25	1286.11	1305.76
26	1286.20	1307.76
27	1286.33	1309.75
28	1287.68	1311.23
29	1287.82	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   336    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -28.8879    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 24 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1116.90	1214.60
2	1117.37	1214.13
3	1119.13	1213.18
4	1120.60	1211.82
5	1122.02	1210.42
6	1123.55	1209.13
7	1125.51	1208.73
8	1127.13	1207.56
9	1276.40	1287.77
10	1276.50	1289.76
11	1276.78	1291.74
12	1278.19	1293.16
13	1279.33	1294.81
14	1280.73	1296.23
15	1281.66	1298.00
16	1282.57	1299.78
17	1283.63	1301.48
18	1284.64	1303.21
19	1285.20	1305.13
20	1286.60	1306.56
21	1287.91	1308.06
22	1288.33	1310.02
23	1289.69	1311.49
24	1289.94	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   349    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  41.7274    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 41 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1028.24	1185.00
2	1028.87	1184.39
3	1030.65	1183.47
4	1032.31	1182.37
5	1033.73	1180.96
6	1035.33	1179.75
7	1036.96	1178.60
8	1038.96	1178.58
9	1040.71	1177.61
10	1042.55	1176.82
11	1044.26	1175.80
12	1045.77	1174.48
13	1047.70	1173.95
14	1049.67	1173.63
15	1051.10	1172.23
16	1053.10	1172.06
17	1054.86	1171.12
18	1056.33	1169.76
19	1058.18	1169.01
20	1060.13	1168.56
21	1061.60	1167.20
22	1063.08	1165.86
23	1064.54	1164.50
24	1066.01	1163.14
25	1067.46	1161.76
26	1069.41	1161.34
27	1071.37	1160.94
28	1073.14	1160.00
29	1074.71	1158.76
30	1076.20	1157.43
31	1077.65	1156.05
32	1279.88	1297.42
33	1280.69	1299.24
34	1281.66	1300.99
35	1283.06	1302.43
36	1284.31	1303.99
37	1285.67	1305.45
38	1286.92	1307.02
39	1288.08	1308.64
40	1288.55	1310.59
41	1289.03	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   392    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  14.1820    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1122.38	1218.25
2	1123.63	1217.02
3	1125.59	1216.60
4	1127.47	1215.92
5	1128.89	1214.51
6	1130.88	1214.30
7	1132.36	1212.96
8	1286.20	1292.27
9	1287.60	1293.70
10	1288.91	1295.20

11	1289.43	1297.14
12	1290.01	1299.05
13	1291.41	1300.48
14	1292.49	1302.16
15	1293.48	1303.90
16	1294.25	1305.75
17	1295.65	1307.18
18	1295.96	1309.15
19	1296.16	1311.14
20	1296.19	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   400    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  62.8658    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1099.92	1203.28
2	1100.46	1203.09
3	1101.87	1201.68
4	1103.72	1200.93
5	1105.29	1199.68
6	1106.91	1198.52
7	1108.38	1197.16
8	1276.62	1290.82
9	1278.03	1292.24
10	1279.42	1293.67
11	1280.07	1295.56
12	1280.78	1297.43
13	1281.73	1299.20
14	1282.31	1301.11
15	1283.40	1302.79
16	1283.82	1304.74
17	1284.58	1306.59
18	1285.10	1308.52
19	1285.80	1310.40
20	1286.06	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   401    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  18.5774    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1095.03	1200.02
2	1096.00	1199.58
3	1097.44	1198.19
4	1098.93	1196.86
5	1100.58	1195.73
6	1102.00	1194.31
7	1103.42	1192.90
8	1105.02	1191.71
9	1290.87	1299.12

10	1292.20	1300.61
11	1293.59	1302.05
12	1294.83	1303.62
13	1295.15	1305.59
14	1296.37	1307.17
15	1297.51	1308.82
16	1298.57	1310.52
17	1298.99	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   427    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -27.8895    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 24 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1102.97	1205.31
2	1104.30	1204.99
3	1105.71	1203.58
4	1107.17	1202.21
5	1108.74	1200.97
6	1110.43	1199.90
7	1112.01	1198.67
8	1113.74	1197.67
9	1115.42	1196.58
10	1117.06	1195.44
11	1118.75	1194.38
12	1120.55	1193.49
13	1122.27	1192.47
14	1278.06	1295.60
15	1279.39	1297.10
16	1279.49	1299.09
17	1280.80	1300.60
18	1281.92	1302.26
19	1282.80	1304.06
20	1283.69	1305.85
21	1285.04	1307.32
22	1285.15	1309.32
23	1286.49	1310.80
24	1287.47	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   448    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.7740    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 26 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1101.05	1204.03
2	1102.07	1203.33
3	1103.57	1202.00
4	1105.57	1201.89
5	1107.00	1200.49
6	1108.47	1199.13
7	1278.84	1280.21

8	1279.36	1282.14
9	1280.63	1283.68
10	1280.72	1285.68
11	1281.91	1287.28
12	1283.22	1288.80
13	1283.30	1290.79
14	1284.10	1292.63
15	1285.18	1294.31
16	1286.44	1295.87
17	1286.55	1297.86
18	1286.90	1299.83
19	1287.98	1301.52
20	1289.37	1302.95
21	1290.03	1304.84
22	1291.33	1306.36
23	1292.37	1308.07
24	1293.78	1309.48
25	1295.17	1310.92
26	1296.24	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   453    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  72.7003    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1105.62	1207.08
2	1107.20	1206.67
3	1108.96	1205.72
4	1110.81	1204.94
5	1277.03	1287.98
6	1278.02	1289.71
7	1278.16	1291.71
8	1278.62	1293.66
9	1278.68	1295.66
10	1278.87	1297.65
11	1280.27	1299.08
12	1280.90	1300.97
13	1281.09	1302.97
14	1282.14	1304.67
15	1283.43	1306.19
16	1283.92	1308.13
17	1285.06	1309.78
18	1286.16	1311.45
19	1286.17	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   454    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.2829    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1116.78	1214.52

2	1116.79	1214.51
3	1118.35	1213.26
4	1119.85	1211.93
5	1121.29	1210.55
6	1123.07	1209.63
7	1124.49	1208.23
8	1126.42	1207.69
9	1295.74	1297.23
10	1297.09	1298.71
11	1298.50	1300.12
12	1299.32	1301.95
13	1299.76	1303.90
14	1300.05	1305.88
15	1301.45	1307.30
16	1302.61	1308.93
17	1302.79	1310.92
18	1303.76	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   455    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.5681    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 26 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1121.11	1217.41
2	1122.55	1217.09
3	1124.52	1216.76
4	1126.25	1215.75
5	1127.90	1214.63
6	1129.32	1213.22
7	1131.07	1212.25
8	1132.51	1210.86
9	1134.31	1209.98
10	1136.28	1209.64
11	1137.89	1208.45
12	1279.55	1289.93
13	1280.36	1291.76
14	1281.51	1293.39
15	1282.91	1294.82
16	1284.21	1296.34
17	1285.01	1298.17
18	1285.95	1299.94
19	1287.23	1301.47
20	1287.47	1303.46
21	1288.80	1304.95
22	1290.20	1306.38
23	1291.61	1307.80
24	1292.79	1309.41
25	1293.84	1311.11
26	1294.50	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   457    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.6917    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 33 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1129.51	1223.01
2	1130.30	1222.23
3	1132.16	1221.49
4	1133.84	1220.41
5	1135.60	1219.46
6	1137.59	1219.18
7	1276.18	1267.08
8	1277.41	1268.66
9	1278.79	1270.10
10	1279.25	1272.05
11	1280.14	1273.84
12	1281.04	1275.63
13	1281.76	1277.49
14	1282.61	1279.30
15	1282.64	1281.30
16	1284.03	1282.73
17	1285.33	1284.25
18	1286.27	1286.02
19	1286.49	1288.01
20	1286.53	1290.01
21	1287.78	1291.57
22	1288.91	1293.21
23	1289.95	1294.92
24	1290.83	1296.72
25	1291.65	1298.54
26	1292.90	1300.11
27	1294.20	1301.63
28	1294.53	1303.60
29	1295.80	1305.14
30	1296.49	1307.01
31	1296.52	1309.01
32	1297.02	1310.95
33	1297.31	1312.00

```
*************************************************************
**     Factor of safety calculation for surface #   469    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.2162    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 30 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1113.22	1212.15
2	1113.23	1212.14
3	1115.23	1212.08
4	1116.98	1211.11
5	1118.51	1209.82
6	1119.94	1208.42
7	1121.77	1207.63
8	1123.59	1206.81
9	1125.26	1205.70
10	1126.86	1204.50
11	1128.56	1203.44
12	1130.47	1202.85
13	1132.45	1202.61
14	1134.15	1201.55
15	1135.58	1200.15
16	1137.50	1199.61
17	1276.57	1292.45
18	1277.65	1294.13

19	1277.69	1296.13
20	1279.06	1297.58
21	1280.35	1299.11
22	1281.44	1300.79
23	1282.36	1302.57
24	1283.58	1304.15
25	1284.77	1305.76
26	1286.18	1307.18
27	1287.10	1308.96
28	1288.50	1310.38
29	1289.68	1311.99
30	1289.69	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   493    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  17.1196    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1111.74	1211.16
2	1112.67	1210.84
3	1114.60	1210.30
4	1116.59	1210.13
5	1118.09	1208.80
6	1281.78	1290.01
7	1282.80	1291.73
8	1283.45	1293.62
9	1284.08	1295.52
10	1284.59	1297.45
11	1284.65	1299.45
12	1286.03	1300.90
13	1287.44	1302.32
14	1288.72	1303.86
15	1290.01	1305.38
16	1291.35	1306.86
17	1292.71	1308.33
18	1294.11	1309.76
19	1294.94	1311.58
20	1295.22	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   495    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.4999    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 25 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1091.33	1197.56
2	1091.96	1197.29
3	1093.61	1196.15
4	1095.56	1195.70
5	1097.02	1194.33
6	1098.95	1193.83
7	1100.88	1193.30

8	1102.31	1191.90
9	1103.91	1190.70
10	1105.51	1189.49
11	1107.17	1188.38
12	1109.15	1188.15
13	1278.28	1292.03
14	1278.62	1294.00
15	1279.94	1295.51
16	1280.07	1297.50
17	1280.58	1299.43
18	1281.55	1301.18
19	1281.95	1303.14
20	1283.36	1304.56
21	1284.67	1306.07
22	1285.28	1307.97
23	1286.55	1309.52
24	1287.18	1311.42
25	1287.51	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   509    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  24.0600    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 29 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1082.51	1191.67
2	1083.73	1190.63
3	1085.35	1189.45
4	1086.82	1188.09
5	1088.81	1187.94
6	1090.65	1187.15
7	1092.24	1185.93
8	1094.18	1185.46
9	1095.92	1184.48
10	1097.35	1183.07
11	1099.11	1182.13
12	1100.59	1180.79
13	1102.58	1180.56
14	1104.16	1179.34
15	1105.67	1178.02
16	1107.09	1176.61
17	1109.03	1176.15
18	1275.03	1294.25
19	1276.21	1295.86
20	1277.57	1297.32
21	1278.03	1299.27
22	1279.24	1300.87
23	1279.66	1302.82
24	1280.03	1304.79
25	1281.45	1306.20
26	1282.08	1308.10
27	1283.39	1309.60
28	1284.22	1311.42
29	1284.37	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   546    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -16.3148    **
**    This will be ignored for final summary of results    **
```

```
************************************************************
```

The trial failure surface in question is
defined by the following 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1097.46	1201.64
2	1098.38	1200.86
3	1099.79	1199.45
4	1101.38	1198.23
5	1102.82	1196.84
6	1277.01	1295.24
7	1278.33	1296.75
8	1278.72	1298.71
9	1279.35	1300.61
10	1280.36	1302.34
11	1281.15	1304.18
12	1282.42	1305.72
13	1283.35	1307.49
14	1284.56	1309.08
15	1285.74	1310.70
16	1286.86	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   547    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -47.7112    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1093.29	1198.86
2	1094.18	1197.99
3	1095.93	1197.02
4	1097.39	1195.65
5	1275.57	1280.54
6	1276.98	1281.97
7	1278.15	1283.59
8	1279.53	1285.03
9	1279.58	1287.03
10	1280.76	1288.65
11	1280.87	1290.65
12	1281.48	1292.55
13	1281.63	1294.55
14	1282.86	1296.12
15	1283.32	1298.07
16	1283.75	1300.02
17	1284.22	1301.97
18	1285.63	1303.38
19	1286.72	1305.06
20	1288.10	1306.50
21	1288.78	1308.39
22	1289.30	1310.32
23	1289.85	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   562    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  11.9417    **
**    This will be ignored for final summary of results    **
```

****

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1097.36	1201.57
2	1098.74	1201.21
3	1100.21	1199.86
4	1101.70	1198.52
5	1282.93	1288.19
6	1284.34	1289.62
7	1284.36	1291.62
8	1285.72	1293.09
9	1287.00	1294.62
10	1287.63	1296.52
11	1288.32	1298.40
12	1289.60	1299.93
13	1290.79	1301.54
14	1291.36	1303.46
15	1291.46	1305.45
16	1292.71	1307.01
17	1294.07	1308.48
18	1295.00	1310.25
19	1296.18	1311.87
20	1296.28	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   583    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.9490    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 24 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1114.13	1212.75
2	1115.71	1211.84
3	1117.14	1210.45
4	1119.06	1209.88
5	1276.78	1280.40
6	1278.19	1281.82
7	1279.53	1283.30
8	1280.12	1285.21
9	1281.53	1286.63
10	1282.86	1288.12
11	1283.96	1289.79
12	1284.75	1291.63
13	1285.81	1293.33
14	1286.72	1295.10
15	1287.99	1296.65
16	1288.12	1298.65
17	1289.22	1300.32
18	1289.51	1302.30
19	1289.84	1304.27
20	1291.25	1305.68
21	1291.99	1307.54
22	1293.36	1309.00
23	1294.39	1310.72
24	1294.97	1312.00

****

```
**      Factor of safety calculation for surface #   587     **
**      failed to converge within FIFTY iterations           **
**                                                           **
**    The last calculated value of the FOS was  17.9187      **
**    This will be ignored for final summary of results      **
*************************************************************
```

The trial failure surface in question is
defined by the following 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1067.87	1190.00
2	1068.08	1189.79
3	1069.75	1188.69
4	1071.27	1187.40
5	1072.83	1186.14
6	1074.30	1184.78
7	1075.83	1183.50
8	1290.53	1299.67
9	1291.83	1301.19
10	1292.04	1303.18
11	1292.82	1305.02
12	1294.18	1306.49
13	1294.58	1308.45
14	1294.90	1310.42
15	1296.16	1311.98
16	1296.18	1312.00

```
*************************************************************
**      Factor of safety calculation for surface #   614     **
**      failed to converge within FIFTY iterations           **
**                                                           **
**    The last calculated value of the FOS was  10.8269      **
**    This will be ignored for final summary of results      **
*************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1083.40	1192.27
2	1083.63	1192.06
3	1085.63	1191.98
4	1087.61	1191.71
5	1089.08	1190.35
6	1091.01	1189.83
7	1092.64	1188.68
8	1094.55	1188.06
9	1095.99	1186.68
10	1282.55	1296.99
11	1283.47	1298.76
12	1284.56	1300.44
13	1285.79	1302.02
14	1286.94	1303.66
15	1287.42	1305.60
16	1288.67	1307.16
17	1289.14	1309.10
18	1289.74	1311.01
19	1290.25	1312.00

```
*************************************************************
**      Factor of safety calculation for surface #   618     **
**      failed to converge within FIFTY iterations           **
**                                                           **
**    The last calculated value of the FOS was   9.4537      **
```

```
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1088.89	1195.93
2	1090.28	1194.70
3	1091.83	1193.43
4	1276.87	1280.76
5	1277.28	1282.72
6	1278.40	1284.38
7	1279.60	1285.98
8	1280.34	1287.84
9	1281.67	1289.33
10	1282.14	1291.28
11	1282.24	1293.27
12	1283.65	1294.69
13	1284.89	1296.26
14	1284.96	1298.26
15	1285.63	1300.15
16	1286.80	1301.77
17	1287.71	1303.55
18	1288.49	1305.39
19	1288.78	1307.37
20	1290.09	1308.88
21	1290.67	1310.79
22	1291.86	1312.00

```
*************************************************************
**     Factor of safety calculation for surface #   636    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.3274    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1070.53	1190.00
2	1071.11	1189.66
3	1072.90	1188.77
4	1074.43	1187.48
5	1076.01	1186.26
6	1077.64	1185.10
7	1079.64	1184.95
8	1081.07	1183.55
9	1082.48	1182.14
10	1084.34	1181.38
11	1277.87	1293.77
12	1279.23	1295.24
13	1280.40	1296.86
14	1281.82	1298.27
15	1282.93	1299.94
16	1284.25	1301.43
17	1285.21	1303.19
18	1286.26	1304.90
19	1286.26	1306.90
20	1287.03	1308.74
21	1288.39	1310.21
22	1288.44	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   656    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.4657    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1126.26	1220.84
2	1127.30	1219.98
3	1128.80	1218.66
4	1130.77	1218.31
5	1132.49	1217.28
6	1279.15	1283.62
7	1280.30	1285.26
8	1280.64	1287.23
9	1281.50	1289.04
10	1282.28	1290.88
11	1282.96	1292.76
12	1284.23	1294.30
13	1284.40	1296.30
14	1285.09	1298.18
15	1285.60	1300.11
16	1287.00	1301.53
17	1288.34	1303.02
18	1288.58	1305.00
19	1289.72	1306.65
20	1291.10	1308.09
21	1292.51	1309.50
22	1293.93	1310.92
23	1294.20	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   664    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.1221    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1118.23	1215.49
2	1119.59	1214.76
3	1121.24	1213.63
4	1123.18	1213.16
5	1124.61	1211.76
6	1126.34	1210.75
7	1127.85	1209.44
8	1129.33	1208.10
9	1130.78	1206.72
10	1132.58	1205.86
11	1134.02	1204.47
12	1277.25	1296.54
13	1278.16	1298.32
14	1278.75	1300.23
15	1280.14	1301.67
16	1281.15	1303.40
17	1281.57	1305.35
18	1282.63	1307.05

19	1284.04	1308.46
20	1285.07	1310.18
21	1286.43	1311.64
22	1286.50	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   687    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  18.1388    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1105.49	1207.00
2	1106.71	1206.02
3	1108.18	1204.66
4	1109.78	1203.46
5	1111.69	1202.86
6	1113.65	1202.49
7	1115.09	1201.10
8	1279.05	1293.50
9	1279.11	1295.50
10	1279.30	1297.49
11	1279.37	1299.49
12	1280.20	1301.31
13	1281.40	1302.91
14	1282.54	1304.55
15	1282.89	1306.52
16	1283.92	1308.24
17	1285.27	1309.71
18	1286.41	1311.36
19	1286.68	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   693    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.0583    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 26 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1099.71	1203.14
2	1100.50	1202.97
3	1102.43	1202.45
4	1104.24	1201.60
5	1105.65	1200.18
6	1107.14	1198.85
7	1108.98	1198.07
8	1110.58	1196.87
9	1112.12	1195.59
10	1113.61	1194.25
11	1115.47	1193.53
12	1116.93	1192.16
13	1118.92	1191.98
14	1120.34	1190.57
15	1121.95	1189.39
16	1275.47	1295.94

17	1276.88	1297.35
18	1278.13	1298.92
19	1278.58	1300.87
20	1279.98	1302.30
21	1280.44	1304.25
22	1281.72	1305.78
23	1282.03	1307.76
24	1283.06	1309.47
25	1284.41	1310.95
26	1284.91	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   696    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  15.4430    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1118.87	1215.91
2	1119.36	1215.83
3	1121.06	1214.77
4	1122.61	1213.50
5	1124.23	1212.34
6	1279.41	1291.20
7	1280.79	1292.65
8	1280.98	1294.64
9	1281.95	1296.38
10	1283.20	1297.94
11	1284.47	1299.49
12	1285.67	1301.09
13	1286.94	1302.63
14	1287.80	1304.44
15	1288.40	1306.35
16	1288.55	1308.34
17	1289.90	1309.81
18	1290.98	1311.50
19	1291.27	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   727    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  11.1598    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1087.20	1194.80
2	1087.92	1194.08
3	1089.81	1193.43
4	1091.41	1192.23
5	1092.85	1190.84
6	1287.65	1292.31
7	1287.78	1294.31
8	1289.18	1295.74
9	1289.37	1297.73
10	1290.30	1299.50

11	1291.64	1300.99
12	1292.34	1302.86
13	1292.89	1304.78
14	1294.31	1306.20
15	1294.86	1308.12
16	1296.11	1309.68
17	1296.65	1311.61
18	1297.05	1312.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1081.02	1190.68
2	1082.52	1189.45
3	1084.51	1189.38
4	1086.51	1189.37
5	1335.55	1298.14
6	1336.60	1299.84
7	1337.20	1301.75
8	1338.59	1303.19
9	1339.71	1304.84
10	1340.67	1306.60
11	1342.08	1308.01
12	1343.45	1309.47
13	1344.75	1310.99
14	1345.46	1312.00

** Corrected JANBU FOS = 1.640 ** (Fo factor = 1.014)

Failure surface No. 2 specified by 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1074.52	1190.00
2	1074.52	1190.00
3	1076.27	1189.02
4	1078.27	1188.96
5	1079.99	1187.95
6	1081.49	1186.62
7	1347.53	1299.95
8	1347.96	1301.90
9	1348.52	1303.82
10	1349.55	1305.54
11	1350.82	1307.08
12	1352.15	1308.58
13	1353.52	1310.04
14	1353.88	1312.00

** Corrected JANBU FOS = 1.682 ** (Fo factor = 1.013)

Failure surface No. 3 specified by 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1098.01	1202.00
2	1099.73	1201.68
3	1101.33	1200.47
4	1103.21	1199.79
5	1105.12	1199.20
6	1106.63	1197.88
7	1347.14	1299.93
8	1348.55	1301.35
9	1349.58	1303.06
10	1350.99	1304.49
11	1352.40	1305.90
12	1353.38	1307.64
13	1353.84	1309.59
14	1354.63	1311.42
15	1354.74	1312.00

** Corrected JANBU FOS = 1.743 ** (Fo factor = 1.014)

Failure surface No. 4 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1110.09	1210.06
2	1110.89	1209.74
3	1112.31	1208.34
4	1114.30	1208.10
5	1339.35	1303.49
6	1339.72	1305.45
7	1340.88	1307.08
8	1342.24	1308.55
9	1342.99	1310.40
10	1344.27	1311.94
11	1344.32	1312.00

** Corrected JANBU FOS = 1.746 ** (Fo factor = 1.011)

Failure surface No. 5 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1093.00	1198.67
2	1093.41	1198.49
3	1095.26	1197.72
4	1096.80	1196.44
5	1098.36	1195.18
6	1099.92	1193.94
7	1344.71	1297.24
8	1345.95	1298.81
9	1346.80	1300.63
10	1348.11	1302.13
11	1348.64	1304.06
12	1349.52	1305.86
13	1350.93	1307.27
14	1352.35	1308.68
15	1353.44	1310.36
16	1354.77	1311.85
17	1354.80	1312.00

** Corrected JANBU FOS = 1.752 ** (Fo factor = 1.016)

Failure surface No. 6 specified by 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1080.22	1190.14

2	1081.08	1189.39
3	1082.60	1188.09
4	1084.56	1187.70
5	1085.98	1186.28
6	1087.84	1185.55
7	1089.71	1184.84
8	1341.93	1290.25
9	1343.02	1291.92
10	1344.06	1293.63
11	1344.56	1295.57
12	1345.61	1297.27
13	1346.15	1299.20
14	1347.28	1300.85
15	1348.55	1302.40
16	1348.72	1304.39
17	1349.54	1306.21
18	1350.12	1308.13
19	1351.39	1309.67
20	1352.73	1311.15
21	1353.50	1312.00

** Corrected JANBU FOS = 1.835 ** (Fo factor = 1.024)

Failure surface No. 7 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1115.44	1213.63
2	1116.27	1213.01
3	1117.94	1211.92
4	1119.93	1211.71
5	1323.82	1300.92
6	1325.16	1302.41
7	1326.40	1303.98
8	1327.80	1305.40
9	1329.07	1306.95
10	1330.46	1308.39
11	1331.82	1309.86
12	1333.23	1311.28
13	1333.90	1312.00

** Corrected JANBU FOS = 1.864 ** (Fo factor = 1.012)

Failure surface No. 8 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1094.66	1199.77
2	1096.12	1198.87
3	1097.71	1197.66
4	1334.25	1291.31
5	1335.38	1292.96
6	1336.53	1294.60
7	1337.54	1296.32
8	1338.37	1298.14
9	1339.42	1299.84
10	1340.14	1301.71
11	1341.04	1303.49
12	1342.15	1305.16
13	1343.37	1306.74
14	1344.72	1308.22
15	1345.44	1310.08
16	1346.59	1311.72
17	1346.66	1312.00

** Corrected JANBU FOS = 1.872 ** (Fo factor = 1.023)

Failure surface No. 9 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1109.81	1209.88
2	1110.25	1209.52
3	1112.09	1208.75
4	1113.70	1207.56
5	1115.22	1206.25
6	1327.17	1300.17
7	1328.36	1301.79
8	1328.71	1303.75
9	1329.94	1305.34
10	1330.93	1307.07
11	1331.44	1309.01
12	1332.71	1310.55
13	1334.03	1312.00

** Corrected JANBU FOS = 1.881 ** (Fo factor = 1.015)

Failure surface No.10 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1106.22	1207.48
2	1108.03	1207.45
3	1110.02	1207.25
4	1112.01	1207.07
5	1113.77	1206.11
6	1115.30	1204.83
7	1116.91	1203.64
8	1118.91	1203.56
9	1345.79	1300.25
10	1347.07	1301.78
11	1348.48	1303.20
12	1349.89	1304.61
13	1349.91	1306.61
14	1350.96	1308.31
15	1352.37	1309.73
16	1352.95	1311.65
17	1353.05	1312.00

** Corrected JANBU FOS = 1.896 ** (Fo factor = 1.015)

```
*******************************************************************
**                                                               **
**  Out of the    750 surfaces generated and analyzed by XSTABL,  **
**       46 surfaces were found to have MISLEADING FOS values.   **
**                                                               **
*******************************************************************
```

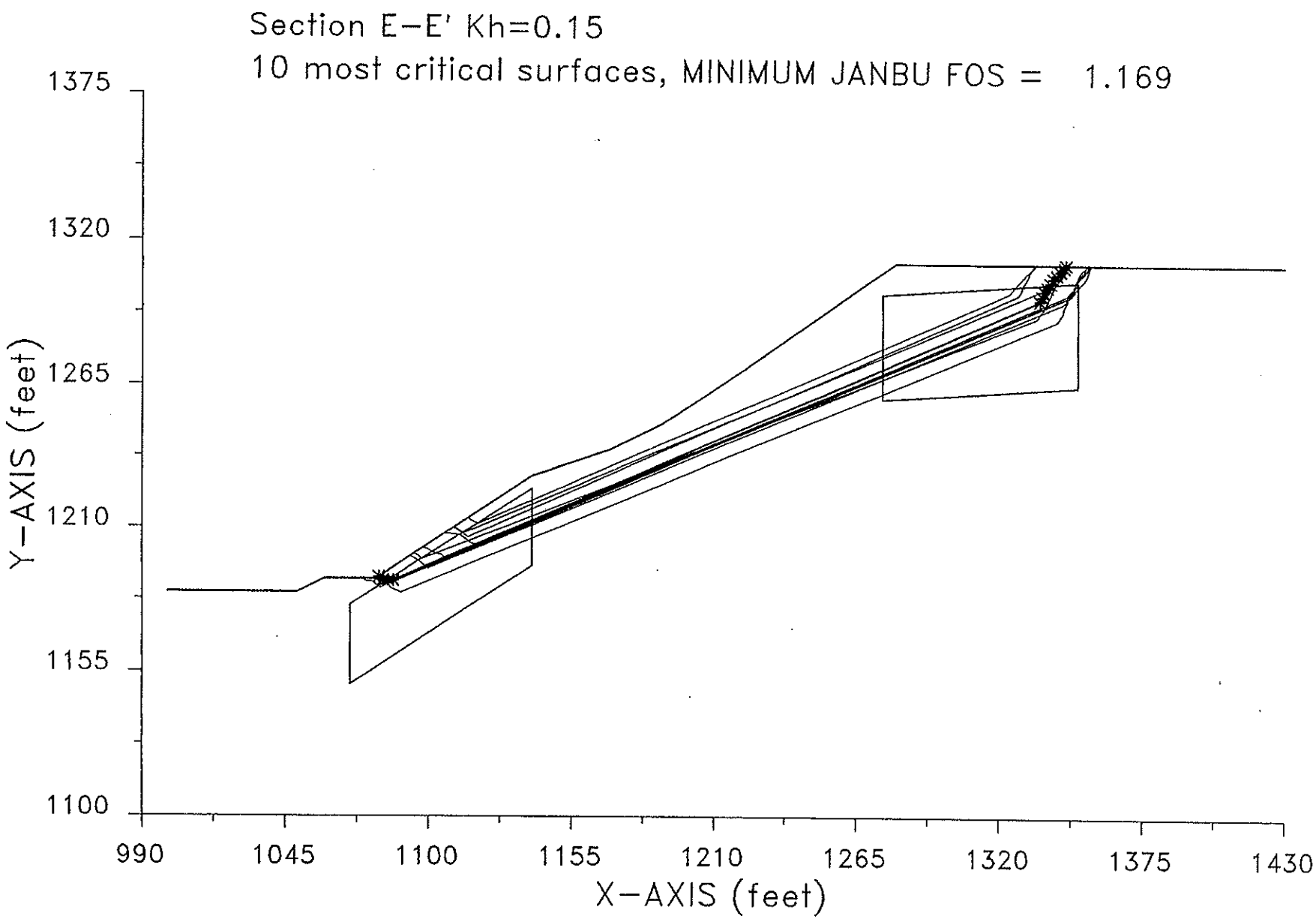
The following is a summary of the TEN most critical surfaces

Problem Description : Section E-E' parallel Bedding

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.640	1.014	1081.02	1345.46	3.855E+05
2.	1.682	1.013	1074.52	1353.88	4.206E+05

3.	1.743	1.014	1098.01	1354.74	4.202E+05
4.	1.746	1.011	1110.09	1344.32	2.859E+05
5.	1.752	1.016	1093.00	1354.80	4.488E+05
6.	1.835	1.024	1080.22	1353.50	5.540E+05
7.	1.864	1.012	1115.44	1333.90	2.677E+05
8.	1.872	1.023	1094.66	1346.66	4.144E+05
9.	1.881	1.015	1109.81	1334.03	3.033E+05
10.	1.896	1.015	1106.22	1353.05	4.190E+05

* * * END OF FILE * * *


Section E-E' Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.169
1375
1320
1265
1210
1155
1100
Y-AXIS (feet)
990
1045
1100
1155
1210
1265
1320
1375
1430
X-AXIS (feet)

XSTABL File: SECTE-E8 10-05-** 9:07

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section E-E' Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1185.0	1050.0	1185.0	1
2	1050.0	1185.0	1060.0	1190.0	1
3	1060.0	1190.0	1080.0	1190.0	1
4	1080.0	1190.0	1110.0	1210.0	1
5	1110.0	1210.0	1140.0	1230.0	1
6	1140.0	1230.0	1170.0	1240.0	1
7	1170.0	1240.0	1190.0	1250.0	1
8	1190.0	1250.0	1220.0	1270.0	1
9	1220.0	1270.0	1280.0	1312.0	1
10	1280.0	1312.0	1320.0	1312.0	1
11	1320.0	1312.0	1360.0	1312.0	1
12	1360.0	1312.0	1430.0	1312.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	20.00	4000.0	28.00
2	24.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

750 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 2.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1070.0	1165.0	1140.0	1210.0	30.0
2	1275.0	1280.0	1350.0	1285.0	40.0

```
*************************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
*************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*************************************************************************
```

USER SELECTED option to maintain strength greater than zero

```
*************************************************************
**     Factor of safety calculation for surface #   145    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.3781    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1107.59	1208.39
2	1107.62	1208.39
3	1109.62	1208.38

4	1111.17	1207.12
5	1112.70	1205.82
6	1295.20	1300.69
7	1295.66	1302.63
8	1297.07	1304.05
9	1297.75	1305.93
10	1299.15	1307.36
11	1299.33	1309.35
12	1300.74	1310.76
13	1300.79	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   224    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  52.3972    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1095.51	1200.34
2	1096.52	1200.18
3	1097.98	1198.82
4	1099.57	1197.61
5	1283.29	1299.11
6	1283.61	1301.09
7	1284.80	1302.70
8	1285.77	1304.44
9	1287.11	1305.93
10	1288.49	1307.38
11	1288.71	1309.37
12	1289.03	1311.34
13	1289.58	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   453    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  41.6922    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1105.62	1207.08
2	1107.20	1206.67
3	1108.96	1205.72
4	1110.81	1204.94
5	1277.03	1287.98
6	1278.02	1289.71
7	1278.16	1291.71
8	1278.62	1293.66
9	1278.68	1295.66
10	1278.87	1297.65
11	1280.27	1299.08
12	1280.90	1300.97
13	1281.09	1302.97
14	1282.14	1304.67
15	1283.43	1306.19
16	1283.92	1308.13

17	1285.06	1309.78
18	1286.16	1311.45
19	1286.17	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   546    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  -9.7332    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1097.46	1201.64
2	1098.38	1200.86
3	1099.79	1199.45
4	1101.38	1198.23
5	1102.82	1196.84
6	1277.01	1295.24
7	1278.33	1296.75
8	1278.72	1298.71
9	1279.35	1300.61
10	1280.36	1302.34
11	1281.15	1304.18
12	1282.42	1305.72
13	1283.35	1307.49
14	1284.56	1309.08
15	1285.74	1310.70
16	1286.86	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   587    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  14.0422    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1067.87	1190.00
2	1068.08	1189.79
3	1069.75	1188.69
4	1071.27	1187.40
5	1072.83	1186.14
6	1074.30	1184.78
7	1075.83	1183.50
8	1290.53	1299.67
9	1291.83	1301.19
10	1292.04	1303.18
11	1292.82	1305.02
12	1294.18	1306.49
13	1294.58	1308.45
14	1294.90	1310.42
15	1296.16	1311.98
16	1296.18	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   664    **
```

```
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.8227    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1118.23	1215.49
2	1119.59	1214.76
3	1121.24	1213.63
4	1123.18	1213.16
5	1124.61	1211.76
6	1126.34	1210.75
7	1127.85	1209.44
8	1129.33	1208.10
9	1130.78	1206.72
10	1132.58	1205.86
11	1134.02	1204.47
12	1277.25	1296.54
13	1278.16	1298.32
14	1278.75	1300.23
15	1280.14	1301.67
16	1281.15	1303.40
17	1281.57	1305.35
18	1282.63	1307.05
19	1284.04	1308.46
20	1285.07	1310.18
21	1286.43	1311.64
22	1286.50	1312.00

```
*************************************************************
**     Factor of safety calculation for surface #   687    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.9892    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1105.49	1207.00
2	1106.71	1206.02
3	1108.18	1204.66
4	1109.78	1203.46
5	1111.69	1202.86
6	1113.65	1202.49
7	1115.09	1201.10
8	1279.05	1293.50
9	1279.11	1295.50
10	1279.30	1297.49
11	1279.37	1299.49
12	1280.20	1301.31
13	1281.40	1302.91
14	1282.54	1304.55
15	1282.89	1306.52
16	1283.92	1308.24
17	1285.27	1309.71
18	1286.41	1311.36
19	1286.68	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   696    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.9449    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1118.87	1215.91
2	1119.36	1215.83
3	1121.06	1214.77
4	1122.61	1213.50
5	1124.23	1212.34
6	1279.41	1291.20
7	1280.79	1292.65
8	1280.98	1294.64
9	1281.95	1296.38
10	1283.20	1297.94
11	1284.47	1299.49
12	1285.67	1301.09
13	1286.94	1302.63
14	1287.80	1304.44
15	1288.40	1306.35
16	1288.55	1308.34
17	1289.90	1309.81
18	1290.98	1311.50
19	1291.27	1312.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1081.02	1190.68
2	1082.52	1189.45
3	1084.51	1189.38
4	1086.51	1189.37
5	1335.55	1298.14
6	1336.60	1299.84
7	1337.20	1301.75
8	1338.59	1303.19
9	1339.71	1304.84
10	1340.67	1306.60
11	1342.08	1308.01
12	1343.45	1309.47
13	1344.75	1310.99
14	1345.46	1312.00

** Corrected JANBU FOS = 1.169 ** (Fo factor = 1.014)

Failure surface No. 2 specified by 14 coordinate points

Point	x-surf	y-surf

No.	(ft)	(ft)
1	1074.52	1190.00
2	1074.52	1190.00
3	1076.27	1189.02
4	1078.27	1188.96
5	1079.99	1187.95
6	1081.49	1186.62
7	1347.53	1299.95
8	1347.96	1301.90
9	1348.52	1303.82
10	1349.55	1305.54
11	1350.82	1307.08
12	1352.15	1308.58
13	1353.52	1310.04
14	1353.88	1312.00

** Corrected JANBU FOS = 1.192 ** (Fo factor = 1.013)

Failure surface No. 3 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1110.09	1210.06
2	1110.89	1209.74
3	1112.31	1208.34
4	1114.30	1208.10
5	1339.35	1303.49
6	1339.72	1305.45
7	1340.88	1307.08
8	1342.24	1308.55
9	1342.99	1310.40
10	1344.27	1311.94
11	1344.32	1312.00

** Corrected JANBU FOS = 1.240 ** (Fo factor = 1.011)

Failure surface No. 4 specified by 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1098.01	1202.00
2	1099.73	1201.68
3	1101.33	1200.47
4	1103.21	1199.79
5	1105.12	1199.20
6	1106.63	1197.88
7	1347.14	1299.93
8	1348.55	1301.35
9	1349.58	1303.06
10	1350.99	1304.49
11	1352.40	1305.90
12	1353.38	1307.64
13	1353.84	1309.59
14	1354.63	1311.42
15	1354.74	1312.00

** Corrected JANBU FOS = 1.240 ** (Fo factor = 1.014)

Failure surface No. 5 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1093.00	1198.67
2	1093.41	1198.49

3	1095.26	1197.72
4	1096.80	1196.44
5	1098.36	1195.18
6	1099.92	1193.94
7	1344.71	1297.24
8	1345.95	1298.81
9	1346.80	1300.63
10	1348.11	1302.13
11	1348.64	1304.06
12	1349.52	1305.86
13	1350.93	1307.27
14	1352.35	1308.68
15	1353.44	1310.36
16	1354.77	1311.85
17	1354.80	1312.00

** Corrected JANBU FOS = 1.252 ** (Fo factor = 1.016)

Failure surface No. 6 specified by 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1080.22	1190.14
2	1081.08	1189.39
3	1082.60	1188.09
4	1084.56	1187.70
5	1085.98	1186.28
6	1087.84	1185.55
7	1089.71	1184.84
8	1341.93	1290.25
9	1343.02	1291.92
10	1344.06	1293.63
11	1344.56	1295.57
12	1345.61	1297.27
13	1346.15	1299.20
14	1347.28	1300.85
15	1348.55	1302.40
16	1348.72	1304.39
17	1349.54	1306.21
18	1350.12	1308.13
19	1351.39	1309.67
20	1352.73	1311.15
21	1353.50	1312.00

** Corrected JANBU FOS = 1.299 ** (Fo factor = 1.024)

Failure surface No. 7 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1094.66	1199.77
2	1096.12	1198.87
3	1097.71	1197.66
4	1334.25	1291.31
5	1335.38	1292.96
6	1336.53	1294.60
7	1337.54	1296.32
8	1338.37	1298.14
9	1339.42	1299.84
10	1340.14	1301.71
11	1341.04	1303.49
12	1342.15	1305.16
13	1343.37	1306.74
14	1344.72	1308.22
15	1345.44	1310.08
16	1346.59	1311.72
17	1346.66	1312.00

** Corrected JANBU FOS = 1.305 ** (Fo factor = 1.023)

Failure surface No. 8 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1106.22	1207.48
2	1108.03	1207.45
3	1110.02	1207.25
4	1112.01	1207.07
5	1113.77	1206.11
6	1115.30	1204.83
7	1116.91	1203.64
8	1118.91	1203.56
9	1345.79	1300.25
10	1347.07	1301.78
11	1348.48	1303.20
12	1349.89	1304.61
13	1349.91	1306.61
14	1350.96	1308.31
15	1352.37	1309.73
16	1352.95	1311.65
17	1353.05	1312.00

** Corrected JANBU FOS = 1.336 ** (Fo factor = 1.015)

Failure surface No. 9 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1115.44	1213.63
2	1116.27	1213.01
3	1117.94	1211.92
4	1119.93	1211.71
5	1323.82	1300.92
6	1325.16	1302.41
7	1326.40	1303.98
8	1327.80	1305.40
9	1329.07	1306.95
10	1330.46	1308.39
11	1331.82	1309.86
12	1333.23	1311.28
13	1333.90	1312.00

** Corrected JANBU FOS = 1.343 ** (Fo factor = 1.012)

Failure surface No.10 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1109.81	1209.88
2	1110.25	1209.52
3	1112.09	1208.75
4	1113.70	1207.56
5	1115.22	1206.25
6	1327.17	1300.17
7	1328.36	1301.79
8	1328.71	1303.75
9	1329.94	1305.34
10	1330.93	1307.07
11	1331.44	1309.01
12	1332.71	1310.55
13	1334.03	1312.00

** Corrected JANBU FOS = 1.354 ** (Fo factor = 1.015)

```
*******************************************************************
**                                                               **
**  Out of the    750 surfaces generated and analyzed by XSTABL,  **
**        8 surfaces were found to have MISLEADING FOS values.   **
**                                                               **
*******************************************************************
```

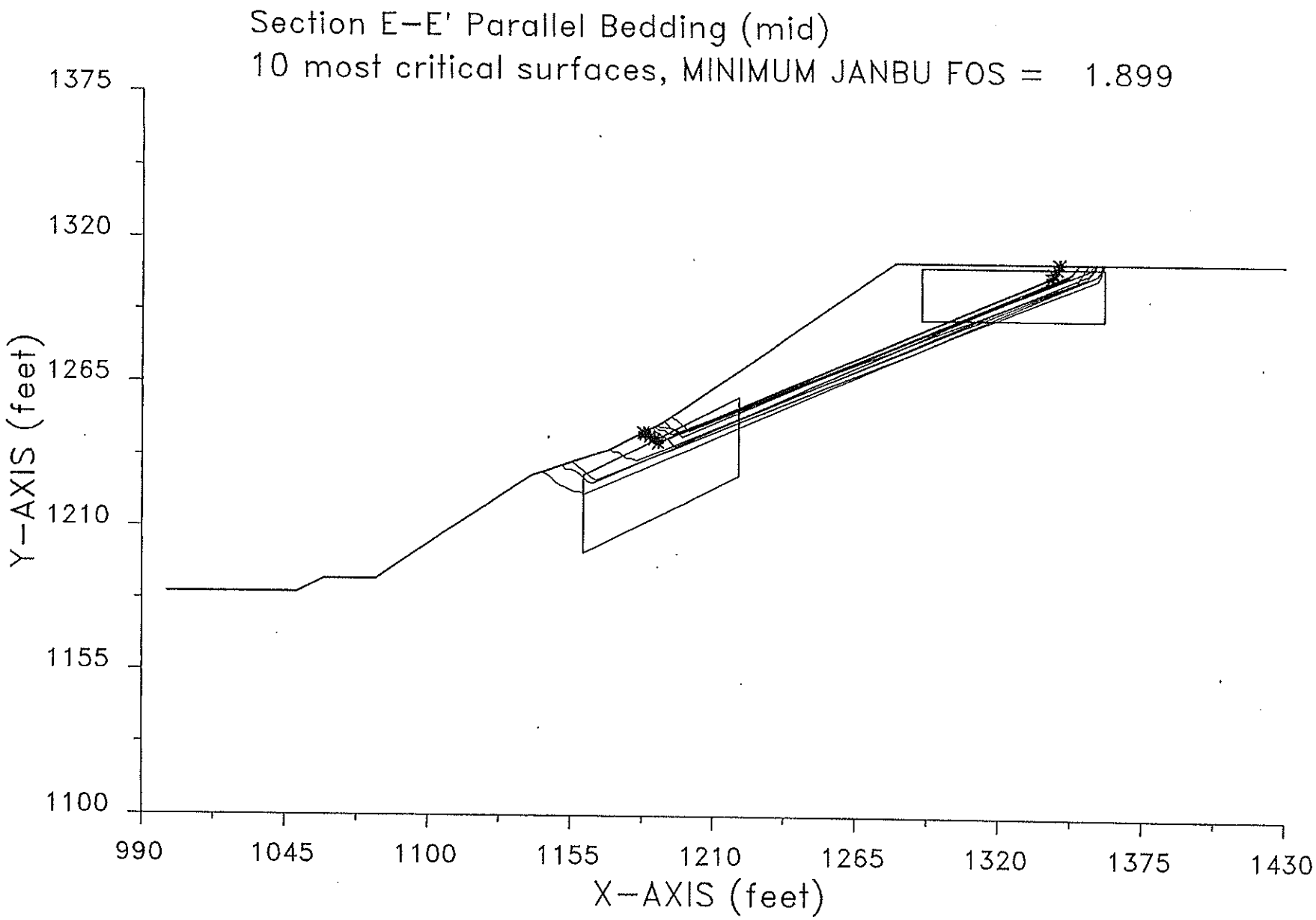
The following is a summary of the TEN most critical surfaces

Problem Description : Section E-E' Kh=0.15

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.169	1.014	1081.02	1345.46	3.690E+05
2.	1.192	1.013	1074.52	1353.88	4.063E+05
3.	1.240	1.011	1110.09	1344.32	2.765E+05
4.	1.240	1.014	1098.01	1354.74	4.076E+05
5.	1.252	1.016	1093.00	1354.80	4.358E+05
6.	1.299	1.024	1080.22	1353.50	5.361E+05
7.	1.305	1.023	1094.66	1346.66	3.957E+05
8.	1.336	1.015	1106.22	1353.05	4.077E+05
9.	1.343	1.012	1115.44	1333.90	2.582E+05
10.	1.354	1.015	1109.81	1334.03	2.945E+05

* * * END OF FILE * * *

SLOPE-E1 10-05-** 9:04



XSTABL File: SECTE-E1 10-05-** 9:04

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section E-E' Parallel Bedding (mid)

SEGMENT BOUNDARY COORDINATES
---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1185.0	1050.0	1185.0	1
2	1050.0	1185.0	1060.0	1190.0	1
3	1060.0	1190.0	1080.0	1190.0	1
4	1080.0	1190.0	1110.0	1210.0	1
5	1110.0	1210.0	1140.0	1230.0	1
6	1140.0	1230.0	1170.0	1240.0	1
7	1170.0	1240.0	1190.0	1250.0	1
8	1190.0	1250.0	1220.0	1270.0	1
9	1220.0	1270.0	1280.0	1312.0	1
10	1280.0	1312.0	1320.0	1312.0	1
11	1320.0	1312.0	1360.0	1312.0	1
12	1360.0	1312.0	1430.0	1312.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	i-value (degrees)
1	20.00	4000.0	28.00
2	24.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

750 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 2.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1160.0	1215.0	1220.0	1245.0	30.0
2	1290.0	1300.0	1360.0	1300.0	20.0

```
************************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
************************************************************************
```

```
-------------------------------------------------------------
USER SELECTED option to maintain strength greater than zero
-------------------------------------------------------------
```

```
*************************************************************
**     Factor of safety calculation for surface #     2    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  11.0120    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1207.79	1261.86
2	1208.94	1261.37
3	1210.91	1260.99
4	1212.90	1260.90
5	1214.33	1259.50
6	1215.79	1258.13
7	1217.20	1256.71
8	1292.35	1292.91
9	1293.72	1294.37
10	1293.92	1296.36
11	1295.23	1297.88

12	1296.25	1299.59
13	1296.90	1301.49
14	1297.43	1303.42
15	1298.61	1305.03
16	1299.96	1306.50
17	1300.96	1308.23
18	1301.72	1310.09
19	1302.47	1311.94
20	1302.51	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    13    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.5344    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 24 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1148.62	1232.87
2	1148.72	1232.80
3	1150.17	1231.42
4	1151.64	1230.06
5	1153.11	1228.70
6	1155.02	1228.13
7	1156.58	1226.88
8	1158.04	1225.51
9	1159.64	1224.30
10	1161.62	1224.04
11	1163.25	1222.89
12	1165.07	1222.06
13	1167.07	1221.96
14	1168.83	1221.01
15	1170.67	1220.23
16	1172.12	1218.85
17	1174.01	1218.22
18	1175.44	1216.82
19	1177.22	1215.89
20	1178.94	1214.88
21	1180.36	1213.47
22	1299.21	1309.49
23	1299.70	1311.43
24	1300.09	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    24    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.4530    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1150.57	1233.52
2	1151.62	1232.56
3	1153.58	1232.15
4	1155.53	1231.73
5	1157.53	1231.72
6	1159.50	1231.34

7	1161.48	1231.09
8	1163.06	1229.86
9	1164.64	1228.63
10	1166.60	1228.25
11	1294.80	1301.14
12	1296.21	1302.56
13	1297.56	1304.03
14	1298.68	1305.69
15	1299.90	1307.27
16	1301.15	1308.83
17	1302.05	1310.62
18	1303.29	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    26    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.8482    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1181.35	1245.67
2	1182.48	1245.20
3	1184.37	1244.55
4	1186.21	1243.76
5	1187.80	1242.55
6	1189.64	1241.76
7	1191.07	1240.37
8	1291.00	1292.94
9	1292.23	1294.52
10	1293.19	1296.27
11	1293.57	1298.23
12	1294.50	1300.00
13	1295.91	1301.42
14	1297.21	1302.94
15	1298.57	1304.41
16	1299.59	1306.13
17	1299.93	1308.10
18	1300.89	1309.85
19	1301.07	1311.84
20	1301.08	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    31    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.8918    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1174.19	1242.10
2	1174.47	1241.83
3	1175.96	1240.50
4	1177.70	1239.53
5	1179.46	1238.56
6	1181.15	1237.50
7	1182.81	1236.39

8	1184.41	1235.19
9	1185.83	1233.78
10	1187.25	1232.37
11	1189.14	1231.72
12	1190.81	1230.61
13	1192.35	1229.34
14	1193.83	1228.00
15	1195.82	1227.82
16	1197.24	1226.41
17	1291.78	1309.74
18	1292.55	1311.59
19	1292.94	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    65    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.1922    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1172.48	1241.24
2	1173.47	1240.28
3	1175.38	1239.71
4	1177.34	1239.30
5	1179.10	1238.35
6	1180.53	1236.95
7	1182.09	1235.70
8	1183.51	1234.29
9	1185.47	1233.90
10	1186.91	1232.51
11	1188.37	1231.14
12	1189.80	1229.74
13	1295.45	1306.31
14	1296.58	1307.96
15	1297.94	1309.42
16	1298.94	1311.15
17	1299.38	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    87    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.3732    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1179.06	1244.53
2	1179.09	1244.53
3	1181.02	1244.01
4	1182.81	1243.11
5	1184.26	1241.74
6	1185.68	1240.33
7	1187.51	1239.51
8	1294.59	1296.32
9	1295.99	1297.75
10	1297.35	1299.21

7	1298.34	1301.49
8	1298.86	1303.42
9	1299.76	1305.21
10	1300.71	1306.97
11	1300.85	1308.96
12	1301.54	1310.84
13	1301.74	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   168    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.7819    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1199.24	1256.16
2	1199.97	1255.64
3	1201.38	1254.23
4	1202.80	1252.82
5	1204.68	1252.14
6	1206.68	1252.03
7	1208.34	1250.91
8	1210.32	1250.67
9	1212.15	1249.86
10	1297.48	1290.95
11	1298.86	1292.40
12	1299.65	1294.24
13	1300.82	1295.85
14	1301.69	1297.66
15	1302.92	1299.23
16	1303.93	1300.96
17	1304.20	1302.94
18	1304.25	1304.94
19	1305.61	1306.40
20	1306.17	1308.32
21	1306.63	1310.27
22	1307.99	1311.74
23	1308.10	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   212    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  60.2161    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 24 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1151.63	1233.88
2	1152.60	1233.12
3	1154.14	1231.85
4	1156.07	1231.30
5	1157.48	1229.88
6	1158.90	1228.48
7	1160.90	1228.38
8	1162.48	1227.15
9	1164.48	1227.09

11	1297.43	1301.21
12	1297.49	1303.21
13	1298.42	1304.98
14	1299.81	1306.42
15	1300.76	1308.18
16	1300.99	1310.16
17	1301.47	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   122    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.1186    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 26 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1201.14	1257.42
2	1202.85	1256.73
3	1204.84	1256.57
4	1206.81	1256.19
5	1208.41	1254.99
6	1209.96	1253.73
7	1211.47	1252.42
8	1213.26	1251.54
9	1215.09	1250.71
10	1216.74	1249.59
11	1218.16	1248.18
12	1294.86	1290.08
13	1296.27	1291.50
14	1296.85	1293.41
15	1298.08	1294.99
16	1299.38	1296.51
17	1300.01	1298.41
18	1300.46	1300.36
19	1301.66	1301.96
20	1302.99	1303.45
21	1303.21	1305.44
22	1303.74	1307.37
23	1305.13	1308.81
24	1306.54	1310.22
25	1307.83	1311.75
26	1307.90	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   125    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.4180    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1165.24	1238.41
2	1166.70	1237.84
3	1168.62	1237.28
4	1170.14	1235.98
5	1171.68	1234.71
6	1173.63	1234.28

10	1165.92	1225.70
11	1167.36	1224.32
12	1168.80	1222.92
13	1170.79	1222.83
14	1172.41	1221.66
15	1173.86	1220.28
16	1175.57	1219.25
17	1177.54	1218.88
18	1179.01	1217.52
19	1180.70	1216.45
20	1182.42	1215.43
21	1291.44	1308.32
22	1292.52	1310.00
23	1293.91	1311.43
24	1294.34	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   214    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.5217    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1162.26	1237.42
2	1162.43	1237.26
3	1163.85	1235.85
4	1165.57	1234.84
5	1167.57	1234.84
6	1169.33	1233.88
7	1170.99	1232.76
8	1172.73	1231.77
9	1174.53	1230.90
10	1176.04	1229.59
11	1178.03	1229.40
12	1298.11	1306.91
13	1298.35	1308.90
14	1298.58	1310.88
15	1299.68	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   225    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -17.2887    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1197.73	1255.15
2	1198.84	1254.25
3	1200.40	1253.00
4	1201.88	1251.65
5	1203.33	1250.28
6	1204.87	1249.00
7	1206.64	1248.07
8	1208.55	1247.48
9	1291.21	1298.86

10	1291.90	1300.74
11	1292.10	1302.73
12	1293.49	1304.17
13	1294.58	1305.85
14	1294.95	1307.81
15	1294.98	1309.81
16	1296.19	1311.41
17	1296.52	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   228    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  24.5015    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1156.71	1235.57
2	1157.83	1234.47
3	1159.82	1234.28
4	1161.76	1233.79
5	1163.18	1232.38
6	1165.07	1231.72
7	1292.07	1306.48
8	1292.16	1308.48
9	1292.53	1310.45
10	1293.94	1311.86
11	1294.01	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   253    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.4448    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1163.23	1237.74
2	1164.15	1237.67
3	1165.57	1236.27
4	1167.00	1234.86
5	1168.42	1233.45
6	1170.38	1233.07
7	1171.91	1231.79
8	1173.33	1230.38
9	1174.91	1229.15
10	1176.76	1228.39
11	1178.18	1226.98
12	1179.71	1225.69
13	1181.25	1224.41
14	1183.07	1223.60
15	1184.97	1222.97
16	1296.30	1307.48
17	1297.54	1309.04
18	1297.64	1311.04
19	1298.59	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   259    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -24.8266    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 31 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1185.05	1247.52
2	1186.10	1246.51
3	1187.82	1245.48
4	1189.42	1244.29
5	1190.89	1242.93
6	1192.34	1241.56
7	1193.96	1240.38
8	1195.94	1240.11
9	1197.48	1238.83
10	1199.03	1237.56
11	1200.58	1236.30
12	1202.36	1235.39
13	1203.86	1234.06
14	1205.32	1232.70
15	1206.77	1231.32
16	1208.71	1230.84
17	1210.43	1229.82
18	1212.21	1228.91
19	1293.82	1293.12
20	1294.64	1294.95
21	1295.95	1296.46
22	1297.34	1297.90
23	1298.75	1299.32
24	1299.24	1301.26
25	1299.25	1303.26
26	1299.34	1305.26
27	1299.39	1307.26
28	1300.79	1308.69
29	1302.12	1310.17
30	1303.51	1311.62
31	1303.81	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   269    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  20.7331    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1178.81	1244.40
2	1180.02	1243.45
3	1181.61	1242.24
4	1183.04	1240.84
5	1184.66	1239.67
6	1186.11	1238.29
7	1291.86	1307.88
8	1291.92	1309.88
9	1292.21	1311.86

10	1292.27	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   273    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  42.6669    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1162.88	1237.63
2	1162.93	1237.59
3	1164.36	1236.19
4	1166.29	1235.68
5	1168.12	1234.86
6	1170.12	1234.78
7	1172.03	1234.21
8	1173.46	1232.81
9	1175.20	1231.82
10	1177.18	1231.57
11	1178.84	1230.45
12	1180.58	1229.47
13	1182.09	1228.16
14	1297.54	1300.99
15	1298.81	1302.53
16	1299.06	1304.52
17	1299.29	1306.51
18	1300.61	1308.00
19	1301.35	1309.86
20	1301.86	1311.80
21	1301.87	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   296    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.1463    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1191.89	1251.26
2	1192.34	1250.93
3	1193.86	1249.63
4	1195.67	1248.78
5	1197.15	1247.43
6	1198.93	1246.52
7	1200.43	1245.20
8	1202.04	1244.02
9	1203.51	1242.66
10	1205.20	1241.59
11	1206.64	1240.21
12	1208.47	1239.40
13	1210.18	1238.36
14	1211.60	1236.95
15	1213.04	1235.57
16	1299.62	1309.22
17	1301.03	1310.64

18	1302.35	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   300    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  15.6039    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1162.03	1237.34
2	1162.04	1237.34
3	1163.97	1236.84
4	1165.91	1236.35
5	1167.35	1234.95
6	1168.99	1233.82
7	1170.64	1232.69
8	1291.67	1301.63
9	1292.21	1303.56
10	1293.40	1305.16
11	1294.31	1306.94
12	1294.86	1308.87
13	1296.24	1310.32
14	1296.63	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   306    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.7693    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1176.13	1243.07
2	1177.17	1242.62
3	1179.04	1241.91
4	1180.51	1240.56
5	1182.51	1240.43
6	1184.17	1239.32
7	1185.68	1238.01
8	1187.45	1237.06
9	1290.21	1300.70
10	1291.59	1302.15
11	1292.99	1303.58
12	1294.36	1305.04
13	1295.77	1306.45
14	1295.80	1308.45
15	1297.08	1309.99
16	1298.48	1311.42
17	1299.00	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   313    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.4105    **
```

```
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1190.31	1250.21
2	1190.58	1249.97
3	1192.39	1249.13
4	1194.03	1247.98
5	1195.62	1246.77
6	1197.04	1245.36
7	1199.03	1245.15
8	1200.49	1243.78
9	1201.90	1242.37
10	1203.40	1241.05
11	1295.73	1305.41
12	1297.06	1306.90
13	1297.94	1308.70
14	1299.34	1310.13
15	1300.70	1311.59
16	1301.03	1312.00

```
*************************************************************
**     Factor of safety calculation for surface #   315    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.8890    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1197.58	1255.05
2	1197.59	1255.05
3	1199.55	1254.66
4	1201.50	1254.19
5	1203.44	1253.71
6	1205.35	1253.14
7	1206.99	1251.99
8	1208.64	1250.85
9	1290.11	1294.63
10	1291.27	1296.26
11	1292.55	1297.79
12	1293.01	1299.74
13	1294.37	1301.21
14	1295.39	1302.92
15	1296.08	1304.80
16	1297.18	1306.47
17	1298.38	1308.07
18	1298.66	1310.05
19	1300.04	1311.50
20	1300.46	1312.00

```
*************************************************************
**     Factor of safety calculation for surface #   317    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.9849    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1207.91	1261.94
2	1208.42	1261.75
3	1210.05	1260.60
4	1211.94	1259.94
5	1213.36	1258.53
6	1215.12	1257.57
7	1216.80	1256.50
8	1290.79	1304.81
9	1292.20	1306.22
10	1293.36	1307.86
11	1294.72	1309.32
12	1296.12	1310.75
13	1296.16	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   319    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was 194.7079    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1140.03	1230.01
2	1141.17	1229.37
3	1142.78	1228.18
4	1144.76	1227.87
5	1146.73	1227.56
6	1148.19	1226.19
7	1149.78	1224.98
8	1151.78	1224.87
9	1153.21	1223.47
10	1155.20	1223.32
11	1156.80	1222.12
12	1158.30	1220.80
13	1159.73	1219.40
14	1161.31	1218.17
15	1162.85	1216.90
16	1164.27	1215.49
17	1165.94	1214.39
18	1167.54	1213.18
19	1169.12	1211.96
20	1299.42	1307.70
21	1300.75	1309.19
22	1302.13	1310.64
23	1302.28	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   348    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -67.9697    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 29 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1182.89	1246.45
2	1183.50	1245.85
3	1185.46	1245.49
4	1187.20	1244.50
5	1189.19	1244.29
6	1190.87	1243.20
7	1192.77	1242.58
8	1194.76	1242.44
9	1196.21	1241.06
10	1197.75	1239.78
11	1199.23	1238.44
12	1200.86	1237.28
13	1202.47	1236.09
14	1204.07	1234.89
15	1205.75	1233.81
16	1207.56	1232.96
17	1209.32	1232.02
18	1211.32	1231.92
19	1212.76	1230.53
20	1214.38	1229.36
21	1216.37	1229.15
22	1293.00	1300.83
23	1294.39	1302.27
24	1295.78	1303.71
25	1296.61	1305.53
26	1297.85	1307.10
27	1298.74	1308.89
28	1299.52	1310.73
29	1300.19	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   382    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.0059    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1168.08	1239.36
2	1168.50	1239.14
3	1170.41	1238.54
4	1172.28	1237.83
5	1173.76	1236.49
6	1175.74	1236.24
7	1177.19	1234.85
8	1178.68	1233.52
9	1180.20	1232.22
10	1181.68	1230.87
11	1183.60	1230.32
12	1185.36	1229.36
13	1186.78	1227.95
14	1188.42	1226.81
15	1190.40	1226.54
16	1191.91	1225.22
17	1193.50	1224.01
18	1292.70	1307.01
19	1294.00	1308.54
20	1294.59	1310.45
21	1295.14	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   403    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.9393    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1201.92	1257.95
2	1201.93	1257.94
3	1203.65	1256.91
4	1205.20	1255.65
5	1206.84	1254.51
6	1208.39	1253.24
7	1209.86	1251.89
8	1211.34	1250.54
9	1212.83	1249.21
10	1214.27	1247.82
11	1215.83	1246.58
12	1217.47	1245.43
13	1293.19	1303.23
14	1294.44	1304.78
15	1295.76	1306.29
16	1297.16	1307.72
17	1298.04	1309.51
18	1299.27	1311.09
19	1299.54	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   413    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.4269    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1165.08	1238.36
2	1165.80	1238.05
3	1167.22	1236.64
4	1169.15	1236.12
5	1170.97	1235.31
6	1172.39	1233.90
7	1173.84	1232.52
8	1175.29	1231.14
9	1177.29	1231.04
10	1178.81	1229.74
11	1180.74	1229.21
12	1182.71	1228.91
13	1184.66	1228.43
14	1186.51	1227.68
15	1188.14	1226.53
16	1190.11	1226.14
17	1191.77	1225.03
18	1292.79	1306.09
19	1294.19	1307.51
20	1295.53	1309.00
21	1296.93	1310.43
22	1298.18	1311.99

23	1298.18	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   422    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.8779    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 24 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1142.73	1230.91
2	1143.23	1230.46
3	1144.86	1229.30
4	1146.28	1227.89
5	1147.75	1226.54
6	1149.17	1225.13
7	1150.93	1224.18
8	1152.60	1223.07
9	1154.16	1221.82
10	1155.98	1221.00
11	1157.79	1220.15
12	1159.39	1218.94
13	1161.36	1218.62
14	1163.31	1218.16
15	1165.26	1217.73
16	1166.82	1216.47
17	1168.62	1215.60
18	1170.54	1215.03
19	1172.41	1214.33
20	1173.88	1212.98
21	1298.20	1307.64
22	1298.56	1309.61
23	1299.00	1311.56
24	1299.37	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   423    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.3296    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 25 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1160.26	1236.75
2	1161.01	1236.30
3	1162.84	1235.50
4	1164.42	1234.27
5	1165.84	1232.87
6	1167.27	1231.47
7	1168.86	1230.26
8	1170.28	1228.85
9	1172.15	1228.14
10	1173.57	1226.73
11	1175.23	1225.62
12	1176.73	1224.30
13	1178.40	1223.19
14	1179.82	1221.79

15	1181.77	1221.32
16	1183.29	1220.02
17	1185.28	1219.90
18	1186.70	1218.49
19	1188.49	1217.60
20	1290.03	1304.20
21	1291.27	1305.78
22	1292.45	1307.39
23	1293.09	1309.28
24	1294.42	1310.78
25	1294.93	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   430    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.9331    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 24 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1178.35	1244.17
2	1179.03	1243.62
3	1180.73	1242.57
4	1182.15	1241.16
5	1183.76	1239.97
6	1185.20	1238.59
7	1186.86	1237.48
8	1188.55	1236.40
9	1190.00	1235.02
10	1191.46	1233.66
11	1192.94	1232.31
12	1194.78	1231.53
13	1196.72	1231.05
14	1198.60	1230.35
15	1200.15	1229.09
16	1201.78	1227.92
17	1203.55	1226.99
18	1205.05	1225.68
19	1291.14	1304.42
20	1291.88	1306.28
21	1292.67	1308.12
22	1294.04	1309.57
23	1294.29	1311.55
24	1294.60	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   444    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -25.9584    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.69	1232.23
2	1147.07	1231.99
3	1148.50	1230.60
4	1150.50	1230.56

5	1152.17	1229.46
6	1154.17	1229.34
7	1155.78	1228.16
8	1157.75	1227.81
9	1159.17	1226.40
10	1160.86	1225.34
11	1162.76	1224.72
12	1164.18	1223.30
13	1165.75	1222.07
14	1291.31	1306.04
15	1292.35	1307.75
16	1293.52	1309.37
17	1294.83	1310.88
18	1294.83	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   446    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  87.4545    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 29 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1159.26	1236.42
2	1159.90	1235.99
3	1161.78	1235.29
4	1163.77	1235.11
5	1165.62	1234.36
6	1167.28	1233.24
7	1168.97	1232.17
8	1170.96	1231.97
9	1172.74	1231.06
10	1174.31	1229.82
11	1176.23	1229.25
12	1177.73	1227.93
13	1179.16	1226.54
14	1180.76	1225.33
15	1182.18	1223.93
16	1184.15	1223.60
17	1185.76	1222.41
18	1187.20	1221.02
19	1188.70	1219.70
20	1190.70	1219.58
21	1192.12	1218.18
22	1193.74	1217.00
23	1294.15	1302.59
24	1295.27	1304.25
25	1295.95	1306.13
26	1297.32	1307.59
27	1298.36	1309.30
28	1299.58	1310.88
29	1300.67	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   453    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.7794    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1182.05	1246.02
2	1182.30	1245.93
3	1183.73	1244.54
4	1185.21	1243.20
5	1187.21	1243.07
6	1188.63	1241.66
7	1190.07	1240.28
8	1191.90	1239.47
9	1193.87	1239.12
10	1195.82	1238.71
11	1197.53	1237.66
12	1199.38	1236.89
13	1201.37	1236.71
14	1302.04	1303.45
15	1302.18	1305.45
16	1303.31	1307.10
17	1303.51	1309.09
18	1304.33	1310.92
19	1304.37	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   474    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-293.5941    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1197.41	1254.94
2	1198.24	1254.11
3	1199.67	1252.71
4	1201.67	1252.56
5	1203.21	1251.29
6	1205.18	1250.98
7	1291.14	1290.64
8	1291.48	1292.61
9	1292.63	1294.25
10	1293.67	1295.96
11	1294.43	1297.80
12	1295.72	1299.34
13	1296.55	1301.16
14	1297.12	1303.08
15	1298.09	1304.82
16	1298.61	1306.75
17	1300.03	1308.17
18	1300.96	1309.94
19	1301.41	1311.89
20	1301.45	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   476    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.9261    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1208.05	1262.04
2	1209.71	1261.55
3	1211.44	1260.54
4	1213.13	1259.48
5	1214.92	1258.58
6	1216.68	1257.64
7	1218.11	1256.24
8	1293.77	1299.62
9	1295.16	1301.05
10	1296.48	1302.55
11	1296.90	1304.51
12	1298.25	1305.98
13	1299.14	1307.78
14	1300.52	1309.22
15	1301.25	1311.08
16	1302.17	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   496    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.2747    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1188.78	1249.39
2	1189.38	1248.89
3	1191.21	1248.09
4	1192.87	1246.97
5	1194.69	1246.14
6	1196.69	1246.13
7	1198.11	1244.72
8	1199.61	1243.40
9	1299.57	1308.94
10	1300.87	1310.46
11	1302.07	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   508    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.9364    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1172.45	1241.23
2	1173.09	1240.61
3	1174.52	1239.21
4	1175.94	1237.80
5	1177.92	1237.55
6	1179.83	1236.96
7	1181.41	1235.73
8	1182.92	1234.42

9	1184.92	1234.36
10	1186.73	1233.52
11	1188.37	1232.36
12	1189.88	1231.06
13	1191.88	1230.93
14	1193.29	1229.52
15	1195.27	1229.23
16	1295.29	1307.83
17	1295.65	1309.79
18	1296.14	1311.73
19	1296.34	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   511    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.0563    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1161.02	1237.01
2	1161.46	1236.74
3	1163.42	1236.33
4	1164.85	1234.93
5	1166.27	1233.52
6	1167.85	1232.29
7	1169.47	1231.13
8	1171.16	1230.05
9	1173.00	1229.28
10	1174.99	1229.07
11	1176.99	1228.97
12	1178.57	1227.74
13	1293.34	1303.52
14	1294.66	1305.03
15	1294.80	1307.02
16	1296.13	1308.52
17	1296.55	1310.48
18	1297.96	1311.89
19	1298.06	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   538    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  16.5592    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1150.94	1233.65
2	1151.29	1233.40
3	1152.71	1231.99
4	1154.71	1231.90
5	1156.35	1230.77
6	1158.19	1229.97
7	1159.88	1228.90
8	1161.77	1228.24
9	1163.76	1228.14

10	1165.52	1227.18
11	1290.71	1308.32
12	1291.27	1310.24
13	1292.46	1311.85
14	1292.54	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   542    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  11.6598    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1158.20	1236.07
2	1159.75	1235.82
3	1161.23	1234.48
4	1162.65	1233.07
5	1164.21	1231.82
6	1301.37	1293.11
7	1302.15	1294.95
8	1303.50	1296.43
9	1303.71	1298.42
10	1303.73	1300.42
11	1304.85	1302.08
12	1306.11	1303.63
13	1307.43	1305.14
14	1307.75	1307.11
15	1308.79	1308.82
16	1309.91	1310.47
17	1310.36	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   547    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.8589    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 27 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1154.79	1234.93
2	1156.35	1234.78
3	1158.30	1234.33
4	1159.72	1232.93
5	1161.65	1232.39
6	1163.62	1232.07
7	1165.05	1230.67
8	1166.47	1229.26
9	1167.93	1227.89
10	1169.82	1227.25
11	1171.78	1226.82
12	1173.36	1225.60
13	1174.81	1224.22
14	1176.70	1223.59
15	1178.47	1222.65
16	1180.47	1222.58
17	1182.47	1222.44

18	1184.10	1221.29
19	1185.61	1219.98
20	1187.03	1218.56
21	1188.45	1217.16
22	1297.83	1305.05
23	1299.23	1306.48
24	1299.41	1308.47
25	1299.91	1310.41
26	1301.33	1311.82
27	1301.43	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   552    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -18.4363    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1169.25	1239.75
2	1169.58	1239.43
3	1171.07	1238.10
4	1172.49	1236.68
5	1174.47	1236.44
6	1176.05	1235.22
7	1177.93	1234.52
8	1179.34	1233.11
9	1180.79	1231.73
10	1290.55	1309.46
11	1291.35	1311.29
12	1292.03	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   565    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -31.7152    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1182.41	1246.21
2	1183.09	1245.54
3	1184.97	1244.87
4	1186.39	1243.45
5	1188.24	1242.70
6	1189.80	1241.45
7	1191.43	1240.29
8	1192.90	1238.93
9	1291.52	1305.35
10	1292.91	1306.79
11	1293.56	1308.68
12	1294.26	1310.55
13	1295.05	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   580    **
```

```
**      failed to converge within FIFTY iterations          **
**                                                          **
**    The last calculated value of the FOS was  12.7078     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1178.15	1244.07
2	1179.38	1243.84
3	1181.00	1242.67
4	1182.79	1241.79
5	1184.27	1240.45
6	1186.21	1239.95
7	1188.15	1239.45
8	1189.82	1238.35
9	1299.58	1309.33
10	1299.61	1311.33
11	1299.88	1312.00

```
************************************************************
**      Factor of safety calculation for surface #   584   **
**      failed to converge within FIFTY iterations          **
**                                                          **
**    The last calculated value of the FOS was   9.7163     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1157.75	1235.92
2	1158.61	1235.45
3	1160.06	1234.06
4	1161.51	1232.69
5	1163.01	1231.37
6	1164.98	1231.03
7	1166.47	1229.69
8	1168.11	1228.56
9	1295.82	1300.08
10	1296.46	1301.97
11	1297.25	1303.81
12	1298.55	1305.33
13	1299.82	1306.87
14	1301.07	1308.43
15	1301.65	1310.35
16	1302.07	1312.00

```
************************************************************
**      Factor of safety calculation for surface #   588   **
**      failed to converge within FIFTY iterations          **
**                                                          **
**    The last calculated value of the FOS was  10.4314     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1180.36	1245.18
2	1181.76	1243.85
3	1183.44	1242.78
4	1185.10	1241.67
5	1304.33	1307.14
6	1305.39	1308.84
7	1306.51	1310.50
8	1306.99	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   590    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.2258    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1163.39	1237.80
2	1164.37	1236.83
3	1165.81	1235.45
4	1167.27	1234.07
5	1168.80	1232.79
6	1170.49	1231.72
7	1172.19	1230.65
8	1174.18	1230.46
9	1175.62	1229.08
10	1293.37	1300.28
11	1293.77	1302.23
12	1294.03	1304.22
13	1294.83	1306.05
14	1296.03	1307.65
15	1297.41	1309.10
16	1297.75	1311.07
17	1298.59	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   599    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.5862    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1170.12	1240.06
2	1171.76	1239.19
3	1173.25	1237.85
4	1174.91	1236.74
5	1176.65	1235.76
6	1178.41	1234.82
7	1294.81	1300.43
8	1296.20	1301.86
9	1297.58	1303.31
10	1298.99	1304.72
11	1299.66	1306.61
12	1301.01	1308.08
13	1302.37	1309.55
14	1303.70	1311.05

15	1303.97	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   605    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.5471    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1156.18	1235.39
2	1156.98	1234.59
3	1158.87	1233.93
4	1160.37	1232.61
5	1162.05	1231.53
6	1163.53	1230.17
7	1164.94	1228.76
8	1166.45	1227.45
9	1167.99	1226.18
10	1169.48	1224.84
11	1171.48	1224.73
12	1172.95	1223.38
13	1174.74	1222.49
14	1176.53	1221.61
15	1178.19	1220.49
16	1179.70	1219.18
17	1181.70	1219.08
18	1183.20	1217.75
19	1293.71	1306.66
20	1293.89	1308.65
21	1295.20	1310.16
22	1296.10	1311.95
23	1296.14	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   613    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  42.3130    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1202.03	1258.02
2	1202.67	1257.83
3	1204.12	1256.45
4	1205.76	1255.31
5	1207.69	1254.77
6	1209.11	1253.36
7	1210.54	1251.96
8	1212.16	1250.79
9	1213.86	1249.73
10	1215.64	1248.83
11	1217.60	1248.42
12	1302.80	1292.32
13	1304.20	1293.75
14	1305.10	1295.53
15	1305.63	1297.46

16	1306.02	1299.43
17	1306.41	1301.39
18	1307.16	1303.24
19	1308.55	1304.68
20	1309.26	1306.55
21	1309.61	1308.52
22	1310.13	1310.45
23	1310.95	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   615    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.3497    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1176.67	1243.33
2	1177.57	1242.66
3	1179.50	1242.14
4	1181.20	1241.09
5	1182.61	1239.67
6	1184.27	1238.56
7	1185.70	1237.15
8	1187.57	1236.46
9	1189.02	1235.08
10	1190.44	1233.67
11	1192.31	1232.96
12	1193.99	1231.88
13	1195.66	1230.77
14	1197.43	1229.84
15	1199.20	1228.90
16	1200.62	1227.50
17	1202.30	1226.41
18	1203.72	1225.01
19	1293.64	1309.46
20	1294.33	1311.34
21	1294.99	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   619    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -69.9256    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.83	1232.28
2	1147.23	1232.14
3	1149.10	1231.43
4	1150.99	1230.79
5	1152.74	1229.82
6	1154.68	1229.34
7	1156.66	1229.06
8	1158.08	1227.66
9	1159.70	1226.48
10	1161.69	1226.29

11	1163.22	1225.00
12	1164.68	1223.63
13	1166.68	1223.59
14	1304.90	1309.21
15	1305.24	1311.18
16	1306.06	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   620    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -15.4277    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1186.71	1248.36
2	1186.87	1248.20
3	1188.52	1247.07
4	1190.30	1246.16
5	1191.79	1244.83
6	1193.79	1244.72
7	1195.23	1243.33
8	1196.67	1241.94
9	1198.66	1241.81
10	1200.40	1240.82
11	1202.29	1240.16
12	1203.71	1238.76
13	1205.13	1237.34
14	1207.03	1236.74
15	1208.69	1235.62
16	1210.11	1234.21
17	1211.63	1232.91
18	1213.54	1232.31
19	1215.52	1232.06
20	1295.97	1309.74
21	1297.22	1311.30
22	1297.77	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   621    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -44.3468    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 25 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1184.93	1247.47
2	1186.71	1247.11
3	1188.12	1245.70
4	1189.67	1244.43
5	1191.10	1243.03
6	1192.68	1241.81
7	1194.12	1240.43
8	1195.55	1239.03
9	1197.54	1238.80
10	1199.54	1238.70
11	1201.23	1237.64

12	1203.08	1236.87
13	1204.67	1235.67
14	1206.29	1234.49
15	1207.86	1233.25
16	1209.65	1232.36
17	1294.56	1300.12
18	1295.74	1301.73
19	1297.12	1303.18
20	1298.46	1304.66
21	1299.02	1306.58
22	1299.83	1308.41
23	1300.68	1310.22
24	1302.00	1311.73
25	1302.01	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   626    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.7429    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1201.01	1257.34
2	1201.05	1257.30
3	1202.95	1256.68
4	1204.39	1255.28
5	1205.82	1253.89
6	1207.37	1252.63
7	1296.99	1295.29
8	1297.65	1297.18
9	1299.05	1298.60
10	1299.14	1300.60
11	1300.55	1302.01
12	1301.45	1303.80
13	1302.86	1305.21
14	1304.17	1306.73
15	1305.44	1308.27
16	1305.80	1310.24
17	1306.94	1311.88
18	1307.01	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   627    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  11.8692    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1174.89	1242.44
2	1176.26	1241.67
3	1177.72	1240.31
4	1179.43	1239.26
5	1181.09	1238.15
6	1301.98	1306.81
7	1303.01	1308.52

8	1303.41	1310.48
9	1304.82	1311.90
10	1304.87	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   630    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  32.0023    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1155.74	1235.25
2	1156.54	1234.46
3	1158.19	1233.33
4	1159.94	1232.37
5	1161.67	1231.37
6	1163.21	1230.10
7	1165.04	1229.27
8	1166.48	1227.89
9	1167.95	1226.54
10	1290.83	1292.97
11	1292.15	1294.47
12	1293.26	1296.14
13	1294.63	1297.60
14	1295.58	1299.36
15	1296.15	1301.27
16	1297.01	1303.08
17	1297.17	1305.07
18	1298.53	1306.54
19	1298.87	1308.51
20	1300.25	1309.96
21	1301.64	1311.40
22	1301.85	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   652    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.2510    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1197.56	1255.04
2	1198.17	1254.44
3	1199.59	1253.04
4	1201.39	1252.17
5	1203.07	1251.08
6	1204.56	1249.75
7	1206.12	1248.50
8	1207.54	1247.09
9	1209.17	1245.93
10	1210.82	1244.80
11	1212.79	1244.47
12	1297.32	1295.78
13	1298.10	1297.62
14	1298.61	1299.55

15	1299.98	1301.01
16	1301.22	1302.58
17	1301.78	1304.50
18	1302.60	1306.32
19	1304.00	1307.75
20	1304.23	1309.73
21	1304.44	1311.72
22	1304.57	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   654    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.1890    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1182.38	1246.19
2	1183.00	1245.60
3	1184.59	1244.39
4	1186.23	1243.24
5	1188.21	1243.00
6	1189.67	1241.63
7	1302.76	1301.96
8	1302.84	1303.96
9	1303.17	1305.93
10	1303.69	1307.86
11	1304.81	1309.52
12	1305.93	1311.18
13	1306.68	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   658    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  14.4056    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1184.84	1247.42
2	1186.14	1246.12
3	1187.90	1245.17
4	1189.31	1243.76
5	1292.55	1295.14
6	1293.90	1296.62
7	1294.08	1298.61
8	1294.83	1300.47
9	1294.95	1302.46
10	1295.21	1304.45
11	1296.08	1306.24
12	1297.49	1307.66
13	1297.78	1309.64
14	1298.50	1311.51
15	1298.54	1312.00

```
************************************************************
```

```
**      Factor of safety calculation for surface #   669     **
**      failed to converge within FIFTY iterations           **
**                                                           **
**    The last calculated value of the FOS was   9.7501      **
**    This will be ignored for final summary of results      **
*************************************************************
```

The trial failure surface in question is
defined by the following 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1156.84	1235.61
2	1157.97	1235.01
3	1159.85	1234.34
4	1161.83	1234.04
5	1163.34	1232.73
6	1164.76	1231.32
7	1166.20	1229.93
8	1292.38	1295.18
9	1293.79	1296.59
10	1294.97	1298.21
11	1296.38	1299.63
12	1296.51	1301.63
13	1297.93	1303.04
14	1299.34	1304.46
15	1300.44	1306.13
16	1300.79	1308.09
17	1302.03	1309.66
18	1303.44	1311.08
19	1303.62	1312.00

```
*************************************************************
**      Factor of safety calculation for surface #   679     **
**      failed to converge within FIFTY iterations           **
**                                                           **
**    The last calculated value of the FOS was  25.5019      **
**    This will be ignored for final summary of results      **
*************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1195.09	1253.39
2	1196.72	1253.15
3	1198.13	1251.73
4	1200.11	1251.49
5	1201.68	1250.25
6	1203.68	1250.24
7	1205.14	1248.87
8	1206.62	1247.53
9	1208.10	1246.18
10	1209.53	1244.79
11	1211.32	1243.88
12	1212.89	1242.64
13	1301.09	1306.13
14	1301.97	1307.93
15	1303.35	1309.37
16	1304.72	1310.82
17	1305.77	1312.00

```
*************************************************************
**      Factor of safety calculation for surface #   680     **
**      failed to converge within FIFTY iterations           **
**                                                           **
```

```
**    The last calculated value of the FOS was  27.5046     **
**    This will be ignored for final summary of results     **
*************************************************************
```

The trial failure surface in question is
defined by the following 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1180.93	1245.46
2	1181.72	1244.87
3	1183.13	1243.46
4	1184.56	1242.06
5	1186.36	1241.20
6	1188.20	1240.40
7	1190.19	1240.25
8	1191.61	1238.84
9	1193.16	1237.57
10	1194.62	1236.20
11	1196.42	1235.35
12	1198.23	1234.49
13	1200.23	1234.40
14	1201.68	1233.02
15	1203.55	1232.31
16	1205.52	1231.95
17	1207.37	1231.21
18	1208.83	1229.84
19	1210.24	1228.42
20	1301.35	1307.93
21	1301.39	1309.93
22	1302.71	1311.43
23	1302.94	1312.00

```
*************************************************************
**     Factor of safety calculation for surface #   698    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -62.5642    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1167.07	1239.02
2	1167.71	1238.73
3	1169.15	1237.34
4	1170.56	1235.93
5	1171.98	1234.51
6	1173.88	1233.88
7	1291.75	1303.62
8	1292.67	1305.40
9	1292.88	1307.39
10	1294.17	1308.91
11	1295.43	1310.47
12	1296.50	1312.00

```
*************************************************************
**     Factor of safety calculation for surface #   718    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.7527    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1204.36	1259.57
2	1205.34	1258.59
3	1207.22	1257.93
4	1208.67	1256.55
5	1210.09	1255.14
6	1211.50	1253.73
7	1213.17	1252.62
8	1215.04	1251.91
9	1216.98	1251.42
10	1301.49	1304.37
11	1302.89	1305.79
12	1303.29	1307.75
13	1304.71	1309.17
14	1306.08	1310.62
15	1306.60	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   744     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was   7.5893     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1170.21	1240.10
2	1170.79	1239.87
3	1172.33	1238.60
4	1173.87	1237.32
5	1175.85	1237.07
6	1177.31	1235.70
7	1178.73	1234.30
8	1180.31	1233.06
9	1182.12	1232.22
10	1183.68	1230.97
11	1185.56	1230.30
12	1187.55	1230.03
13	1298.85	1305.64
14	1298.94	1307.64
15	1300.01	1309.33
16	1300.90	1311.12
17	1301.61	1312.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1183.08	1246.54
2	1183.76	1246.10
3	1185.50	1245.11
4	1187.27	1244.19
5	1188.74	1242.83
6	1339.81	1306.75
7	1340.65	1308.56
8	1342.05	1309.99
9	1342.82	1311.83
10	1342.97	1312.00

** Corrected JANBU FOS = 1.899 ** (Fo factor = 1.015)

Failure surface No. 2 specified by 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1193.79	1252.53
2	1194.45	1252.14
3	1196.18	1251.14
4	1197.69	1249.83
5	1199.24	1248.57
6	1200.69	1247.19
7	1354.30	1309.71
8	1355.39	1311.39
9	1355.79	1312.00

** Corrected JANBU FOS = 1.942 ** (Fo factor = 1.020)

Failure surface No. 3 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1188.65	1249.33
2	1189.36	1248.62
3	1191.36	1248.53
4	1193.35	1248.39
5	1195.10	1247.43
6	1196.63	1246.14
7	1198.21	1244.91
8	1347.49	1308.46
9	1348.71	1310.04
10	1350.11	1311.47
11	1350.63	1312.00

** Corrected JANBU FOS = 1.946 ** (Fo factor = 1.020)

Failure surface No. 4 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1151.68	1233.89
2	1151.88	1233.74
3	1153.29	1232.33
4	1155.29	1232.31
5	1157.13	1231.52
6	1158.73	1230.31
7	1160.21	1228.97
8	1161.64	1227.57
9	1163.57	1227.04
10	1347.42	1307.95
11	1348.53	1309.61
12	1349.57	1311.32
13	1349.92	1312.00

** Corrected JANBU FOS = 1.975 ** (Fo factor = 1.023)

Failure surface No. 5 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1187.48	1248.74
2	1187.54	1248.69
3	1189.18	1247.54
4	1191.18	1247.41
5	1192.73	1246.15
6	1194.72	1246.01
7	1353.14	1306.46
8	1354.41	1308.01
9	1355.66	1309.57
10	1356.66	1311.31
11	1356.77	1312.00

** Corrected JANBU FOS = 1.996 ** (Fo factor = 1.014)

Failure surface No. 6 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1186.51	1248.25
2	1187.63	1247.18
3	1189.26	1246.02
4	1190.95	1244.96
5	1192.58	1243.80
6	1194.03	1242.42
7	1195.66	1241.26
8	1353.95	1307.90
9	1355.21	1309.46
10	1356.10	1311.24
11	1356.70	1312.00

** Corrected JANBU FOS = 1.998 ** (Fo factor = 1.025)

Failure surface No. 7 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1191.22	1250.81
2	1192.53	1249.53
3	1193.95	1248.12
4	1195.89	1247.63
5	1197.50	1246.44
6	1346.43	1306.87
7	1347.38	1308.63
8	1348.74	1310.09
9	1350.08	1311.58
10	1350.50	1312.00

** Corrected JANBU FOS = 2.003 ** (Fo factor = 1.018)

Failure surface No. 8 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1170.26	1240.13
2	1171.45	1239.13
3	1173.44	1239.04
4	1175.04	1237.84

5	1176.54	1236.52
6	1178.54	1236.41
7	1180.42	1235.75
8	1349.49	1304.78
9	1350.20	1306.65
10	1351.55	1308.12
11	1352.18	1310.02
12	1353.59	1311.44
13	1353.86	1312.00

** Corrected JANBU FOS = 2.018 ** (Fo factor = 1.019)

Failure surface No. 9 specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1155.57	1235.19
2	1156.92	1234.28
3	1158.38	1232.91
4	1160.09	1231.87
5	1161.52	1230.48
6	1163.09	1229.24
7	1164.82	1228.23
8	1357.34	1305.74
9	1358.19	1307.55
10	1358.79	1309.46
11	1359.48	1311.34
12	1360.05	1312.00

** Corrected JANBU FOS = 2.026 ** (Fo factor = 1.021)

Failure surface No.10 specified by 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1143.24	1231.08
2	1144.96	1230.91
3	1146.70	1229.93
4	1148.15	1228.54
5	1149.56	1227.13
6	1151.27	1226.09
7	1153.15	1225.40
8	1154.86	1224.38
9	1156.76	1223.75
10	1158.76	1223.65
11	1160.50	1222.67
12	1357.19	1307.65
13	1358.18	1309.39
14	1358.80	1311.29
15	1359.21	1312.00

** Corrected JANBU FOS = 2.030 ** (Fo factor = 1.028)

```
*******************************************************************
**                                                               **
**  Out of the    750 surfaces generated and analyzed by XSTABL,  **
**       68 surfaces were found to have MISLEADING FOS values.   **
**                                                               **
*******************************************************************
```

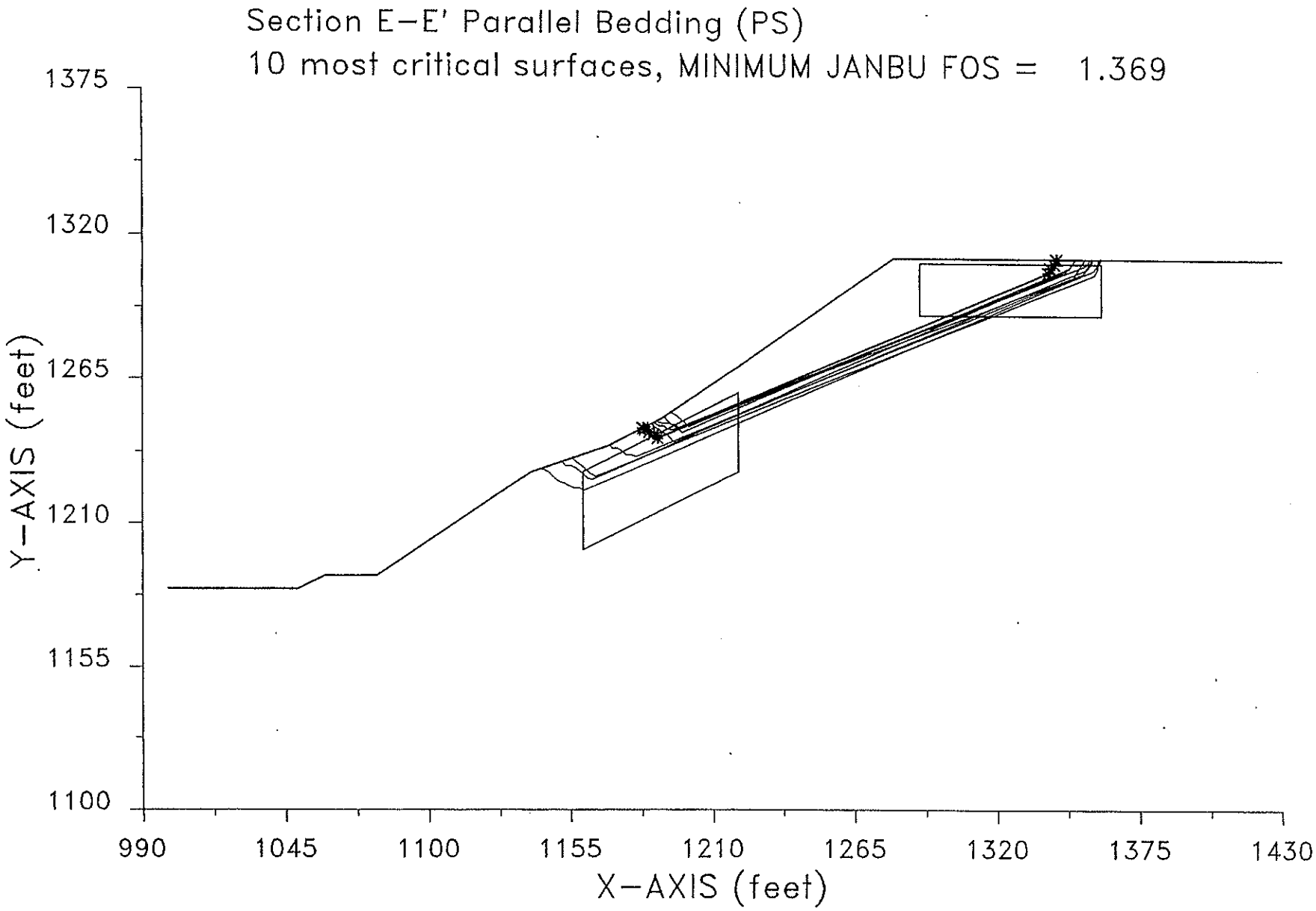
The following is a summary of the TEN most critical surfaces

Problem Description : Section E-E' Parallel Bedding (mid)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.899	1.015	1183.08	1342.97	2.187E+05
2.	1.942	1.020	1193.79	1355.79	2.349E+05
3.	1.946	1.020	1188.65	1350.63	2.482E+05
4.	1.975	1.023	1151.68	1349.92	3.049E+05
5.	1.996	1.014	1187.48	1356.77	2.466E+05
6.	1.998	1.025	1186.51	1356.70	2.844E+05
7.	2.003	1.018	1191.22	1350.50	2.372E+05
8.	2.018	1.019	1170.26	1353.86	2.985E+05
9.	2.026	1.021	1155.57	1360.05	3.275E+05
10.	2.030	1.028	1143.24	1359.21	3.758E+05

* * * END OF FILE * * *

SEC2-E1E 10-06-** 10:50



XSTABL File: SECE-E1E 10-06-** 9:17

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section E-E' Parallel Bedding (PS)

SEGMENT BOUNDARY COORDINATES
---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1185.0	1050.0	1185.0	1
2	1050.0	1185.0	1060.0	1190.0	1
3	1060.0	1190.0	1080.0	1190.0	1
4	1080.0	1190.0	1110.0	1210.0	1
5	1110.0	1210.0	1140.0	1230.0	1
6	1140.0	1230.0	1170.0	1240.0	1
7	1170.0	1240.0	1190.0	1250.0	1
8	1190.0	1250.0	1220.0	1270.0	1
9	1220.0	1270.0	1280.0	1312.0	1
10	1280.0	1312.0	1320.0	1312.0	1
11	1320.0	1312.0	1360.0	1312.0	1
12	1360.0	1312.0	1430.0	1312.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	f-value (degrees)
1	20.00	4000.0	28.00
2	24.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

750 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 2.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1160.0	1215.0	1220.0	1245.0	30.0
2	1290.0	1300.0	1360.0	1300.0	20.0

```
************************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
************************************************************************
```

```
-------------------------------------------------------------
USER SELECTED option to maintain strength greater than zero
-------------------------------------------------------------
```

```
*************************************************************
**     Factor of safety calculation for surface #   225    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -12.2576    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1197.73	1255.15
2	1198.84	1254.25
3	1200.40	1253.00

4	1201.88	1251.65
5	1203.33	1250.28
6	1204.87	1249.00
7	1206.64	1248.07
8	1208.55	1247.48
9	1291.21	1298.86
10	1291.90	1300.74
11	1292.10	1302.73
12	1293.49	1304.17
13	1294.58	1305.85
14	1294.95	1307.81
15	1294.98	1309.81
16	1296.19	1311.41
17	1296.52	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   228    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  22.1799    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1156.71	1235.57
2	1157.83	1234.47
3	1159.82	1234.28
4	1161.76	1233.79
5	1163.18	1232.38
6	1165.07	1231.72
7	1292.07	1306.48
8	1292.16	1308.48
9	1292.53	1310.45
10	1293.94	1311.86
11	1294.01	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   269    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  15.4409    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1178.81	1244.40
2	1180.02	1243.45
3	1181.61	1242.24
4	1183.04	1240.84
5	1184.66	1239.67
6	1186.11	1238.29
7	1291.86	1307.88
8	1291.92	1309.88
9	1292.21	1311.86
10	1292.27	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   300    **
```

```
**      failed to converge within FIFTY iterations          **
**                                                          **
**    The last calculated value of the FOS was  12.2963     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1162.03	1237.34
2	1162.04	1237.34
3	1163.97	1236.84
4	1165.91	1236.35
5	1167.35	1234.95
6	1168.99	1233.82
7	1170.64	1232.69
8	1291.67	1301.63
9	1292.21	1303.56
10	1293.40	1305.16
11	1294.31	1306.94
12	1294.86	1308.87
13	1296.24	1310.32
14	1296.63	1312.00

```
************************************************************
**      Factor of safety calculation for surface #   317  **
**      failed to converge within FIFTY iterations          **
**                                                          **
**    The last calculated value of the FOS was   8.7149     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1207.91	1261.94
2	1208.42	1261.75
3	1210.05	1260.60
4	1211.94	1259.94
5	1213.36	1258.53
6	1215.12	1257.57
7	1216.80	1256.50
8	1290.79	1304.81
9	1292.20	1306.22
10	1293.36	1307.86
11	1294.72	1309.32
12	1296.12	1310.75
13	1296.16	1312.00

```
************************************************************
**      Factor of safety calculation for surface #   538  **
**      failed to converge within FIFTY iterations          **
**                                                          **
**    The last calculated value of the FOS was  13.2341     **
**    This will be ignored for final summary of results     **
************************************************************
```

The trial failure surface in question is
defined by the following 14 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1150.94	1233.65
2	1151.29	1233.40
3	1152.71	1231.99
4	1154.71	1231.90
5	1156.35	1230.77
6	1158.19	1229.97
7	1159.88	1228.90
8	1161.77	1228.24
9	1163.76	1228.14
10	1165.52	1227.18
11	1290.71	1308.32
12	1291.27	1310.24
13	1292.46	1311.85
14	1292.54	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   552    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -10.6226    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1169.25	1239.75
2	1169.58	1239.43
3	1171.07	1238.10
4	1172.49	1236.68
5	1174.47	1236.44
6	1176.05	1235.22
7	1177.93	1234.52
8	1179.34	1233.11
9	1180.79	1231.73
10	1290.55	1309.46
11	1291.35	1311.29
12	1292.03	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   658    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.3536    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1184.84	1247.42
2	1186.14	1246.12
3	1187.90	1245.17
4	1189.31	1243.76
5	1292.55	1295.14
6	1293.90	1296.62
7	1294.08	1298.61
8	1294.83	1300.47
9	1294.95	1302.46
10	1295.21	1304.45
11	1296.08	1306.24
12	1297.49	1307.66
13	1297.78	1309.64

14	1298.50	1311.51
15	1298.54	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   698    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was -31.4009    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1167.07	1239.02
2	1167.71	1238.73
3	1169.15	1237.34
4	1170.56	1235.93
5	1171.98	1234.51
6	1173.88	1233.88
7	1291.75	1303.62
8	1292.67	1305.40
9	1292.88	1307.39
10	1294.17	1308.91
11	1295.43	1310.47
12	1296.50	1312.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1183.08	1246.54
2	1183.76	1246.10
3	1185.50	1245.11
4	1187.27	1244.19
5	1188.74	1242.83
6	1339.81	1306.75
7	1340.65	1308.56
8	1342.05	1309.99
9	1342.82	1311.83
10	1342.97	1312.00

** Corrected JANBU FOS = 1.369 ** (Fo factor = 1.015)

Failure surface No. 2 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1187.48	1248.74
2	1187.54	1248.69
3	1189.18	1247.54
4	1191.18	1247.41
5	1192.73	1246.15

6	1194.72	1246.01
7	1353.14	1306.46
8	1354.41	1308.01
9	1355.66	1309.57
10	1356.66	1311.31
11	1356.77	1312.00

** Corrected JANBU FOS = 1.390 ** (Fo factor = 1.014)

Failure surface No. 3 specified by 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1193.79	1252.53
2	1194.45	1252.14
3	1196.18	1251.14
4	1197.69	1249.83
5	1199.24	1248.57
6	1200.69	1247.19
7	1354.30	1309.71
8	1355.39	1311.39
9	1355.79	1312.00

** Corrected JANBU FOS = 1.408 ** (Fo factor = 1.020)

Failure surface No. 4 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1188.65	1249.33
2	1189.36	1248.62
3	1191.36	1248.53
4	1193.35	1248.39
5	1195.10	1247.43
6	1196.63	1246.14
7	1198.21	1244.91
8	1347.49	1308.46
9	1348.71	1310.04
10	1350.11	1311.47
11	1350.63	1312.00

** Corrected JANBU FOS = 1.416 ** (Fo factor = 1.020)

Failure surface No. 5 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1170.26	1240.13
2	1171.45	1239.13
3	1173.44	1239.04
4	1175.04	1237.84
5	1176.54	1236.52
6	1178.54	1236.41
7	1180.42	1235.75
8	1349.49	1304.78
9	1350.20	1306.65
10	1351.55	1308.12
11	1352.18	1310.02
12	1353.59	1311.44
13	1353.86	1312.00

** Corrected JANBU FOS = 1.436 ** (Fo factor = 1.019)

Failure surface No. 6 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1191.22	1250.81
2	1192.53	1249.53
3	1193.95	1248.12
4	1195.89	1247.63
5	1197.50	1246.44
6	1346.43	1306.87
7	1347.38	1308.63
8	1348.74	1310.09
9	1350.08	1311.58
10	1350.50	1312.00

** Corrected JANBU FOS = 1.444 ** (Fo factor = 1.018)

Failure surface No. 7 specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1155.57	1235.19
2	1156.92	1234.28
3	1158.38	1232.91
4	1160.09	1231.87
5	1161.52	1230.48
6	1163.09	1229.24
7	1164.82	1228.23
8	1357.34	1305.74
9	1358.19	1307.55
10	1358.79	1309.46
11	1359.48	1311.34
12	1360.05	1312.00

** Corrected JANBU FOS = 1.448 ** (Fo factor = 1.021)

Failure surface No. 8 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1186.51	1248.25
2	1187.63	1247.18
3	1189.26	1246.02
4	1190.95	1244.96
5	1192.58	1243.80
6	1194.03	1242.42
7	1195.66	1241.26
8	1353.95	1307.90
9	1355.21	1309.46
10	1356.10	1311.24
11	1356.70	1312.00

** Corrected JANBU FOS = 1.456 ** (Fo factor = 1.025)

Failure surface No. 9 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1151.68	1233.89
2	1151.88	1233.74
3	1153.29	1232.33
4	1155.29	1232.31
5	1157.13	1231.52
6	1158.73	1230.31
7	1160.21	1228.97

8	1161.64	1227.57
9	1163.57	1227.04
10	1347.42	1307.95
11	1348.53	1309.61
12	1349.57	1311.32
13	1349.92	1312.00

** Corrected JANBU FOS = 1.457 ** (Fo factor = 1.023)

Failure surface No.10 specified by 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1143.24	1231.08
2	1144.96	1230.91
3	1146.70	1229.93
4	1148.15	1228.54
5	1149.56	1227.13
6	1151.27	1226.09
7	1153.15	1225.40
8	1154.86	1224.38
9	1156.76	1223.75
10	1158.76	1223.65
11	1160.50	1222.67
12	1357.19	1307.65
13	1358.18	1309.39
14	1358.80	1311.29
15	1359.21	1312.00

** Corrected JANBU FOS = 1.474 ** (Fo factor = 1.028)

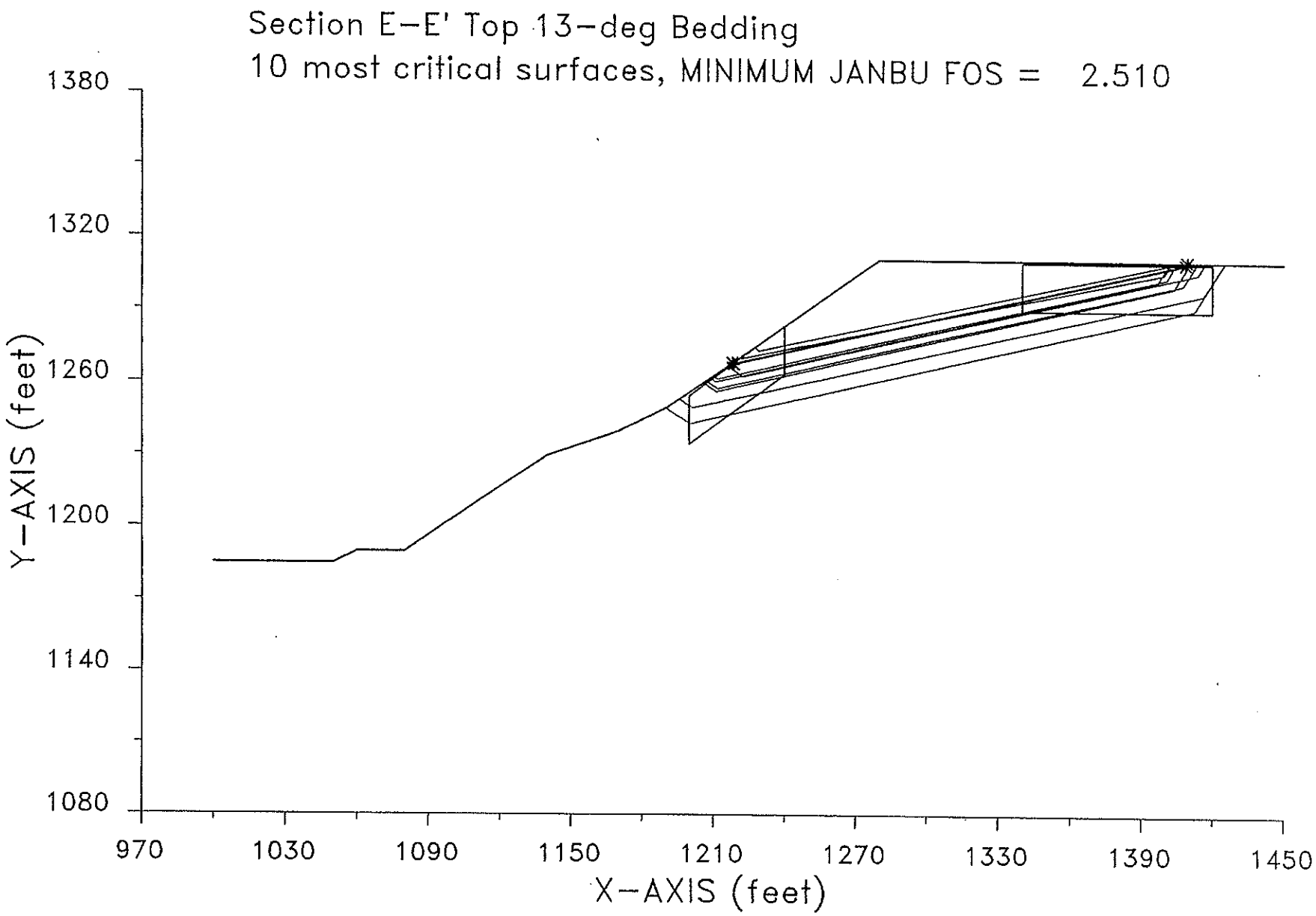
```
*******************************************************************
**                                                               **
**  Out of the    750 surfaces generated and analyzed by XSTABL,  **
**      9 surfaces were found to have MISLEADING FOS values.     **
**                                                               **
*******************************************************************
```

The following is a summary of the TEN most critical surfaces

Problem Description : Section E-E' Parallel Bedding (PS)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.369	1.015	1183.08	1342.97	2.148E+05
2.	1.390	1.014	1187.48	1356.77	2.410E+05
3.	1.408	1.020	1193.79	1355.79	2.344E+05
4.	1.416	1.020	1188.65	1350.63	2.458E+05
5.	1.436	1.019	1170.26	1353.86	2.932E+05
6.	1.444	1.018	1191.22	1350.50	2.349E+05
7.	1.448	1.021	1155.57	1360.05	3.248E+05
8.	1.456	1.025	1186.51	1356.70	2.838E+05
9.	1.457	1.023	1151.68	1349.92	3.040E+05
10.	1.474	1.028	1143.24	1359.21	3.737E+05

* * * END OF FILE * * *


Section E-E' Top 13-deg Bedding
10 most critical surfaces, MINIMUM JANBU FOS = 2.510
1380
1320
1260
1200
1140
1080
Y-AXIS (feet)
970
1030
1090
1150
1210
1270
1330
1390
1450
X-AXIS (feet)

XSTABL File: SECTEET2 10-08-** 14:22

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
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*****************************************
```

Problem Description : Section E-E' Top 13-deg Bedding

SEGMENT BOUNDARY COORDINATES
---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1185.0	1050.0	1185.0	1
2	1050.0	1185.0	1060.0	1190.0	1
3	1060.0	1190.0	1080.0	1190.0	1
4	1080.0	1190.0	1110.0	1210.0	1
5	1110.0	1210.0	1140.0	1230.0	1
6	1140.0	1230.0	1170.0	1240.0	1
7	1170.0	1240.0	1190.0	1250.0	1
8	1190.0	1250.0	1220.0	1270.0	1
9	1220.0	1270.0	1280.0	1312.0	1
10	1280.0	1312.0	1320.0	1312.0	1
11	1320.0	1312.0	1360.0	1312.0	1
12	1360.0	1312.0	1450.0	1312.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	7.00	4000.0	28.00
2	13.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 4.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1200.0	1245.0	1240.0	1274.0	20.0
2	1340.0	1301.0	1420.0	1301.0	20.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

```
************************************************************
**     Factor of safety calculation for surface #    18    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  14.9519    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1234.38	1280.07
2	1236.81	1278.49
3	1340.99	1291.11
4	1343.17	1294.46
5	1345.35	1297.82
6	1347.53	1301.17
7	1349.71	1304.53
8	1351.89	1307.88
9	1354.07	1311.24
10	1354.56	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    67    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  23.1368    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1239.54	1283.68
2	1239.80	1283.51
3	1406.68	1299.99
4	1408.86	1303.35
5	1411.04	1306.70
6	1413.22	1310.06
7	1414.48	1312.00

```
************************************************************
**     Factor of safety calculation for surface #    86    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.2237    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1235.67	1280.97
2	1238.96	1278.83
3	1344.70	1291.96
4	1346.88	1295.32
5	1349.06	1298.67
6	1351.24	1302.03
7	1353.42	1305.38
8	1355.60	1308.74
9	1357.72	1312.00

```
************************************************************
**     Factor of safety calculation for surface #   146    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  20.5712    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1237.67	1282.37
2	1239.81	1280.99
3	1408.63	1295.72
4	1410.81	1299.08
5	1412.99	1302.43
6	1415.17	1305.79
7	1417.34	1309.14
8	1419.20	1312.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1218.08	1268.72
2	1218.78	1268.26
3	1408.65	1310.99
4	1409.31	1312.00

** Corrected JANBU FOS = 2.510 ** (Fo factor = 1.002)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1227.32	1275.13
2	1229.32	1273.83
3	1402.03	1310.87
4	1402.76	1312.00

** Corrected JANBU FOS = 2.855 ** (Fo factor = 1.005)

Failure surface No. 3 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1209.97	1263.31
2	1211.81	1262.12
3	1400.49	1304.67
4	1402.67	1308.02
5	1404.85	1311.38
6	1405.25	1312.00

** Corrected JANBU FOS = 2.876 ** (Fo factor = 1.014)

Failure surface No. 4 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1208.78	1262.52
2	1211.16	1260.98
3	1396.51	1303.34
4	1398.69	1306.70
5	1400.87	1310.05
6	1402.14	1312.00

** Corrected JANBU FOS = 2.922 ** (Fo factor = 1.017)

Failure surface No. 5 specified by 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1195.66	1253.77
2	1198.07	1252.21
3	1201.42	1250.04
4	1416.00	1298.08
5	1418.18	1301.44
6	1420.36	1304.79
7	1422.54	1308.15
8	1424.72	1311.50
9	1425.04	1312.00

** Corrected JANBU FOS = 3.010 ** (Fo factor = 1.022)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1216.09	1267.39
2	1219.23	1265.35
3	1222.59	1263.17
4	1413.74	1306.94
5	1415.92	1310.30
6	1417.03	1312.00

** Corrected JANBU FOS = 3.037 ** (Fo factor = 1.013)

Failure surface No. 7 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1207.00	1261.33
2	1208.60	1260.30
3	1211.95	1258.12
4	1407.43	1302.24
5	1409.61	1305.59
6	1411.79	1308.95
7	1413.77	1312.00

** Corrected JANBU FOS = 3.040 ** (Fo factor = 1.018)

Failure surface No. 8 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1205.81	1260.54

2	1207.94	1259.16
3	1211.30	1256.98
4	1403.46	1300.91
5	1405.64	1304.26
6	1407.81	1307.62
7	1409.99	1310.97
8	1410.66	1312.00

** Corrected JANBU FOS = 3.067 ** (Fo factor = 1.020)

Failure surface No. 9 specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1190.08	1250.05
2	1190.19	1249.98
3	1193.55	1247.80
4	1196.90	1245.62
5	1200.26	1243.45
6	1412.35	1292.00
7	1414.53	1295.36
8	1416.70	1298.71
9	1418.88	1302.07
10	1421.06	1305.42
11	1423.24	1308.78
12	1425.33	1312.00

** Corrected JANBU FOS = 3.126 ** (Fo factor = 1.030)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1221.37	1270.96
2	1222.18	1270.43
3	1399.45	1306.69
4	1401.63	1310.04
5	1402.90	1312.00

** Corrected JANBU FOS = 3.131 ** (Fo factor = 1.011)

```
*******************************************************************
**                                                               **
**  Out of the    500 surfaces generated and analyzed by XSTABL,  **
**        4 surfaces were found to have MISLEADING FOS values.   **
**                                                               **
*******************************************************************
```

The following is a summary of the TEN most critical surfaces

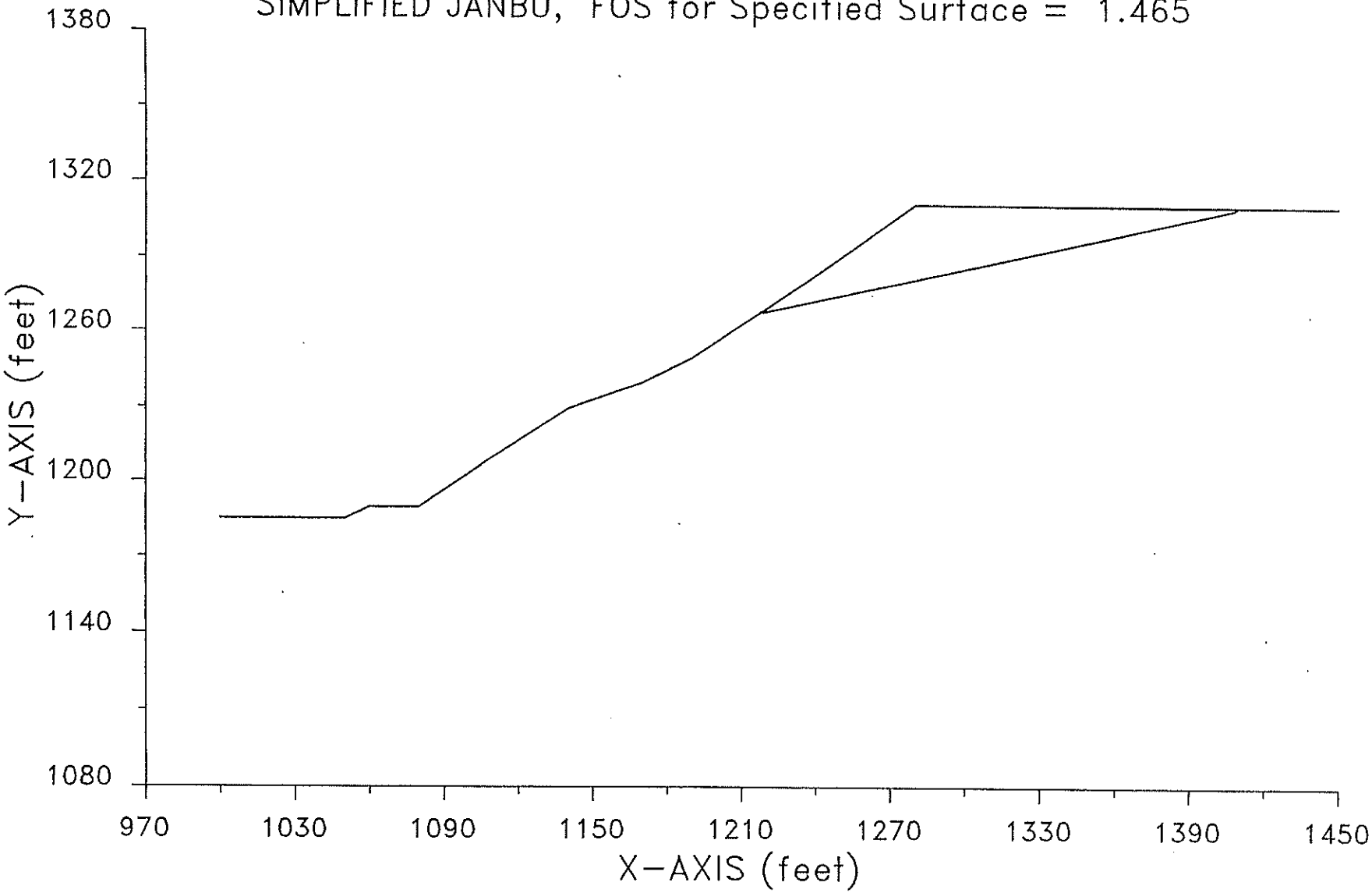
Problem Description : Section E-E' Top 13-deg Bedding

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	2.510	1.002	1218.08	1409.31	1.903E+05
2.	2.855	1.005	1227.32	1402.76	1.729E+05
3.	2.876	1.014	1209.97	1405.25	2.664E+05
4.	2.922	1.017	1208.78	1402.14	2.801E+05
5.	3.010	1.022	1195.66	1425.04	4.396E+05
6.	3.037	1.013	1216.09	1417.03	2.975E+05
7.	3.040	1.018	1207.00	1413.77	3.403E+05
8.	3.067	1.020	1205.81	1410.66	3.543E+05
9.	3.126	1.030	1190.08	1425.33	5.596E+05
10.	3.131	1.011	1221.37	1402.90	2.098E+05

* * * END OF FILE * * *

SLOPEETP 10-08-** 14:37

Section E-E' Top 13-deg Bedding
SIMPLIFIED JANBU, FOS for Specified Surface = 1.465



XSTABL File: SECTEETP 10-08-** 14:37

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 95       *
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*                                       *
*  Ver. 5.105                95 Ä 1437  *
*****************************************
```

Problem Description : Section E-E' Top 13-deg Bedding

SEGMENT BOUNDARY COORDINATES
---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1185.0	1050.0	1185.0	1
2	1050.0	1185.0	1060.0	1190.0	1
3	1060.0	1190.0	1080.0	1190.0	1
4	1080.0	1190.0	1110.0	1210.0	1
5	1110.0	1210.0	1140.0	1230.0	1
6	1140.0	1230.0	1170.0	1240.0	1
7	1170.0	1240.0	1190.0	1250.0	1
8	1190.0	1250.0	1220.0	1270.0	1
9	1220.0	1270.0	1280.0	1312.0	1
10	1280.0	1312.0	1320.0	1312.0	1
11	1320.0	1312.0	1360.0	1312.0	1
12	1360.0	1312.0	1450.0	1312.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	7.00	4000.0	28.00
2	13.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 4 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1218.08	1268.72
2	1218.78	1268.26
3	1408.65	1310.99
4	1409.31	1312.00

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1218.43	1268.49	.46	.70	-33.31	33.69	39.
2	1219.39	1268.40	1.20	1.22	12.68	33.69	175.
3	1250.00	1275.29	15.71	60.00	12.68	34.99	113141.
4	1300.00	1286.54	25.46	40.00	12.68	.00	122215.
5	1340.00	1295.54	16.46	40.00	12.68	.00	79006.
6	1384.32	1305.52	6.48	48.65	12.68	.00	37856.
7	1408.98	1311.49	.51	.66	56.84	.00	40.

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	2434.9	4000.0	28.00	0.	0.	0.	.00
2	112.7	150.0	24.00	0.	0.	0.	.00
3	1743.1	150.0	24.00	0.	0.	0.	.00
4	2837.8	150.0	24.00	0.	0.	0.	.00
5	1826.9	150.0	24.00	0.	0.	0.	.00
6	706.6	150.0	24.00	0.	0.	0.	.00
7	-2650.8	4000.0	28.00	0.	0.	0.	.00

For the single specified surface,
Corrected JANBU factor of safety = 1.465 (Fo factor = 1.002)

Resisting Shear Strength = 185.39E+03 lb

RESPONSE TO COUNTY REVIEW COMMENTS
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

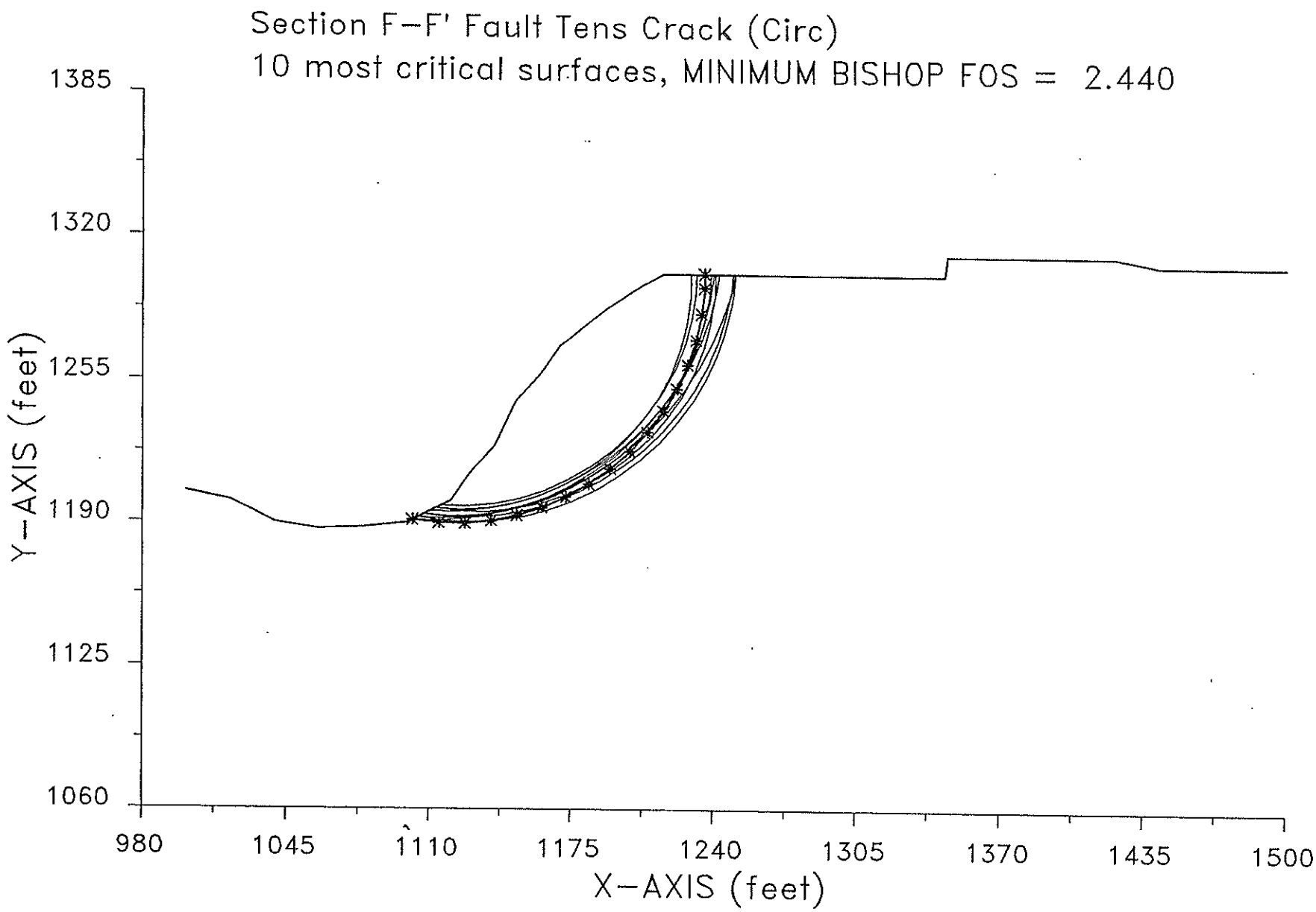
Project No. 58-9194-02

VOLUME II

Prepared by:

KLEINFELDER, INC.
1370 Valley Vista Drive, Suite 150
Diamond Bar, CA 91765

October 9, 2001


Section F-F' Fault Tens Crack (Circ)
10 most critical surfaces, MINIMUM BISHOP FOS = 2.440
1385
1320
1255
1190
1125
1060
Y-AXIS (feet)
980
1045
1110
1175
1240
1305
1370
1435
1500
X-AXIS (feet)

XSTABL File: SECTF-F1 10-05-** 10:12

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section F-F' Fault Tens Crack (Circ)

SEGMENT BOUNDARY COORDINATES
---

21 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1204.0	1020.0	1200.0	1
2	1020.0	1200.0	1040.0	1190.0	1
3	1040.0	1190.0	1060.0	1187.0	1
4	1060.0	1187.0	1080.0	1188.0	1
5	1080.0	1188.0	1100.0	1190.0	1
6	1100.0	1190.0	1120.0	1200.0	1
7	1120.0	1200.0	1130.0	1214.0	1
8	1130.0	1214.0	1140.0	1225.0	1
9	1140.0	1225.0	1150.0	1246.0	1
10	1150.0	1246.0	1160.0	1257.0	1
11	1160.0	1257.0	1170.0	1271.0	1
12	1170.0	1271.0	1180.0	1279.0	1
13	1180.0	1279.0	1190.0	1287.0	1
14	1190.0	1287.0	1200.0	1294.0	1
15	1200.0	1294.0	1210.0	1300.0	1
16	1210.0	1300.0	1217.0	1304.0	1
17	1217.0	1304.0	1345.0	1304.0	1
18	1345.0	1304.0	1346.0	1313.0	1
19	1346.0	1313.0	1422.0	1313.0	1
20	1422.0	1313.0	1442.0	1309.0	1
21	1442.0	1309.0	1500.0	1309.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS

specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-40.00	4000.0	28.00
2	.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1100.0 ft
and x = 1150.0 ft

Each surface terminates between x = 1160.0 ft
and x = 1250.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

12.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

```
*************************************************************
**     Factor of safety calculation for surface #   322    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was     .0025   **
**    This will be ignored for final summary of results   **
*************************************************************

Circular surface (FOS=   .0025) is defined by: xcenter =    848.12
ycenter =   1468.87   Init. Pt. =   1142.11   Seg. Length =  12.00
-------------------------------------------------------------------

*************************************************************
**     Factor of safety calculation for surface #   333    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was     .0027   **
**    This will be ignored for final summary of results   **
*************************************************************

Circular surface (FOS=   .0027) is defined by: xcenter =   -174.34
ycenter =   2229.01   Init. Pt. =   1142.11   Seg. Length =  12.00
-------------------------------------------------------------------

*************************************************************
**     Factor of safety calculation for surface #   344    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was     .0038   **
**    This will be ignored for final summary of results   **
*************************************************************

Circular surface (FOS=   .0038) is defined by: xcenter =  -5211.41
ycenter =   6150.25   Init. Pt. =   1144.74   Seg. Length =  12.00
-------------------------------------------------------------------

*************************************************************
**     Factor of safety calculation for surface #   363    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was     .0046   **
**    This will be ignored for final summary of results   **
*************************************************************

Circular surface (FOS=   .0046) is defined by: xcenter =    993.28
ycenter =   1377.56   Init. Pt. =   1147.37   Seg. Length =  12.00
-------------------------------------------------------------------

*************************************************************
**     Factor of safety calculation for surface #   376    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was     .0043   **
**    This will be ignored for final summary of results   **
*************************************************************

Circular surface (FOS=   .0043) is defined by: xcenter =    329.78
ycenter =   1892.03   Init. Pt. =   1147.37   Seg. Length =  12.00
-------------------------------------------------------------------

*************************************************************
```

```
**     Factor of safety calculation for surface #   381     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was     .0048    **
**    This will be ignored for final summary of results     **
*************************************************************
```

Circular surface (FOS= .0048) is defined by: xcenter = 1145.59
ycenter = 1260.68 Init. Pt. = 1150.00 Seg. Length = 12.00

```
**     Factor of safety calculation for surface #   386     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was     .0036    **
**    This will be ignored for final summary of results     **
*************************************************************
```

Circular surface (FOS= .0036) is defined by: xcenter = 1143.13
ycenter = 1263.28 Init. Pt. = 1150.00 Seg. Length = 12.00

```
**     Factor of safety calculation for surface #   387     **
**     failed to converge within FIFTY iterations           **
**                                                          **
**    The last calculated value of the FOS was  22.0045     **
**    This will be ignored for final summary of results     **
*************************************************************
```

Circular surface (FOS= 22.0045) is defined by: xcenter = 557.11
ycenter = 1899.59 Init. Pt. = 1150.00 Seg. Length = 12.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1102.63	1191.32
2	1114.56	1189.98
3	1126.56	1189.89
4	1138.50	1191.06
5	1150.25	1193.47
6	1161.69	1197.10
7	1172.69	1201.90
8	1183.12	1207.83
9	1192.88	1214.81
10	1201.85	1222.78
11	1209.94	1231.64
12	1217.06	1241.30
13	1223.13	1251.66
14	1228.09	1262.58
15	1231.87	1273.97
16	1234.45	1285.69
17	1235.78	1297.62

18 1235.82 1304.00

**** Simplified BISHOP FOS = 2.440 ****

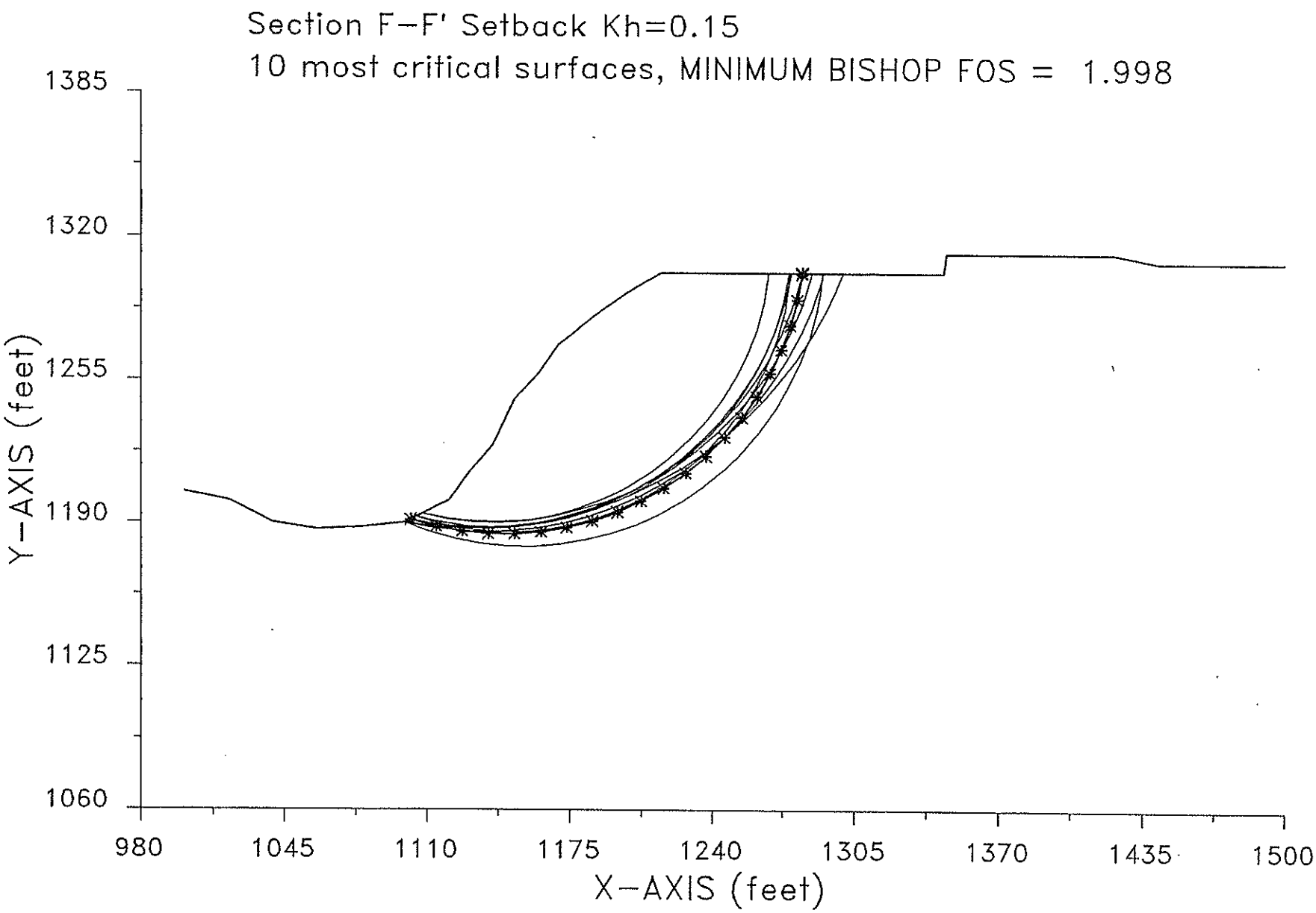
```
*****************************************************************
**                                                             **
**  Out of the    400 surfaces generated and analyzed by XSTABL,  **
**        8 surfaces were found to have MISLEADING FOS values.   **
**                                                             **
*****************************************************************
```

The following is a summary of the TEN most critical surfaces

Problem Description : Section F-F' Fault Tens Crack (Circc)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	2.440	1121.38	1304.25	114.48	1102.63	1235.82	1.127E+08
2.	2.468	1131.79	1303.68	108.70	1113.16	1240.80	1.047E+08
3.	2.475	1126.53	1315.64	123.11	1107.89	1248.82	1.305E+08
4.	2.484	1128.18	1312.69	122.22	1105.26	1249.93	1.354E+08
5.	2.589	1110.34	1334.04	142.93	1102.63	1249.99	1.576E+08
6.	2.596	1115.71	1317.14	124.95	1105.26	1239.91	1.279E+08
7.	2.597	1117.53	1321.28	126.21	1110.53	1242.42	1.260E+08
8.	2.599	1121.93	1310.20	117.10	1107.89	1238.85	1.190E+08
9.	2.600	1124.14	1301.44	105.43	1113.16	1229.48	9.432E+07
10.	2.603	1123.99	1305.78	108.20	1115.79	1232.04	9.646E+07

* * * END OF FILE * * *


Section F-F' Setback Kh=0.15
10 most critical surfaces, MINIMUM BISHOP FOS = 1.998
1385
1320
1255
1190
1125
1060
Y-AXIS (feet)
980
1045
1110
1175
1240
1305
1370
1435
1500
X-AXIS (feet)

XSTABL File: SECTF-F3 10-05-** 10:13

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section F-F' Setback Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

21 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1204.0	1020.0	1200.0	1
2	1020.0	1200.0	1040.0	1190.0	1
3	1040.0	1190.0	1060.0	1187.0	1
4	1060.0	1187.0	1080.0	1188.0	1
5	1080.0	1188.0	1100.0	1190.0	1
6	1100.0	1190.0	1120.0	1200.0	1
7	1120.0	1200.0	1130.0	1214.0	1
8	1130.0	1214.0	1140.0	1225.0	1
9	1140.0	1225.0	1150.0	1246.0	1
10	1150.0	1246.0	1160.0	1257.0	1
11	1160.0	1257.0	1170.0	1271.0	1
12	1170.0	1271.0	1180.0	1279.0	1
13	1180.0	1279.0	1190.0	1287.0	1
14	1190.0	1287.0	1200.0	1294.0	1
15	1200.0	1294.0	1210.0	1300.0	1
16	1210.0	1300.0	1217.0	1304.0	1
17	1217.0	1304.0	1345.0	1304.0	1
18	1345.0	1304.0	1346.0	1313.0	1
19	1346.0	1313.0	1422.0	1313.0	1
20	1422.0	1313.0	1442.0	1309.0	1
21	1442.0	1309.0	1500.0	1309.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS

specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ĩ-value (degrees)
1	-40.00	4000.0	28.00
2	.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1100.0 ft
and x = 1150.0 ft

Each surface terminates between x = 1265.0 ft
and x = 1300.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

12.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter. In such

cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1102.63	1191.32
2	1114.20	1188.13
3	1126.01	1185.97
4	1137.95	1184.84
5	1149.95	1184.76
6	1161.91	1185.73
7	1173.74	1187.73
8	1185.36	1190.76
9	1196.66	1194.78
10	1207.57	1199.78
11	1218.01	1205.71
12	1227.88	1212.52
13	1237.13	1220.17
14	1245.67	1228.60
15	1253.45	1237.73
16	1260.41	1247.52
17	1266.48	1257.86
18	1271.63	1268.70
19	1275.81	1279.95
20	1279.00	1291.52
21	1281.17	1303.32
22	1281.24	1304.00

**** Simplified BISHOP FOS = 1.998 ****

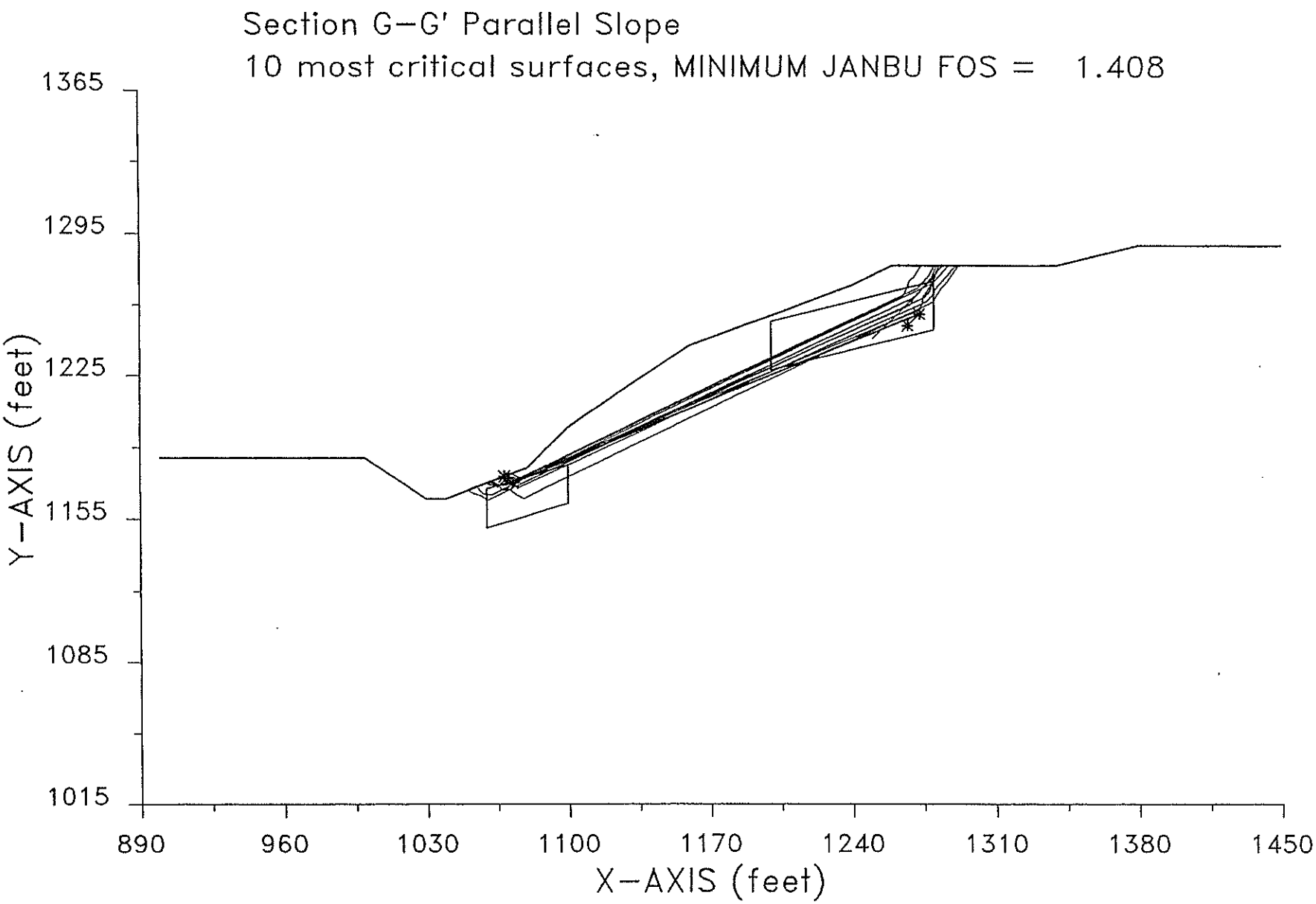
The following is a summary of the TEN most critical surfaces

Problem Description : Section F-F' Setback Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.998	1144.88	1322.26	137.59	1102.63	1281.24	1.852E+08
2.	2.007	1147.15	1314.87	129.21	1105.26	1275.72	1.663E+08
3.	2.014	1134.75	1338.16	150.32	1102.63	1280.99	1.985E+08
4.	2.017	1136.07	1330.01	142.66	1102.63	1276.25	1.849E+08
5.	2.022	1139.28	1317.21	127.20	1107.89	1265.67	1.492E+08
6.	2.023	1153.78	1316.32	137.29	1100.00	1290.44	2.040E+08
7.	2.025	1130.31	1368.86	181.42	1100.00	1299.69	2.653E+08
8.	2.037	1136.50	1345.91	160.12	1100.00	1290.87	2.308E+08
9.	2.046	1140.73	1324.00	136.07	1105.26	1275.26	1.755E+08
10.	2.047	1140.04	1340.48	150.02	1107.89	1285.52	1.983E+08

* * * END OF FILE * * *

SEC G-G 10-09-** 12:22



XSTABL File: SECTG-G 10-09-** 12:22

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section G-G' Parallel Slope

SEGMENT BOUNDARY COORDINATES
---

12 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	900.0	1185.0	1000.0	1185.0	1
2	1000.0	1185.0	1030.0	1165.0	1
3	1030.0	1165.0	1040.0	1165.0	1
4	1040.0	1165.0	1080.0	1180.0	1
5	1080.0	1180.0	1100.0	1200.0	1
6	1100.0	1200.0	1130.0	1220.0	1
7	1130.0	1220.0	1160.0	1240.0	1
8	1160.0	1240.0	1240.0	1270.0	1
9	1240.0	1270.0	1260.0	1280.0	1
10	1260.0	1280.0	1340.0	1280.0	1
11	1340.0	1280.0	1380.0	1290.0	1
12	1380.0	1290.0	1450.0	1290.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	22.00	4000.0	28.00
2	26.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

1000 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 4.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1060.0	1160.0	1100.0	1172.0	19.0
2	1200.0	1240.0	1280.0	1260.0	24.0

```
************************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
************************************************************************
```

```
-------------------------------------------------------------
USER SELECTED option to maintain strength greater than zero
-------------------------------------------------------------

*************************************************************
**     Factor of safety calculation for surface #     3    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.4983    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1037.70	1165.00
2	1039.40	1164.42
3	1042.84	1162.38
4	1045.87	1159.77
5	1049.85	1159.37
6	1052.76	1156.63
7	1056.44	1155.06
8	1060.37	1154.30
9	1208.20	1253.35
10	1209.26	1257.21
11	1210.53	1258.95

```
************************************************************
**     Factor of safety calculation for surface #     7    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.5804    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1049.38	1168.52
2	1051.04	1167.30
3	1055.01	1166.80
4	1057.87	1164.00
5	1061.44	1162.20
6	1215.48	1253.63
7	1215.92	1257.61
8	1218.28	1260.83
9	1218.46	1261.92

```
************************************************************
**     Factor of safety calculation for surface #    14    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.6282    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1065.37	1174.51
2	1068.60	1174.14
3	1071.44	1171.31
4	1074.96	1169.43
5	1078.65	1167.87
6	1202.02	1234.54
7	1202.24	1238.54
8	1203.63	1242.29
9	1205.35	1245.90
10	1205.63	1249.89
11	1207.21	1253.56
12	1208.40	1257.38
13	1208.45	1258.17

```
************************************************************
**     Factor of safety calculation for surface #    36    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  13.6432    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1056.76	1171.28

2	1057.32	1170.85
3	1060.48	1168.40
4	1064.40	1167.62
5	1205.48	1242.74
6	1205.98	1246.71
7	1206.73	1250.64
8	1206.76	1254.64
9	1207.43	1257.79

```
************************************************************
**     Factor of safety calculation for surface #    52    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  34.3682    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1056.24	1171.09
2	1059.32	1170.06
3	1063.14	1168.86
4	1066.90	1167.50
5	1205.40	1243.44
6	1207.34	1246.94
7	1210.17	1249.77
8	1212.14	1253.25
9	1213.65	1256.95
10	1215.46	1260.52
11	1215.76	1260.91

```
************************************************************
**     Factor of safety calculation for surface #   116    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.2606    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1053.09	1169.91
2	1056.28	1167.73
3	1059.49	1165.35
4	1063.34	1164.27
5	1206.55	1246.81
6	1208.07	1250.51
7	1209.74	1254.14
8	1210.98	1257.94
9	1212.60	1259.72

```
************************************************************
**     Factor of safety calculation for surface #   126    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.1013    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is

defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1080.07	1180.07
2	1081.46	1180.04
3	1085.18	1178.57
4	1088.94	1177.19
5	1213.92	1254.79
6	1216.32	1257.99
7	1217.41	1261.53

```
************************************************************
**     Factor of safety calculation for surface #   156    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-198.0142    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1063.48	1173.81
2	1064.97	1173.26
3	1067.93	1170.57
4	1213.24	1242.62
5	1216.07	1245.45
6	1216.32	1249.44
7	1218.90	1252.50
8	1220.52	1256.15
9	1222.90	1259.37
10	1223.98	1263.22
11	1224.14	1264.05

```
************************************************************
**     Factor of safety calculation for surface #   229    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  26.8780    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1047.79	1167.92
2	1049.80	1167.55
3	1053.34	1165.69
4	1056.72	1163.55
5	1060.65	1162.82
6	1206.50	1247.58
7	1207.26	1251.51
8	1210.09	1254.34
9	1212.26	1257.69
10	1214.06	1260.27

```
************************************************************
**     Factor of safety calculation for surface #   243    **
**     failed to converge within FIFTY iterations          **
**                                                         **
```

```
**    The last calculated value of the FOS was   7.9309    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1056.00	1171.00
2	1056.90	1170.13
3	1059.90	1167.48
4	1062.85	1164.77
5	1066.33	1162.80
6	1205.04	1247.85
7	1207.86	1250.68
8	1210.68	1253.52
9	1213.50	1256.36
10	1214.31	1260.28
11	1214.31	1260.37

```
*************************************************************
**     Factor of safety calculation for surface #   308    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.9309    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1072.44	1177.16
2	1073.42	1176.70
3	1076.52	1174.17
4	1080.42	1173.27
5	1207.29	1251.20
6	1208.27	1255.08
7	1209.45	1258.55

```
*************************************************************
**     Factor of safety calculation for surface #   316    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.0872    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1062.79	1173.55
2	1064.81	1172.27
3	1067.75	1169.56
4	1071.74	1169.33
5	1205.54	1245.08
6	1206.85	1248.86
7	1208.57	1252.47
8	1209.72	1256.30
9	1211.48	1259.31

```
************************************************************
**     Factor of safety calculation for surface #   361    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  86.4263    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1052.68	1169.75
2	1056.00	1168.78
3	1059.04	1166.17
4	1062.11	1163.61
5	1213.19	1254.83
6	1215.32	1258.22
7	1218.13	1261.07
8	1218.27	1261.85

```
************************************************************
**     Factor of safety calculation for surface #   362    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  46.4450    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1058.08	1171.78
2	1061.44	1170.97
3	1064.92	1169.00
4	1208.08	1241.40
5	1210.39	1244.67
6	1212.50	1248.07
7	1212.73	1252.06
8	1215.03	1255.34
9	1216.84	1258.90
10	1217.41	1261.53

```
************************************************************
**     Factor of safety calculation for surface #   369    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.4094    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1060.80	1172.80
2	1061.11	1172.49
3	1063.96	1169.69
4	1230.42	1258.83
5	1231.28	1262.74
6	1233.70	1265.93
7	1235.28	1268.23

```
************************************************************
**     Factor of safety calculation for surface #   506    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.8930    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1050.91	1169.09
2	1053.81	1166.70
3	1057.79	1166.42
4	1060.83	1163.81
5	1212.89	1247.50
6	1215.71	1250.34
7	1217.90	1253.68
8	1218.43	1257.65
9	1220.98	1260.72
10	1222.04	1263.26

```
************************************************************
**     Factor of safety calculation for surface #   515    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-134.5269    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1054.28	1170.36
2	1055.25	1169.46
3	1058.16	1166.72
4	1060.99	1163.90
5	1222.89	1246.95
6	1225.64	1249.85
7	1225.66	1253.85
8	1228.11	1257.01
9	1228.41	1261.00
10	1231.23	1263.84
11	1231.38	1266.77

```
************************************************************
**     Factor of safety calculation for surface #   562    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.4669    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1053.99	1170.24
2	1055.50	1168.82

3	1059.26	1167.45
4	1062.31	1164.87
5	1210.67	1251.50
6	1212.69	1254.96
7	1214.54	1258.50
8	1214.83	1260.56

```
************************************************************
**     Factor of safety calculation for surface #   623    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.8214    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1067.99	1175.50
2	1069.23	1174.34
3	1072.17	1171.62
4	1075.40	1169.26
5	1201.74	1247.32
6	1204.39	1250.32
7	1207.14	1253.23
8	1209.33	1256.58
9	1210.54	1258.95

```
************************************************************
**     Factor of safety calculation for surface #   651    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   7.7899    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1043.24	1166.22
2	1044.31	1165.97
3	1048.27	1165.37
4	1051.33	1162.79
5	1055.28	1162.21
6	1058.21	1159.48
7	1061.88	1157.89
8	1065.38	1155.96
9	1068.22	1153.14
10	1205.15	1251.87
11	1207.85	1254.81
12	1207.98	1257.99

```
************************************************************
**     Factor of safety calculation for surface #   665    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-780.7899    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1065.40	1174.52
2	1066.69	1173.46
3	1069.73	1170.86
4	1219.77	1248.14
5	1221.47	1251.76
6	1221.64	1255.76
7	1222.49	1259.67
8	1224.02	1263.36
9	1224.26	1264.10

```
************************************************************
**     Factor of safety calculation for surface #   702    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  15.7733    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1059.52	1172.32
2	1062.23	1169.64
3	1203.44	1244.97
4	1205.94	1248.09
5	1208.34	1251.29
6	1208.48	1255.29
7	1210.41	1258.79
8	1210.47	1258.93

```
************************************************************
**     Factor of safety calculation for surface #   708    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  29.2792    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1081.34	1181.34
2	1083.29	1180.98
3	1086.12	1178.15
4	1089.41	1175.87
5	1093.41	1175.76
6	1096.28	1172.98
7	1099.42	1170.49
8	1201.18	1251.73
9	1204.00	1254.57
10	1205.48	1257.06

```
************************************************************
**     Factor of safety calculation for surface #   731    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.9064    **
**    This will be ignored for final summary of results    **
```

```
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1053.37	1170.02
2	1054.99	1169.95
3	1058.42	1167.90
4	1061.96	1166.04
5	1231.02	1253.85
6	1233.82	1256.70
7	1233.84	1260.70
8	1235.82	1264.17
9	1237.80	1267.65
10	1238.93	1269.60

```
************************************************************
**     Factor of safety calculation for surface #   760    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.6416    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1061.77	1173.16
2	1063.17	1172.12
3	1066.14	1169.45
4	1225.23	1257.54
5	1227.32	1260.95
6	1229.51	1264.30
7	1232.31	1267.12

```
************************************************************
**     Factor of safety calculation for surface #   806    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was-114.6599    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1056.08	1171.03
2	1059.10	1168.57
3	1062.84	1167.14
4	1209.65	1250.63
5	1212.44	1253.50
6	1215.10	1256.48
7	1215.89	1260.41
8	1216.07	1261.03

```
************************************************************
**     Factor of safety calculation for surface #   847    **
**     failed to converge within FIFTY iterations          **
**                                                         **
```

```
**    The last calculated value of the FOS was 204.6999    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1068.67	1175.75
2	1070.25	1175.08
3	1073.59	1172.88
4	1076.46	1170.09
5	1079.33	1167.31
6	1082.16	1164.48
7	1208.67	1253.14
8	1209.07	1257.12
9	1210.77	1259.04

```
*************************************************************
**     Factor of safety calculation for surface #   854    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.9294    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1057.96	1171.73
2	1059.04	1170.68
3	1062.59	1168.84
4	1200.63	1241.39
5	1201.73	1245.24
6	1204.46	1248.16
7	1205.74	1251.95
8	1207.32	1255.63
9	1210.14	1258.47
10	1210.26	1258.85

```
*************************************************************
**     Factor of safety calculation for surface #   887    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.0210    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 9 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1073.07	1177.40
2	1073.52	1177.01
3	1076.71	1174.60
4	1079.94	1172.23
5	1210.67	1246.21
6	1212.26	1249.88
7	1212.47	1253.88
8	1214.98	1256.99
9	1215.21	1260.71

```
************************************************************
**     Factor of safety calculation for surface #   897    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.1162    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1081.96	1181.96
2	1084.41	1181.91
3	1087.25	1179.10
4	1090.13	1176.32
5	1202.27	1250.78
6	1202.76	1254.75
7	1203.22	1256.21

```
************************************************************
**     Factor of safety calculation for surface #   904    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.6467    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1060.44	1172.67
2	1062.14	1172.21
3	1065.51	1170.07
4	1069.14	1168.39
5	1072.22	1165.84
6	1075.51	1163.56
7	1201.04	1248.30
8	1203.70	1251.29
9	1206.00	1254.56
10	1206.87	1257.58

```
************************************************************
**     Factor of safety calculation for surface #   916    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   8.3195    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1048.95	1168.36
2	1050.05	1167.56
3	1053.47	1165.48
4	1056.31	1162.66
5	1059.29	1159.99
6	1062.24	1157.29
7	1207.20	1252.09

8	1209.76	1255.17
9	1211.60	1258.72
10	1212.12	1259.55

```
************************************************************
**     Factor of safety calculation for surface #   921    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.0408    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1056.08	1171.03
2	1057.51	1169.81
3	1061.16	1168.18
4	1223.71	1251.97
5	1225.11	1255.72
6	1226.02	1259.62
7	1228.55	1262.72
8	1229.19	1265.95

```
************************************************************
**     Factor of safety calculation for surface #   938    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.1406    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1069.41	1176.03
2	1069.97	1175.50
3	1072.80	1172.68
4	1204.47	1241.02
5	1206.85	1244.23
6	1207.06	1248.23
7	1207.89	1252.14
8	1210.71	1254.97
9	1213.47	1257.87
10	1213.80	1260.18

```
************************************************************
**     Factor of safety calculation for surface #   946    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   6.7655    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 15 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1054.41	1170.40
2	1055.06	1169.86

3	1058.05	1167.21
4	1061.41	1165.04
5	1065.03	1163.34
6	1067.91	1160.56
7	1200.17	1233.47
8	1200.46	1237.46
9	1203.23	1240.35
10	1203.76	1244.32
11	1204.36	1248.27
12	1205.89	1251.97
13	1207.27	1255.72
14	1209.97	1258.67
15	1210.07	1258.78

```
************************************************************
**     Factor of safety calculation for surface #   980    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  87.8570    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1081.88	1181.88
2	1082.73	1181.11
3	1085.69	1178.42
4	1088.55	1175.62
5	1092.12	1173.81
6	1095.26	1171.34
7	1212.68	1250.52
8	1215.42	1253.44
9	1215.43	1257.44
10	1217.92	1260.57
11	1218.06	1261.77

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1068.60	1175.72
2	1069.50	1174.84
3	1072.84	1172.64
4	1272.92	1255.92
5	1267.21	1250.20

** Corrected JANBU FOS = 1.408 ** (Fo factor = 1.010)

Failure surface No. 2 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1055.03	1170.64
2	1055.81	1169.93
3	1058.67	1167.14
4	1062.67	1167.05
5	1279.65	1271.18
6	1282.42	1274.06
7	1284.92	1277.19
8	1287.31	1280.00

** Corrected JANBU FOS = 1.673 ** (Fo factor = 1.012)

Failure surface No. 3 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1063.07	1173.65
2	1064.52	1172.22
3	1068.40	1171.24
4	1272.33	1268.84
5	1275.07	1271.76
6	1277.64	1274.82
7	1279.63	1278.29
8	1280.02	1280.00

** Corrected JANBU FOS = 1.688 ** (Fo factor = 1.013)

Failure surface No. 4 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1067.94	1175.48
2	1069.05	1174.74
3	1072.51	1172.73
4	1075.61	1170.21
5	1276.58	1262.14
6	1279.31	1265.06
7	1281.29	1268.54
8	1283.76	1271.68
9	1286.52	1274.58
10	1289.05	1277.68
11	1291.27	1280.00

** Corrected JANBU FOS = 1.790 ** (Fo factor = 1.019)

Failure surface No. 5 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1050.82	1169.06
2	1053.27	1167.62
3	1057.11	1166.52
4	1060.36	1164.18
5	1271.50	1264.67
6	1274.08	1267.73
7	1276.36	1271.01
8	1279.05	1273.98
9	1280.53	1277.70
10	1281.23	1280.00

** Corrected JANBU FOS = 1.814 ** (Fo factor = 1.018)

Failure surface No. 6 specified by 10 coordinate points

Point	x-surf	y-surf

No.	(ft)	(ft)
1	1070.08	1176.28
2	1070.29	1176.12
3	1074.11	1174.95
4	1076.95	1172.14
5	1275.63	1264.08
6	1278.23	1267.11
7	1279.48	1270.91
8	1280.39	1274.81
9	1282.78	1278.01
10	1284.55	1280.00

** Corrected JANBU FOS = 1.823 ** (Fo factor = 1.021)

Failure surface No. 7 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1062.41	1173.40
2	1062.45	1173.37
3	1065.30	1170.57
4	1271.77	1257.37
5	1274.34	1260.44
6	1274.98	1264.39
7	1277.32	1267.63
8	1279.30	1271.10
9	1280.91	1274.76
10	1249.84	1243.69

** Corrected JANBU FOS = 1.827 ** (Fo factor = 1.009)

Failure surface No. 8 specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1072.67	1177.25
2	1074.14	1176.02
3	1077.84	1174.50
4	1268.17	1260.10
5	1270.19	1263.55
6	1272.77	1266.61
7	1275.34	1269.67
8	1278.12	1272.55
9	1280.85	1275.48
10	1282.33	1279.19
11	1282.61	1280.00

** Corrected JANBU FOS = 1.845 ** (Fo factor = 1.023)

Failure surface No. 9 specified by 13 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1061.14	1172.93
2	1064.71	1172.17
3	1067.63	1169.44
4	1071.63	1169.26
5	1074.82	1166.84
6	1078.41	1165.07
7	1279.53	1261.88
8	1281.76	1265.20
9	1283.91	1268.57
10	1286.66	1271.48
11	1288.77	1274.87

12	1291.02	1278.18
13	1291.60	1280.00

** Corrected JANBU FOS = 1.849 ** (Fo factor = 1.026)

Failure surface No.10 specified by 10 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1060.33	1172.62
2	1061.44	1171.71
3	1065.44	1171.56
4	1069.44	1171.54
5	1264.59	1264.61
6	1266.68	1268.02
7	1267.88	1271.84
8	1270.67	1274.70
9	1272.91	1278.01
10	1273.99	1280.00

** Corrected JANBU FOS = 1.861 ** (Fo factor = 1.019)

```
*******************************************************************
**                                                               **
**  Out of the   1000 surfaces generated and analyzed by XSTABL, **
**       36 surfaces were found to have MISLEADING FOS values.   **
**                                                               **
*******************************************************************
```

The following is a summary of the TEN most critical surfaces

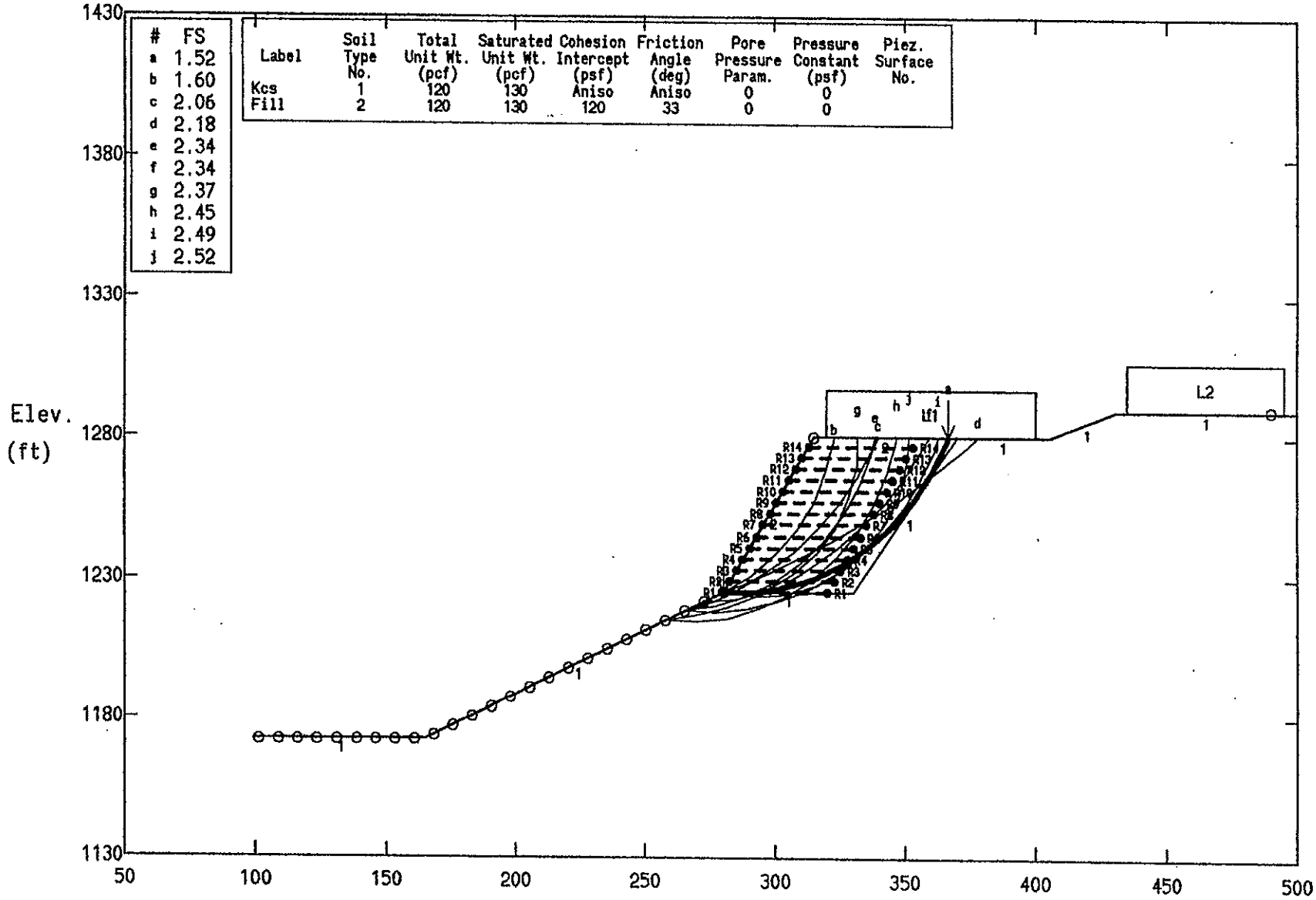
Problem Description : Section G-G' Parallel Slope

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.408	1.010	1068.60	1267.21	3.107E+05
2.	1.673	1.012	1055.03	1287.31	3.223E+05
3.	1.688	1.013	1063.07	1280.02	2.869E+05
4.	1.790	1.019	1067.94	1291.27	4.142E+05
5.	1.814	1.018	1050.82	1281.23	3.700E+05
6.	1.823	1.021	1070.08	1284.55	3.627E+05
7.	1.827	1.009	1062.41	1249.84	3.582E+05
8.	1.845	1.023	1072.67	1282.61	3.612E+05
9.	1.849	1.026	1061.14	1291.60	5.058E+05
10.	1.861	1.019	1060.33	1273.99	3.107E+05

* * * END OF FILE * * *

Prisidio Development Chatsworth, CA

Ten Most Critical. C:PRISIDI2.PLT By: TWA 10-07-01 3:33pm



#	FS
a	1.52
b	1.60
c	2.06
d	2.18
e	2.34
f	2.34
g	2.37
h	2.45
i	2.49
j	2.52

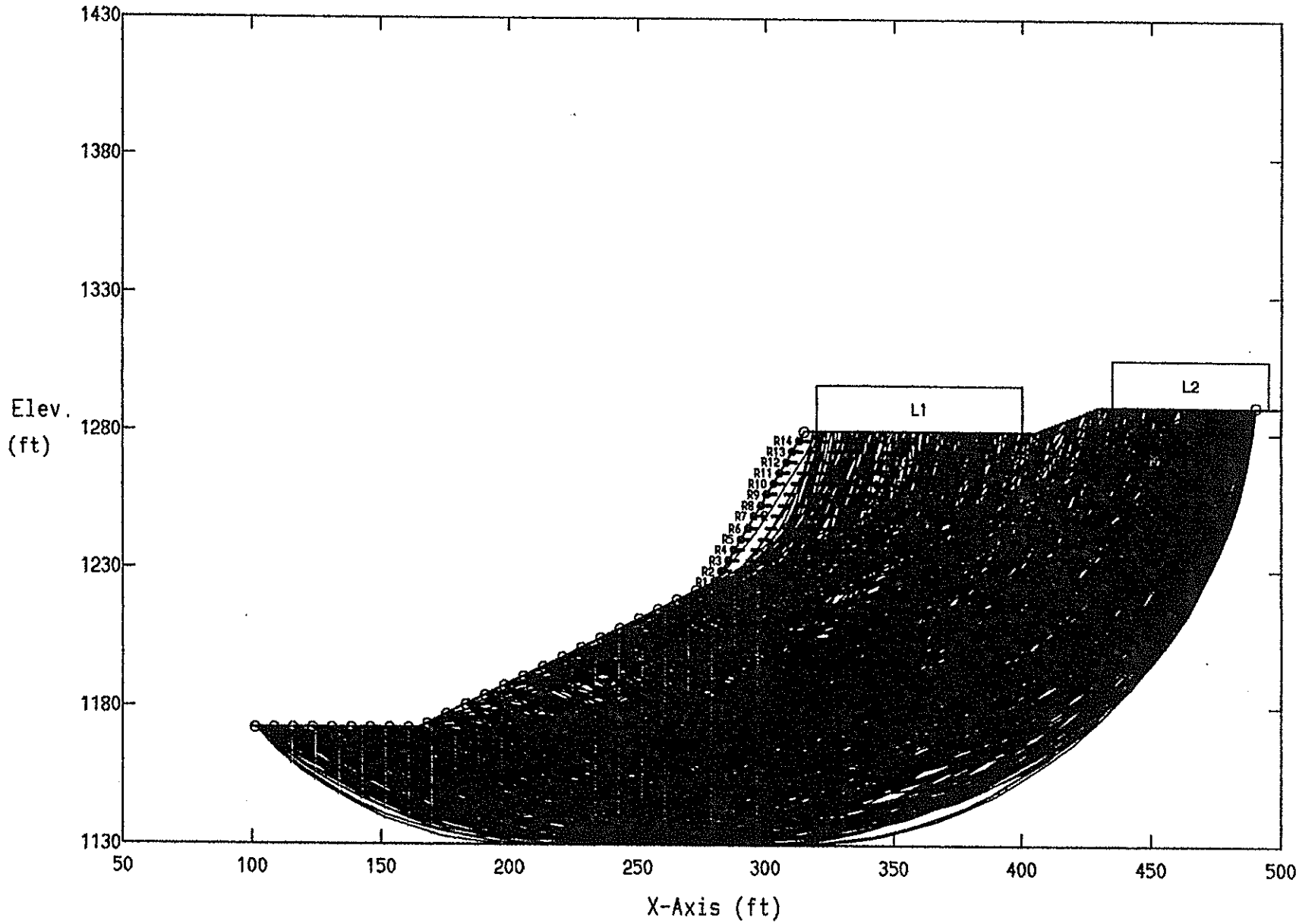
Label	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Kcs	1	120	130	Aniso	Aniso	0	0	
Fill	2	120	130	120	33	0	0	

STABL6H FSmin=1.52 X-Axis (ft)

Factors Of Safety Calculated By The Modified Bishop Method

Prisidio Development Chatsworth, CA

All surfaces evaluated. C:PRISIDI2.PLT By: TWA 10-07-01 3:42pm



Factors Of Safety Calculated By The Modified Bishop Method

** STABL6H **
by
Purdue University

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer's Method of Slices

Run Date:	10-07-01
Time of Run:	3:33pm
Run By:	TWA
Input Data Filename:	C:PRISIDI2
Output Filename:	C:PRISIDI2.OUT
Plotted Output Filename:	C:PRISIDI2.PLT

PROBLEM DESCRIPTION Prisidio Development
Chatsworth, CA

BOUNDARY COORDINATES
NOTE: User defined origin was specified.
Add 50.00 to X values and 1130.00 to Y values listed.

7 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	50.00	42.00	115.00	42.00	1
2	115.00	42.00	230.00	95.00	1
3	230.00	95.00	265.00	150.00	2
4	265.00	150.00	320.00	150.00	2
5	320.00	150.00	355.00	150.00	1
6	355.00	150.00	380.00	160.00	1
7	380.00	160.00	450.00	160.00	1
8	230.00	95.00	280.00	95.00	1
9	280.00	95.00	320.00	150.00	1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.

1	120.0	130.0	150.0	24.0	.00	.0	0
2	120.0	130.0	120.0	33.0	.00	.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	22.0	4000.0	28.0
2	26.0	150.0	24.0
3	90.0	4000.0	28.0

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	270.00	350.00	250.0	.0
2	385.00	445.00	250.0	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

REINFORCING LAYER(S)

14 REINFORCING LAYER(S) SPECIFIED

REINFORCING LAYER NO. 1

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	230.10	95.00	4307.00	.000
2	270.10	95.00	4307.00	.000

REINFORCING LAYER NO. 2

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	232.55	99.00	4307.00	.000
2	272.55	99.00	4307.00	.000

REINFORCING LAYER NO. 3

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	235.09	103.00	4307.00	.000
2	275.09	103.00	4307.00	.000

REINFORCING LAYER NO. 4

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	237.64	107.00	4307.00	.000
2	277.64	107.00	4307.00	.000

REINFORCING LAYER NO. 5

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	240.18	111.00	4307.00	.000
2	280.18	111.00	4307.00	.000

REINFORCING LAYER NO. 6

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR

1	242.73	115.00	4307.00	.000
2	282.73	115.00	4307.00	.000

REINFORCING LAYER NO. 7

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	245.27	119.00	4307.00	.000
2	285.27	119.00	4307.00	.000

REINFORCING LAYER NO. 8

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	247.82	123.00	4307.00	.000
2	287.82	123.00	4307.00	.000

REINFORCING LAYER NO. 9

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	250.36	127.00	4307.00	.000
2	290.36	127.00	4307.00	.000

REINFORCING LAYER NO. 10

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	252.91	131.00	4307.00	.000
2	292.91	131.00	4307.00	.000

REINFORCING LAYER NO. 11

2 POINTS DEFINE THIS LAYER

POINT	X-COORD	Y-COORD	FORCE	INCLINATION

NO.				FACTOR
1	255.45	135.00	4307.00	.000
2	295.45	135.00	4307.00	.000

REINFORCING LAYER NO. 12

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	258.00	139.00	4307.00	.000
2	298.00	139.00	4307.00	.000

REINFORCING LAYER NO. 13

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	260.55	143.00	4307.00	.000
2	300.55	143.00	4307.00	.000

REINFORCING LAYER NO. 14

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	263.09	147.00	4307.00	.000
2	303.09	147.00	4307.00	.000

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

625 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 25 Points Equally Spaced Along The Ground Surface Between X = 51.00 ft.
and X = 230.00 ft.

Each Surface Terminates Between X = 265.00 ft.
and X = 440.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = .00 ft.

12.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	230.00	95.00
2	242.00	95.17
3	253.86	96.97
4	265.37	100.36
5	276.32	105.29
6	286.50	111.64
7	295.71	119.33
8	303.81	128.19
9	310.62	138.06
10	316.04	148.77
11	316.46	150.00

Circle Center At X = 234.7 ; Y = 183.2 and Radius, 88.3

*** 1.521 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	230.00	95.00
2	240.47	100.86
3	249.89	108.30
4	258.02	117.12
5	264.67	127.12
6	269.65	138.03
7	272.87	149.59
8	272.91	150.00

Circle Center At X = 198.2 ; Y = 164.1 and Radius, 76.1

*** 1.595 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	215.08	88.13
2	226.45	91.97
3	237.38	96.92
4	247.76	102.94
5	257.49	109.97
6	266.47	117.93
7	274.61	126.75
8	281.83	136.33
9	288.06	146.59
10	289.68	150.00

Circle Center At X = 182.4 ; Y = 203.7 and Radius, 120.2

*** 2.056 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	230.00	95.00
2	241.22	99.25
3	252.29	103.89
4	263.18	108.92
5	273.89	114.34
6	284.41	120.12
7	294.71	126.28
8	304.78	132.79
9	314.62	139.66
10	324.21	146.87
11	328.08	150.00

Circle Center At X = 115.4 ; Y = 414.6 and Radius, 339.5

*** 2.184 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	215.08	88.13
2	226.94	89.97
3	238.41	93.50
4	249.26	98.63
5	259.26	105.27
6	268.20	113.27
7	275.91	122.46
8	282.22	132.67
9	287.00	143.68
10	288.73	150.00

Circle Center At X = 208.2 ; Y = 171.4 and Radius, 83.5

*** 2.336 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	207.63	84.69
2	219.48	86.52
3	231.14	89.40
4	242.49	93.28
5	253.45	98.16
6	263.95	103.97
7	273.89	110.70
8	283.20	118.27
9	291.81	126.63
10	299.65	135.71
11	306.66	145.45
12	309.36	150.00

Circle Center At X = 192.8 ; Y = 220.0 and Radius, 136.1

*** 2.340 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	222.54	91.56

2	234.51	92.38
3	246.06	95.66
4	256.67	101.26
5	265.89	108.95
6	273.31	118.37
7	278.62	129.14
8	281.58	140.77
9	281.95	150.00

Circle Center At X = 224.6 ; Y = 149.1 and Radius, 57.5

*** 2.372 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	207.63	84.69
2	219.62	84.28
3	231.54	85.63
4	243.14	88.70
5	254.17	93.42
6	264.40	99.71
7	273.60	107.41
8	281.58	116.37
9	288.17	126.40
10	293.23	137.28
11	296.65	148.78
12	296.83	150.00

Circle Center At X = 216.4 ; Y = 166.4 and Radius, 82.2

*** 2.450 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	215.08	88.13
2	227.08	87.79
3	239.02	88.96
4	250.72	91.62
5	262.00	95.73
6	272.66	101.23
7	282.55	108.02
8	291.51	116.01
9	299.40	125.05

10	306.08	135.02
11	311.46	145.75
12	312.96	150.00

Circle Center At X = 223.8 ; Y = 183.0 and Radius, 95.3

*** 2.486 ***

Failure Surface Specified By 10 Coordinate Points

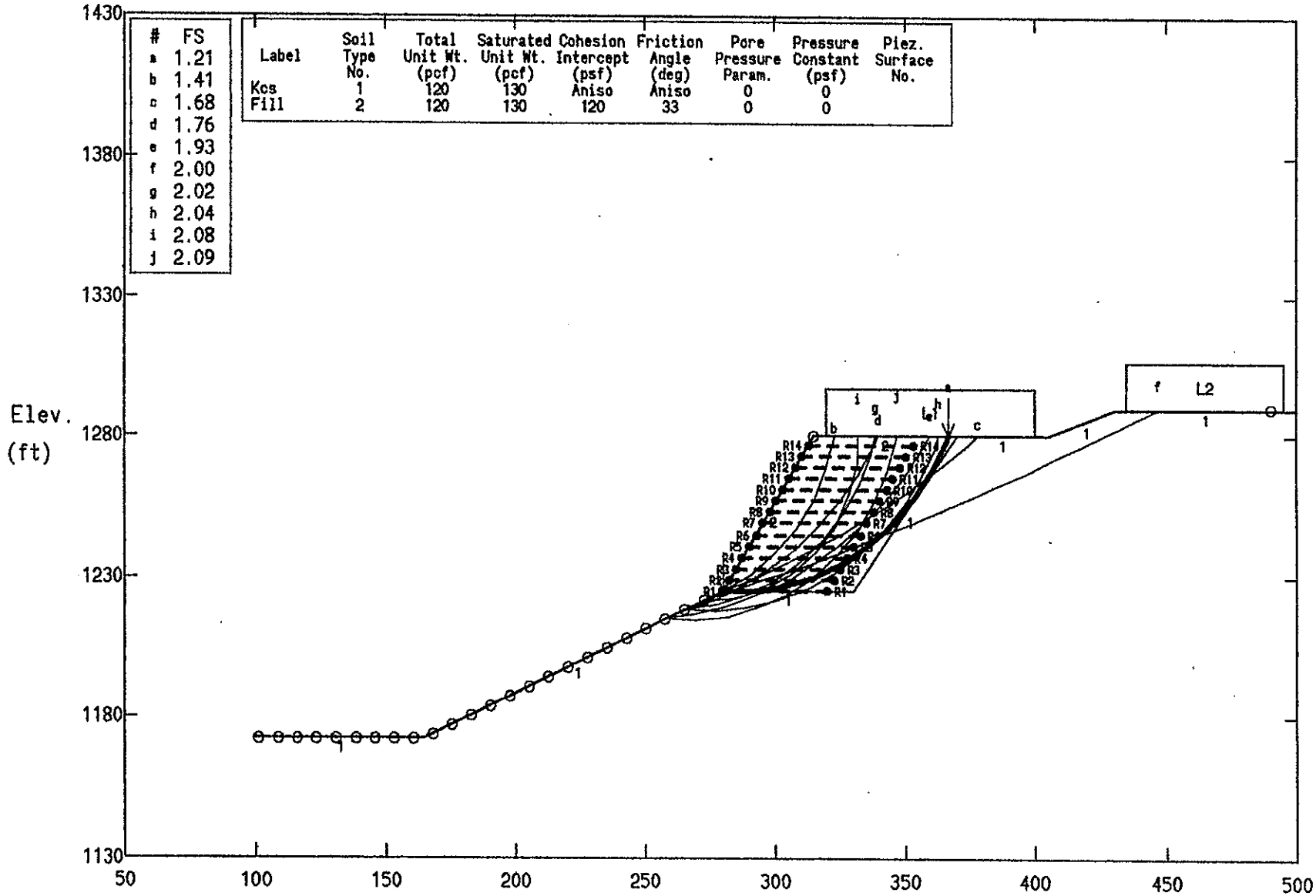
Point No.	X-Surf (ft)	Y-Surf (ft)
1	230.00	95.00
2	241.87	93.26
3	253.85	94.02
4	265.41	97.25
5	276.05	102.81
6	285.30	110.44
7	292.77	119.84
8	298.13	130.57
9	301.15	142.18
10	301.51	150.00

Circle Center At X = 244.2 ; Y = 150.8 and Radius, 57.6

*** 2.524 ***

Prisidio Development Chatsworth, CA

Ten Most Critical. C:PRISIDI2.PLT By: TWA 10-07-01 3:28pm



#	FS
a	1.21
b	1.41
c	1.68
d	1.76
e	1.93
f	2.00
g	2.02
h	2.04
i	2.08
j	2.09

Label	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Kcs	1	120	130	Aniso	Aniso	0	0	
Fill	2	120	130	120	33	0	0	

STABL6H FSmin=1.21 X-Axis (ft)

Factors Of Safety Calculated By The Modified Bishop Method

** STABL6H **
by
Purdue University

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer's Method of Slices

Run Date:	10-07-01
Time of Run:	3:28pm
Run By:	TWA
Input Data Filename:	C:PRISIDI2
Output Filename:	C:PRISIDI2.OUT
Plotted Output Filename:	C:PRISIDI2.PLT

PROBLEM DESCRIPTION Prisidio Development
Chatsworth, CA

BOUNDARY COORDINATES
NOTE: User defined origin was specified.
Add 50.00 to X values and 1130.00 to Y values listed.

7 Top Boundaries
9 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	50.00	42.00	115.00	42.00	1
2	115.00	42.00	230.00	95.00	1
3	230.00	95.00	265.00	150.00	2
4	265.00	150.00	320.00	150.00	2
5	320.00	150.00	355.00	150.00	1
6	355.00	150.00	380.00	160.00	1
7	380.00	160.00	450.00	160.00	1
8	230.00	95.00	280.00	95.00	1
9	280.00	95.00	320.00	150.00	1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.

1	120.0	130.0	150.0	24.0	.00	.0	0
2	120.0	130.0	120.0	33.0	.00	.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	22.0	4000.0	28.0
2	26.0	150.0	24.0
3	90.0	4000.0	28.0

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (lb/sqft)	Deflection (deg)
1	270.00	350.00	250.0	.0
2	385.00	445.00	250.0	.0

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

A Horizontal Earthquake Loading Coefficient
Of .150 Has Been Assigned

A Vertical Earthquake Loading Coefficient
Of .000 Has Been Assigned

Cavitation Pressure = .0 psf

REINFORCING LAYER(S)

14 REINFORCING LAYER(S) SPECIFIED

REINFORCING LAYER NO. 1

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	230.10	95.00	4307.00	.000
2	270.10	95.00	4307.00	.000

REINFORCING LAYER NO. 2

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	232.55	99.00	4307.00	.000
2	272.55	99.00	4307.00	.000

REINFORCING LAYER NO. 3

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	235.09	103.00	4307.00	.000
2	275.09	103.00	4307.00	.000

REINFORCING LAYER NO. 4

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	237.64	107.00	4307.00	.000
2	277.64	107.00	4307.00	.000

REINFORCING LAYER NO. 5

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	240.18	111.00	4307.00	.000
2	280.18	111.00	4307.00	.000

REINFORCING LAYER NO. 6

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	242.73	115.00	4307.00	.000
2	282.73	115.00	4307.00	.000

REINFORCING LAYER NO. 7

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	245.27	119.00	4307.00	.000
2	285.27	119.00	4307.00	.000

REINFORCING LAYER NO. 8

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	247.82	123.00	4307.00	.000
2	287.82	123.00	4307.00	.000

REINFORCING LAYER NO. 9

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	250.36	127.00	4307.00	.000
2	290.36	127.00	4307.00	.000

REINFORCING LAYER NO. 10

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR

1	252.91	131.00	4307.00	.000
2	292.91	131.00	4307.00	.000

REINFORCING LAYER NO. 11

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	255.45	135.00	4307.00	.000
2	295.45	135.00	4307.00	.000

REINFORCING LAYER NO. 12

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	258.00	139.00	4307.00	.000
2	298.00	139.00	4307.00	.000

REINFORCING LAYER NO. 13

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	260.55	143.00	4307.00	.000
2	300.55	143.00	4307.00	.000

REINFORCING LAYER NO. 14

2 POINTS DEFINE THIS LAYER

POINT NO.	X-COORD	Y-COORD	FORCE	INCLINATION FACTOR
1	263.09	147.00	4307.00	.000
2	303.09	147.00	4307.00	.000

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

625 Trial Surfaces Have Been Generated.

25 Surfaces Initiate From Each Of 25 Points Equally Spaced
Along The Ground Surface Between X = 51.00 ft.
and X = 230.00 ft.

Each Surface Terminates Between X = 265.00 ft.
and X = 440.00 ft.

Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = .00 ft.

12.00 ft. Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Examined. They Are Ordered - Most Critical
First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	230.00	95.00
2	242.00	95.17
3	253.86	96.97
4	265.37	100.36
5	276.32	105.29
6	286.50	111.64
7	295.71	119.33
8	303.81	128.19
9	310.62	138.06
10	316.04	148.77
11	316.46	150.00

Circle Center At X = 234.7 ; Y = 183.2 and Radius, 88.3

*** 1.205 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	230.00	95.00
2	240.47	100.86
3	249.89	108.30
4	258.02	117.12
5	264.67	127.12
6	269.65	138.03
7	272.87	149.59
8	272.91	150.00

Circle Center At X = 198.2 ; Y = 164.1 and Radius, 76.1

*** 1.406 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	230.00	95.00
2	241.22	99.25
3	252.29	103.89
4	263.18	108.92
5	273.89	114.34
6	284.41	120.12
7	294.71	126.28
8	304.78	132.79
9	314.62	139.66
10	324.21	146.87
11	328.08	150.00

Circle Center At X = 115.4 ; Y = 414.6 and Radius, 339.5

*** 1.680 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	215.08	88.13
2	226.45	91.97
3	237.38	96.92
4	247.76	102.94
5	257.49	109.97
6	266.47	117.93
7	274.61	126.75
8	281.83	136.33
9	288.06	146.59

10	289.68	150.00

Circle Center At X = 182.4 ; Y = 203.7 and Radius, 120.2

*** 1.757 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	207.63	84.69
2	219.48	86.52
3	231.14	89.40
4	242.49	93.28
5	253.45	98.16
6	263.95	103.97
7	273.89	110.70
8	283.20	118.27
9	291.81	126.63
10	299.65	135.71
11	306.66	145.45
12	309.36	150.00

Circle Center At X = 192.8 ; Y = 220.0 and Radius, 136.1

*** 1.926 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	222.54	91.56
2	234.01	95.11
3	245.44	98.76
4	256.83	102.54
5	268.18	106.43
6	279.49	110.44
7	290.76	114.57
8	301.98	118.81
9	313.16	123.16
10	324.30	127.63
11	335.39	132.21
12	346.44	136.91
13	357.43	141.72
14	368.37	146.64
15	379.27	151.67
16	390.11	156.81

17	396.65	160.00

Circle Center At X = -117.7 ; Y = 1213.1 and Radius, 1172.0

*** 2.001 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	215.08	88.13
2	226.94	89.97
3	238.41	93.50
4	249.26	98.63
5	259.26	105.27
6	268.20	113.27
7	275.91	122.46
8	282.22	132.67
9	287.00	143.68
10	288.73	150.00

Circle Center At X = 208.2 ; Y = 171.4 and Radius, 83.5

*** 2.015 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	215.08	88.13
2	227.08	87.79
3	239.02	88.96
4	250.72	91.62
5	262.00	95.73
6	272.66	101.23
7	282.55	108.02
8	291.51	116.01
9	299.40	125.05
10	306.08	135.02
11	311.46	145.75
12	312.96	150.00

Circle Center At X = 223.8 ; Y = 183.0 and Radius, 95.3

*** 2.043 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	222.54	91.56
2	234.51	92.38
3	246.06	95.66
4	256.67	101.26
5	265.89	108.95
6	273.31	118.37
7	278.62	129.14
8	281.58	140.77
9	281.95	150.00

Circle Center At X = 224.6 ; Y = 149.1 and Radius, 57.5

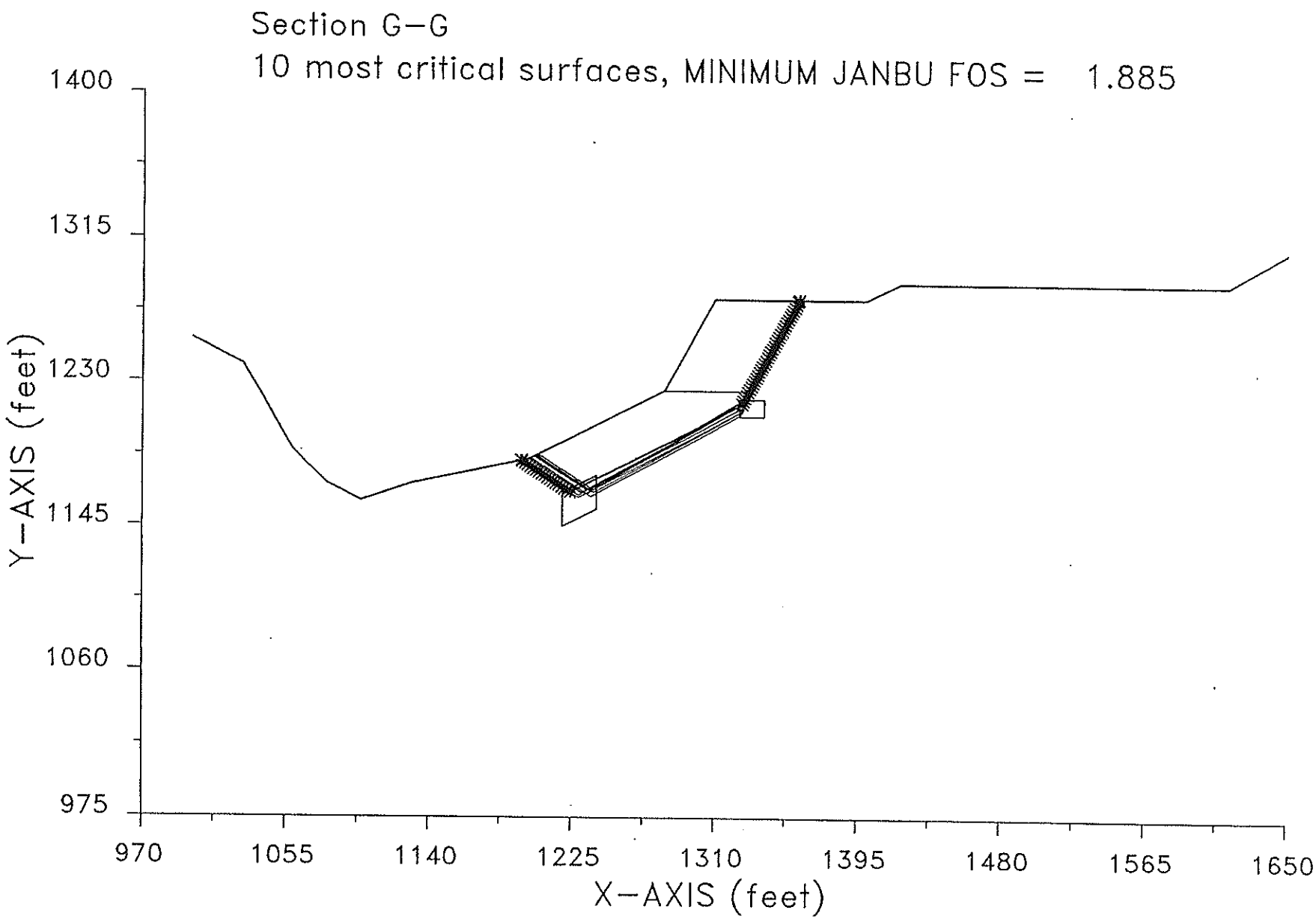
*** 2.081 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	207.63	84.69
2	219.62	84.28
3	231.54	85.63
4	243.14	88.70
5	254.17	93.42
6	264.40	99.71
7	273.60	107.41
8	281.58	116.37
9	288.17	126.40
10	293.23	137.28
11	296.65	148.78
12	296.83	150.00

Circle Center At X = 216.4 ; Y = 166.4 and Radius, 82.2

*** 2.088 ***


Section G-G
10 most critical surfaces, MINIMUM JANBU FOS = 1.885
1400
1315
1230
1145
1060
975
Y-AXIS (feet)
970
1055
1140
1225
1310
1395
1480
1565
1650
X-AXIS (feet)

XSTABL File: SECG-G1 10-08-** 21:46

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section G-G

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1255.0	1030.0	1240.0	1
2	1030.0	1240.0	1060.0	1190.0	1
3	1060.0	1190.0	1080.0	1170.0	1
4	1080.0	1170.0	1100.0	1160.0	1
5	1100.0	1160.0	1130.0	1170.0	1
6	1130.0	1170.0	1200.0	1185.0	1
7	1200.0	1185.0	1280.0	1225.0	1
8	1280.0	1225.0	1310.0	1280.0	2
9	1310.0	1280.0	1360.0	1280.0	2
10	1360.0	1280.0	1400.0	1280.0	1
11	1400.0	1280.0	1420.0	1290.0	1
12	1420.0	1290.0	1615.0	1290.0	1
13	1615.0	1290.0	1650.0	1310.0	1

2 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1280.0	1225.0	1330.0	1225.0	2
2	1330.0	1225.0	1360.0	1280.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	27.00	4000.0	28.00
2	31.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

100 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 2.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1220.0	1155.0	1240.0	1165.0	20.0
2	1325.0	1215.0	1340.0	1215.0	10.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 56 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1195.46	1184.03
2	1195.93	1183.72
3	1197.61	1182.63
4	1199.29	1181.55
5	1200.96	1180.46
6	1202.64	1179.37
7	1204.32	1178.28
8	1206.00	1177.19
9	1207.67	1176.10
10	1209.35	1175.01
11	1211.03	1173.92
12	1212.71	1172.83
13	1214.38	1171.74
14	1216.06	1170.65
15	1217.74	1169.56
16	1219.41	1168.47
17	1221.09	1167.39
18	1222.77	1166.30
19	1224.45	1165.21
20	1326.58	1217.44
21	1327.54	1219.20
22	1328.49	1220.95
23	1329.44	1222.71
24	1330.40	1224.47
25	1331.35	1226.23
26	1332.31	1227.98
27	1333.26	1229.74
28	1334.22	1231.50
29	1335.17	1233.26
30	1336.12	1235.01
31	1337.08	1236.77
32	1338.03	1238.53
33	1338.99	1240.29
34	1339.94	1242.05
35	1340.90	1243.80
36	1341.85	1245.56
37	1342.80	1247.32
38	1343.76	1249.08
39	1344.71	1250.83
40	1345.67	1252.59
41	1346.62	1254.35
42	1347.58	1256.11
43	1348.53	1257.86
44	1349.48	1259.62
45	1350.44	1261.38
46	1351.39	1263.14
47	1352.35	1264.90
48	1353.30	1266.65
49	1354.26	1268.41
50	1355.21	1270.17
51	1356.17	1271.93
52	1357.12	1273.68
53	1358.07	1275.44
54	1359.03	1277.20
55	1359.98	1278.96
56	1360.55	1280.00

** Corrected JANBU FOS = 1.885 ** (Fo factor = 1.071)

Failure surface No. 2 specified by 58 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1200.13	1185.06

2	1200.94	1184.53
3	1202.62	1183.44
4	1204.30	1182.36
5	1205.98	1181.27
6	1207.65	1180.18
7	1209.33	1179.09
8	1211.01	1178.00
9	1212.69	1176.91
10	1214.36	1175.82
11	1216.04	1174.73
12	1217.72	1173.64
13	1219.40	1172.55
14	1221.07	1171.46
15	1222.75	1170.37
16	1224.43	1169.28
17	1226.10	1168.20
18	1227.78	1167.11
19	1229.46	1166.02
20	1231.14	1164.93
21	1325.29	1216.98
22	1326.25	1218.74
23	1327.20	1220.49
24	1328.16	1222.25
25	1329.11	1224.01
26	1329.65	1225.00
27	1330.60	1226.76
28	1331.56	1228.52
29	1332.51	1230.27
30	1333.47	1232.03
31	1334.42	1233.79
32	1335.38	1235.55
33	1336.33	1237.30
34	1337.28	1239.06
35	1338.24	1240.82
36	1339.19	1242.58
37	1340.15	1244.33
38	1341.10	1246.09
39	1342.06	1247.85
40	1343.01	1249.61
41	1343.96	1251.37
42	1344.92	1253.12
43	1345.87	1254.88
44	1346.83	1256.64
45	1347.78	1258.40
46	1348.74	1260.15
47	1349.69	1261.91
48	1350.64	1263.67
49	1351.60	1265.43
50	1352.55	1267.18
51	1353.51	1268.94
52	1354.46	1270.70
53	1355.42	1272.46
54	1356.37	1274.22
55	1357.32	1275.97
56	1358.28	1277.73
57	1359.23	1279.49
58	1359.51	1280.00

** Corrected JANBU FOS = 1.900 ** (Fo factor = 1.071)

Failure surface No. 3 specified by 58 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1201.18	1185.59
2	1202.17	1184.95
3	1203.84	1183.86
4	1205.52	1182.77
5	1207.20	1181.68

6	1208.88	1180.59
7	1210.55	1179.51
8	1212.23	1178.42
9	1213.91	1177.33
10	1215.58	1176.24
11	1217.26	1175.15
12	1218.94	1174.06
13	1220.62	1172.97
14	1222.29	1171.88
15	1223.97	1170.79
16	1225.65	1169.70
17	1227.33	1168.61
18	1229.00	1167.52
19	1230.68	1166.43
20	1232.36	1165.35
21	1234.04	1164.26
22	1325.77	1219.23
23	1326.73	1220.99
24	1327.68	1222.75
25	1328.64	1224.51
26	1328.90	1225.00
27	1329.86	1226.76
28	1330.81	1228.52
29	1331.77	1230.27
30	1332.72	1232.03
31	1333.68	1233.79
32	1334.63	1235.55
33	1335.58	1237.30
34	1336.54	1239.06
35	1337.49	1240.82
36	1338.45	1242.58
37	1339.40	1244.33
38	1340.36	1246.09
39	1341.31	1247.85
40	1342.26	1249.61
41	1343.22	1251.37
42	1344.17	1253.12
43	1345.13	1254.88
44	1346.08	1256.64
45	1347.04	1258.40
46	1347.99	1260.15
47	1348.95	1261.91
48	1349.90	1263.67
49	1350.85	1265.43
50	1351.81	1267.18
51	1352.76	1268.94
52	1353.72	1270.70
53	1354.67	1272.46
54	1355.63	1274.22
55	1356.58	1275.97
56	1357.53	1277.73
57	1358.49	1279.49
58	1358.77	1280.00

** Corrected JANBU FOS = 1.932 ** (Fo factor = 1.070)

Failure surface No. 4 specified by 58 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1205.69	1187.84
2	1206.26	1187.47
3	1207.94	1186.38
4	1209.62	1185.29
5	1211.30	1184.20
6	1212.97	1183.11
7	1214.65	1182.02
8	1216.33	1180.93
9	1218.00	1179.84

10	1219.68	1178.75
11	1221.36	1177.67
12	1223.04	1176.58
13	1224.71	1175.49
14	1226.39	1174.40
15	1228.07	1173.31
16	1229.75	1172.22
17	1231.42	1171.13
18	1233.10	1170.04
19	1234.78	1168.95
20	1236.46	1167.86
21	1238.13	1166.77
22	1326.73	1219.17
23	1327.69	1220.93
24	1328.64	1222.69
25	1329.60	1224.44
26	1329.90	1225.00
27	1330.85	1226.76
28	1331.81	1228.52
29	1332.76	1230.27
30	1333.72	1232.03
31	1334.67	1233.79
32	1335.63	1235.55
33	1336.58	1237.30
34	1337.53	1239.06
35	1338.49	1240.82
36	1339.44	1242.58
37	1340.40	1244.33
38	1341.35	1246.09
39	1342.31	1247.85
40	1343.26	1249.61
41	1344.22	1251.37
42	1345.17	1253.12
43	1346.12	1254.88
44	1347.08	1256.64
45	1348.03	1258.40
46	1348.99	1260.15
47	1349.94	1261.91
48	1350.90	1263.67
49	1351.85	1265.43
50	1352.80	1267.18
51	1353.76	1268.94
52	1354.71	1270.70
53	1355.67	1272.46
54	1356.62	1274.22
55	1357.58	1275.97
56	1358.53	1277.73
57	1359.48	1279.49
58	1359.76	1280.00

** Corrected JANBU FOS = 1.945 ** (Fo factor = 1.071)

Failure surface No. 5 specified by 57 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1203.96	1186.98
2	1205.44	1186.02
3	1207.12	1184.93
4	1208.79	1183.84
5	1210.47	1182.75
6	1212.15	1181.66
7	1213.83	1180.57
8	1215.50	1179.48
9	1217.18	1178.39
10	1218.86	1177.30
11	1220.54	1176.21
12	1222.21	1175.12
13	1223.89	1174.04

14	1225.57	1172.95
15	1227.25	1171.86
16	1228.92	1170.77
17	1230.60	1169.68
18	1232.28	1168.59
19	1233.95	1167.50
20	1235.63	1166.41
21	1327.44	1218.00
22	1328.40	1219.76
23	1329.35	1221.52
24	1330.31	1223.28
25	1331.26	1225.03
26	1332.21	1226.79
27	1333.17	1228.55
28	1334.12	1230.31
29	1335.08	1232.06
30	1336.03	1233.82
31	1336.99	1235.58
32	1337.94	1237.34
33	1338.89	1239.10
34	1339.85	1240.85
35	1340.80	1242.61
36	1341.76	1244.37
37	1342.71	1246.13
38	1343.67	1247.88
39	1344.62	1249.64
40	1345.57	1251.40
41	1346.53	1253.16
42	1347.48	1254.91
43	1348.44	1256.67
44	1349.39	1258.43
45	1350.35	1260.19
46	1351.30	1261.95
47	1352.26	1263.70
48	1353.21	1265.46
49	1354.16	1267.22
50	1355.12	1268.98
51	1356.07	1270.73
52	1357.03	1272.49
53	1357.98	1274.25
54	1358.94	1276.01
55	1359.89	1277.76
56	1360.84	1279.52
57	1361.10	1280.00

** Corrected JANBU FOS = 1.960 ** (Fo factor = 1.072)

Failure surface No. 6 specified by 58 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1203.32	1186.66
2	1204.30	1186.03
3	1205.98	1184.94
4	1207.65	1183.85
5	1209.33	1182.76
6	1211.01	1181.67
7	1212.69	1180.58
8	1214.36	1179.49
9	1216.04	1178.40
10	1217.72	1177.32
11	1219.40	1176.23
12	1221.07	1175.14
13	1222.75	1174.05
14	1224.43	1172.96
15	1226.11	1171.87
16	1227.78	1170.78
17	1229.46	1169.69
18	1231.14	1168.60

19	1232.81	1167.51
20	1234.49	1166.42
21	1326.67	1215.02
22	1327.62	1216.77
23	1328.58	1218.53
24	1329.53	1220.29
25	1330.49	1222.05
26	1331.44	1223.80
27	1332.40	1225.56
28	1333.35	1227.32
29	1334.31	1229.08
30	1335.26	1230.84
31	1336.21	1232.59
32	1337.17	1234.35
33	1338.12	1236.11
34	1339.08	1237.87
35	1340.03	1239.62
36	1340.99	1241.38
37	1341.94	1243.14
38	1342.89	1244.90
39	1343.85	1246.65
40	1344.80	1248.41
41	1345.76	1250.17
42	1346.71	1251.93
43	1347.67	1253.69
44	1348.62	1255.44
45	1349.57	1257.20
46	1350.53	1258.96
47	1351.48	1260.72
48	1352.44	1262.47
49	1353.39	1264.23
50	1354.35	1265.99
51	1355.30	1267.75
52	1356.26	1269.50
53	1357.21	1271.26
54	1358.16	1273.02
55	1359.12	1274.78
56	1360.07	1276.54
57	1361.03	1278.29
58	1361.95	1280.00

** Corrected JANBU FOS = 1.973 ** (Fo factor = 1.074)

Failure surface No. 7 specified by 62 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1195.49	1184.03
2	1195.78	1183.85
3	1197.45	1182.76
4	1199.13	1181.67
5	1200.81	1180.58
6	1202.49	1179.49
7	1204.16	1178.40
8	1205.84	1177.31
9	1207.52	1176.22
10	1209.20	1175.13
11	1210.87	1174.04
12	1212.55	1172.95
13	1214.23	1171.86
14	1215.91	1170.77
15	1217.58	1169.69
16	1219.26	1168.60
17	1220.94	1167.51
18	1222.62	1166.42
19	1224.29	1165.33
20	1225.97	1164.24
21	1227.65	1163.15
22	1229.32	1162.06

23	1325.38	1212.52
24	1326.33	1214.27
25	1327.29	1216.03
26	1328.24	1217.79
27	1329.20	1219.55
28	1330.15	1221.30
29	1331.10	1223.06
30	1332.06	1224.82
31	1333.01	1226.58
32	1333.97	1228.33
33	1334.92	1230.09
34	1335.88	1231.85
35	1336.83	1233.61
36	1337.78	1235.37
37	1338.74	1237.12
38	1339.69	1238.88
39	1340.65	1240.64
40	1341.60	1242.40
41	1342.56	1244.15
42	1343.51	1245.91
43	1344.47	1247.67
44	1345.42	1249.43
45	1346.37	1251.18
46	1347.33	1252.94
47	1348.28	1254.70
48	1349.24	1256.46
49	1350.19	1258.22
50	1351.15	1259.97
51	1352.10	1261.73
52	1353.05	1263.49
53	1354.01	1265.25
54	1354.96	1267.00
55	1355.92	1268.76
56	1356.87	1270.52
57	1357.83	1272.28
58	1358.78	1274.03
59	1359.73	1275.79
60	1360.69	1277.55
61	1361.64	1279.31
62	1362.02	1280.00

** Corrected JANBU FOS = 1.984 ** (Fo factor = 1.074)

Failure surface No. 8 specified by 57 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1197.19	1184.40
2	1197.54	1184.17
3	1199.22	1183.08
4	1200.90	1181.99
5	1202.58	1180.90
6	1204.25	1179.81
7	1205.93	1178.72
8	1207.61	1177.63
9	1209.29	1176.54
10	1210.96	1175.45
11	1212.64	1174.37
12	1214.32	1173.28
13	1216.00	1172.19
14	1217.67	1171.10
15	1219.35	1170.01
16	1221.03	1168.92
17	1222.71	1167.83
18	1224.38	1166.74
19	1226.06	1165.65
20	1227.74	1164.56
21	1229.41	1163.47
22	1329.86	1219.48

23	1330.82	1221.23
24	1331.77	1222.99
25	1332.73	1224.75
26	1333.68	1226.51
27	1334.63	1228.27
28	1335.59	1230.02
29	1336.54	1231.78
30	1337.50	1233.54
31	1338.45	1235.30
32	1339.41	1237.05
33	1340.36	1238.81
34	1341.31	1240.57
35	1342.27	1242.33
36	1343.22	1244.08
37	1344.18	1245.84
38	1345.13	1247.60
39	1346.09	1249.36
40	1347.04	1251.12
41	1347.99	1252.87
42	1348.95	1254.63
43	1349.90	1256.39
44	1350.86	1258.15
45	1351.81	1259.90
46	1352.77	1261.66
47	1353.72	1263.42
48	1354.68	1265.18
49	1355.63	1266.93
50	1356.58	1268.69
51	1357.54	1270.45
52	1358.49	1272.21
53	1359.45	1273.97
54	1360.40	1275.72
55	1361.36	1277.48
56	1362.31	1279.24
57	1362.72	1280.00

** Corrected JANBU FOS = 1.997 ** (Fo factor = 1.069)

Failure surface No. 9 specified by 62 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1204.57	1187.29
2	1205.15	1186.92
3	1206.82	1185.83
4	1208.50	1184.74
5	1210.18	1183.65
6	1211.86	1182.56
7	1213.53	1181.47
8	1215.21	1180.38
9	1216.89	1179.29
10	1218.56	1178.20
11	1220.24	1177.11
12	1221.92	1176.02
13	1223.60	1174.93
14	1225.27	1173.85
15	1226.95	1172.76
16	1228.63	1171.67
17	1230.31	1170.58
18	1231.98	1169.49
19	1233.66	1168.40
20	1235.34	1167.31
21	1237.02	1166.22
22	1238.69	1165.13
23	1325.10	1212.39
24	1326.05	1214.15
25	1327.01	1215.91
26	1327.96	1217.67
27	1328.92	1219.43

28	1329.87	1221.18
29	1330.82	1222.94
30	1331.78	1224.70
31	1332.73	1226.46
32	1333.69	1228.21
33	1334.64	1229.97
34	1335.60	1231.73
35	1336.55	1233.49
36	1337.51	1235.24
37	1338.46	1237.00
38	1339.41	1238.76
39	1340.37	1240.52
40	1341.32	1242.28
41	1342.28	1244.03
42	1343.23	1245.79
43	1344.19	1247.55
44	1345.14	1249.31
45	1346.09	1251.06
46	1347.05	1252.82
47	1348.00	1254.58
48	1348.96	1256.34
49	1349.91	1258.09
50	1350.87	1259.85
51	1351.82	1261.61
52	1352.77	1263.37
53	1353.73	1265.13
54	1354.68	1266.88
55	1355.64	1268.64
56	1356.59	1270.40
57	1357.55	1272.16
58	1358.50	1273.91
59	1359.46	1275.67
60	1360.41	1277.43
61	1361.36	1279.19
62	1361.81	1280.00

** Corrected JANBU FOS = 2.010 ** (Fo factor = 1.076)

Failure surface No.10 specified by 64 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1201.33	1185.67
2	1201.38	1185.63
3	1203.06	1184.55
4	1204.74	1183.46
5	1206.41	1182.37
6	1208.09	1181.28
7	1209.77	1180.19
8	1211.45	1179.10
9	1213.12	1178.01
10	1214.80	1176.92
11	1216.48	1175.83
12	1218.16	1174.74
13	1219.83	1173.65
14	1221.51	1172.56
15	1223.19	1171.47
16	1224.86	1170.39
17	1226.54	1169.30
18	1228.22	1168.21
19	1229.90	1167.12
20	1231.57	1166.03
21	1233.25	1164.94
22	1234.93	1163.85
23	1236.61	1162.76
24	1325.51	1210.82
25	1326.46	1212.58
26	1327.41	1214.34
27	1328.37	1216.10

28	1329.32	1217.85
29	1330.28	1219.61
30	1331.23	1221.37
31	1332.19	1223.13
32	1333.14	1224.88
33	1334.10	1226.64
34	1335.05	1228.40
35	1336.00	1230.16
36	1336.96	1231.92
37	1337.91	1233.67
38	1338.87	1235.43
39	1339.82	1237.19
40	1340.78	1238.95
41	1341.73	1240.70
42	1342.68	1242.46
43	1343.64	1244.22
44	1344.59	1245.98
45	1345.55	1247.73
46	1346.50	1249.49
47	1347.46	1251.25
48	1348.41	1253.01
49	1349.36	1254.77
50	1350.32	1256.52
51	1351.27	1258.28
52	1352.23	1260.04
53	1353.18	1261.80
54	1354.14	1263.55
55	1355.09	1265.31
56	1356.05	1267.07
57	1357.00	1268.83
58	1357.95	1270.58
59	1358.91	1272.34
60	1359.86	1274.10
61	1360.82	1275.86
62	1361.77	1277.62
63	1362.73	1279.37
64	1363.07	1280.00

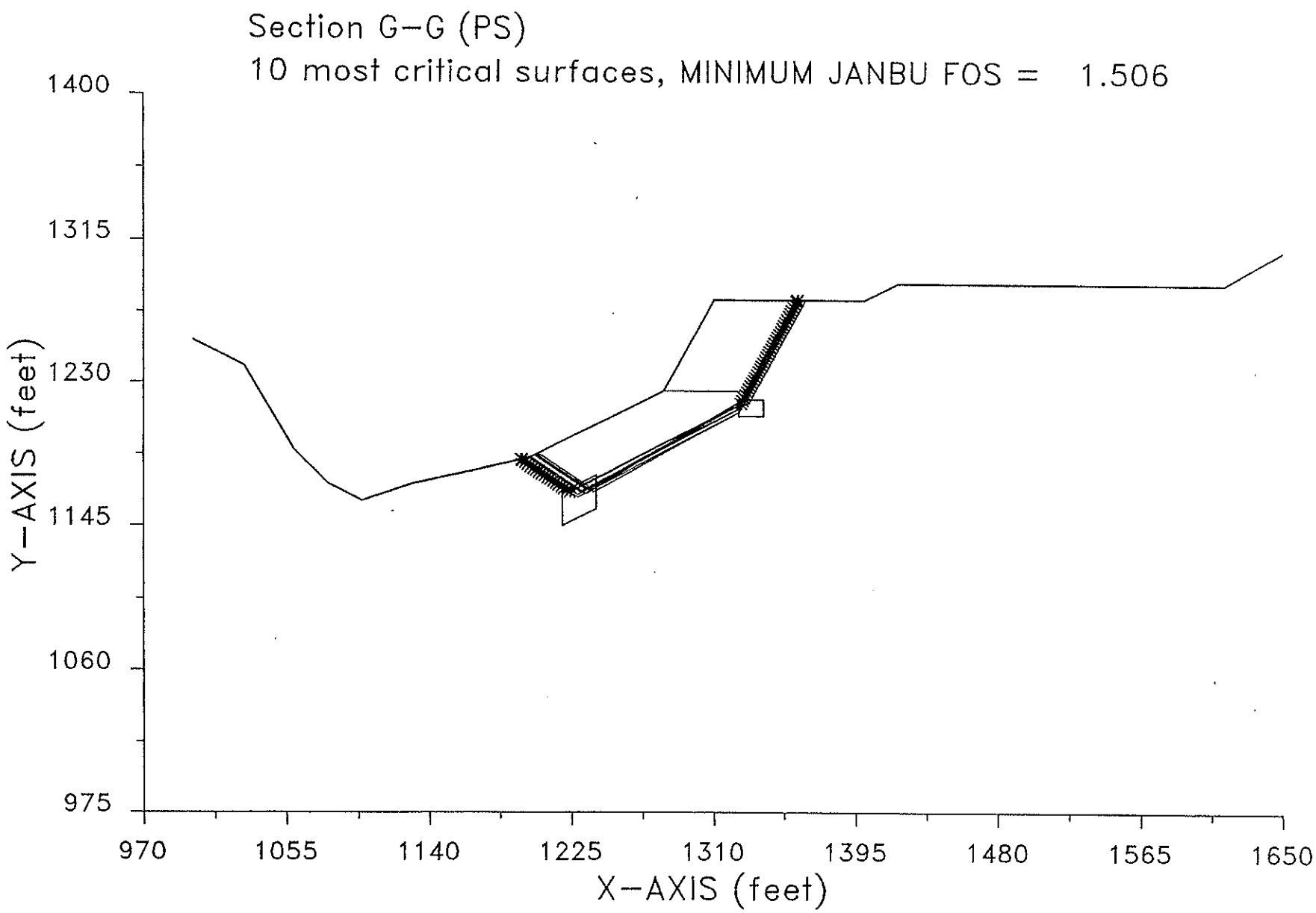
** Corrected JANBU FOS = 2.045 ** (Fo factor = 1.076)

The following is a summary of the TEN most critical surfaces

Problem Description : Section G-G

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.885	1.071	1195.46	1360.55	6.275E+05
2.	1.900	1.071	1200.13	1359.51	6.409E+05
3.	1.932	1.070	1201.18	1358.77	6.495E+05
4.	1.945	1.071	1205.69	1359.76	6.429E+05
5.	1.960	1.072	1203.96	1361.10	6.551E+05
6.	1.973	1.074	1203.32	1361.95	6.691E+05
7.	1.984	1.074	1195.49	1362.02	7.147E+05
8.	1.997	1.069	1197.19	1362.72	6.845E+05
9.	2.010	1.076	1204.57	1361.81	7.049E+05
10.	2.045	1.076	1201.33	1363.07	7.446E+05

* * * END OF FILE * * *


Section G-G (PS)
10 most critical surfaces, MINIMUM JANBU FOS = 1.506
1400
1315
1230
1145
1060
975
Y-AXIS (feet)
970
1055
1140
1225
1310
1395
1480
1565
1650
X-AXIS (feet)

XSTABL File: SECG-G1E 10-08-** 21:52

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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Problem Description : Section G-G (PS)

SEGMENT BOUNDARY COORDINATES
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13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1255.0	1030.0	1240.0	1
2	1030.0	1240.0	1060.0	1190.0	1
3	1060.0	1190.0	1080.0	1170.0	1
4	1080.0	1170.0	1100.0	1160.0	1
5	1100.0	1160.0	1130.0	1170.0	1
6	1130.0	1170.0	1200.0	1185.0	1
7	1200.0	1185.0	1280.0	1225.0	1
8	1280.0	1225.0	1310.0	1280.0	2
9	1310.0	1280.0	1360.0	1280.0	2
10	1360.0	1280.0	1400.0	1280.0	1
11	1400.0	1280.0	1420.0	1290.0	1
12	1420.0	1290.0	1615.0	1290.0	1
13	1615.0	1290.0	1650.0	1310.0	1

2 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1280.0	1225.0	1330.0	1225.0	2
2	1330.0	1225.0	1360.0	1280.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	27.00	4000.0	28.00
2	31.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

100 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 2.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1220.0	1155.0	1240.0	1165.0	20.0
2	1325.0	1215.0	1340.0	1215.0	10.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 56 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1195.46	1184.03
2	1195.93	1183.72
3	1197.61	1182.63
4	1199.29	1181.55
5	1200.96	1180.46
6	1202.64	1179.37
7	1204.32	1178.28
8	1206.00	1177.19
9	1207.67	1176.10
10	1209.35	1175.01
11	1211.03	1173.92
12	1212.71	1172.83
13	1214.38	1171.74
14	1216.06	1170.65
15	1217.74	1169.56
16	1219.41	1168.47
17	1221.09	1167.39
18	1222.77	1166.30
19	1224.45	1165.21
20	1326.58	1217.44
21	1327.54	1219.20
22	1328.49	1220.95
23	1329.44	1222.71
24	1330.40	1224.47
25	1331.35	1226.23
26	1332.31	1227.98
27	1333.26	1229.74
28	1334.22	1231.50
29	1335.17	1233.26
30	1336.12	1235.01
31	1337.08	1236.77
32	1338.03	1238.53
33	1338.99	1240.29
34	1339.94	1242.05
35	1340.90	1243.80
36	1341.85	1245.56
37	1342.80	1247.32
38	1343.76	1249.08
39	1344.71	1250.83
40	1345.67	1252.59
41	1346.62	1254.35
42	1347.58	1256.11
43	1348.53	1257.86
44	1349.48	1259.62
45	1350.44	1261.38
46	1351.39	1263.14
47	1352.35	1264.90
48	1353.30	1266.65
49	1354.26	1268.41
50	1355.21	1270.17
51	1356.17	1271.93
52	1357.12	1273.68
53	1358.07	1275.44
54	1359.03	1277.20
55	1359.98	1278.96
56	1360.55	1280.00

** Corrected JANBU FOS = 1.506 ** (Fo factor = 1.071)

Failure surface No. 2 specified by 58 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1200.13	1185.06
2	1200.94	1184.53
3	1202.62	1183.44
4	1204.30	1182.36
5	1205.98	1181.27
6	1207.65	1180.18
7	1209.33	1179.09
8	1211.01	1178.00
9	1212.69	1176.91
10	1214.36	1175.82
11	1216.04	1174.73
12	1217.72	1173.64
13	1219.40	1172.55
14	1221.07	1171.46
15	1222.75	1170.37
16	1224.43	1169.28
17	1226.10	1168.20
18	1227.78	1167.11
19	1229.46	1166.02
20	1231.14	1164.93
21	1325.29	1216.98
22	1326.25	1218.74
23	1327.20	1220.49
24	1328.16	1222.25
25	1329.11	1224.01
26	1329.65	1225.00
27	1330.60	1226.76
28	1331.56	1228.52
29	1332.51	1230.27
30	1333.47	1232.03
31	1334.42	1233.79
32	1335.38	1235.55
33	1336.33	1237.30
34	1337.28	1239.06
35	1338.24	1240.82
36	1339.19	1242.58
37	1340.15	1244.33
38	1341.10	1246.09
39	1342.06	1247.85
40	1343.01	1249.61
41	1343.96	1251.37
42	1344.92	1253.12
43	1345.87	1254.88
44	1346.83	1256.64
45	1347.78	1258.40
46	1348.74	1260.15
47	1349.69	1261.91
48	1350.64	1263.67
49	1351.60	1265.43
50	1352.55	1267.18
51	1353.51	1268.94
52	1354.46	1270.70
53	1355.42	1272.46
54	1356.37	1274.22
55	1357.32	1275.97
56	1358.28	1277.73
57	1359.23	1279.49
58	1359.51	1280.00

** Corrected JANBU FOS = 1.527 ** (Fo factor = 1.071)

Failure surface No. 3 specified by 58 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1201.18	1185.59
2	1202.17	1184.95
3	1203.84	1183.86
4	1205.52	1182.77
5	1207.20	1181.68
6	1208.88	1180.59
7	1210.55	1179.51
8	1212.23	1178.42
9	1213.91	1177.33
10	1215.58	1176.24
11	1217.26	1175.15
12	1218.94	1174.06
13	1220.62	1172.97
14	1222.29	1171.88
15	1223.97	1170.79
16	1225.65	1169.70
17	1227.33	1168.61
18	1229.00	1167.52
19	1230.68	1166.43
20	1232.36	1165.35
21	1234.04	1164.26
22	1325.77	1219.23
23	1326.73	1220.99
24	1327.68	1222.75
25	1328.64	1224.51
26	1328.90	1225.00
27	1329.86	1226.76
28	1330.81	1228.52
29	1331.77	1230.27
30	1332.72	1232.03
31	1333.68	1233.79
32	1334.63	1235.55
33	1335.58	1237.30
34	1336.54	1239.06
35	1337.49	1240.82
36	1338.45	1242.58
37	1339.40	1244.33
38	1340.36	1246.09
39	1341.31	1247.85
40	1342.26	1249.61
41	1343.22	1251.37
42	1344.17	1253.12
43	1345.13	1254.88
44	1346.08	1256.64
45	1347.04	1258.40
46	1347.99	1260.15
47	1348.95	1261.91
48	1349.90	1263.67
49	1350.85	1265.43
50	1351.81	1267.18
51	1352.76	1268.94
52	1353.72	1270.70
53	1354.67	1272.46
54	1355.63	1274.22
55	1356.58	1275.97
56	1357.53	1277.73
57	1358.49	1279.49
58	1358.77	1280.00

** Corrected JANBU FOS = 1.558 ** (Fo factor = 1.070)

Failure surface No. 4 specified by 58 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1205.69	1187.84

2	1206.26	1187.47
3	1207.94	1186.38
4	1209.62	1185.29
5	1211.30	1184.20
6	1212.97	1183.11
7	1214.65	1182.02
8	1216.33	1180.93
9	1218.00	1179.84
10	1219.68	1178.75
11	1221.36	1177.67
12	1223.04	1176.58
13	1224.71	1175.49
14	1226.39	1174.40
15	1228.07	1173.31
16	1229.75	1172.22
17	1231.42	1171.13
18	1233.10	1170.04
19	1234.78	1168.95
20	1236.46	1167.86
21	1238.13	1166.77
22	1326.73	1219.17
23	1327.69	1220.93
24	1328.64	1222.69
25	1329.60	1224.44
26	1329.90	1225.00
27	1330.85	1226.76
28	1331.81	1228.52
29	1332.76	1230.27
30	1333.72	1232.03
31	1334.67	1233.79
32	1335.63	1235.55
33	1336.58	1237.30
34	1337.53	1239.06
35	1338.49	1240.82
36	1339.44	1242.58
37	1340.40	1244.33
38	1341.35	1246.09
39	1342.31	1247.85
40	1343.26	1249.61
41	1344.22	1251.37
42	1345.17	1253.12
43	1346.12	1254.88
44	1347.08	1256.64
45	1348.03	1258.40
46	1348.99	1260.15
47	1349.94	1261.91
48	1350.90	1263.67
49	1351.85	1265.43
50	1352.80	1267.18
51	1353.76	1268.94
52	1354.71	1270.70
53	1355.67	1272.46
54	1356.62	1274.22
55	1357.58	1275.97
56	1358.53	1277.73
57	1359.48	1279.49
58	1359.76	1280.00

** Corrected JANBU FOS = 1.567 ** (Fo factor = 1.071)

Failure surface No. 5 specified by 57 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1203.96	1186.98
2	1205.44	1186.02
3	1207.12	1184.93
4	1208.79	1183.84
5	1210.47	1182.75

6	1212.15	1181.66
7	1213.83	1180.57
8	1215.50	1179.48
9	1217.18	1178.39
10	1218.86	1177.30
11	1220.54	1176.21
12	1222.21	1175.12
13	1223.89	1174.04
14	1225.57	1172.95
15	1227.25	1171.86
16	1228.92	1170.77
17	1230.60	1169.68
18	1232.28	1168.59
19	1233.95	1167.50
20	1235.63	1166.41
21	1327.44	1218.00
22	1328.40	1219.76
23	1329.35	1221.52
24	1330.31	1223.28
25	1331.26	1225.03
26	1332.21	1226.79
27	1333.17	1228.55
28	1334.12	1230.31
29	1335.08	1232.06
30	1336.03	1233.82
31	1336.99	1235.58
32	1337.94	1237.34
33	1338.89	1239.10
34	1339.85	1240.85
35	1340.80	1242.61
36	1341.76	1244.37
37	1342.71	1246.13
38	1343.67	1247.88
39	1344.62	1249.64
40	1345.57	1251.40
41	1346.53	1253.16
42	1347.48	1254.91
43	1348.44	1256.67
44	1349.39	1258.43
45	1350.35	1260.19
46	1351.30	1261.95
47	1352.26	1263.70
48	1353.21	1265.46
49	1354.16	1267.22
50	1355.12	1268.98
51	1356.07	1270.73
52	1357.03	1272.49
53	1357.98	1274.25
54	1358.94	1276.01
55	1359.89	1277.76
56	1360.84	1279.52
57	1361.10	1280.00

** Corrected JANBU FOS = 1.572 ** (Fo factor = 1.072)

Failure surface No. 6 specified by 58 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1203.32	1186.66
2	1204.30	1186.03
3	1205.98	1184.94
4	1207.65	1183.85
5	1209.33	1182.76
6	1211.01	1181.67
7	1212.69	1180.58
8	1214.36	1179.49
9	1216.04	1178.40
10	1217.72	1177.32

11	1219.40	1176.23
12	1221.07	1175.14
13	1222.75	1174.05
14	1224.43	1172.96
15	1226.11	1171.87
16	1227.78	1170.78
17	1229.46	1169.69
18	1231.14	1168.60
19	1232.81	1167.51
20	1234.49	1166.42
21	1326.67	1215.02
22	1327.62	1216.77
23	1328.58	1218.53
24	1329.53	1220.29
25	1330.49	1222.05
26	1331.44	1223.80
27	1332.40	1225.56
28	1333.35	1227.32
29	1334.31	1229.08
30	1335.26	1230.84
31	1336.21	1232.59
32	1337.17	1234.35
33	1338.12	1236.11
34	1339.08	1237.87
35	1340.03	1239.62
36	1340.99	1241.38
37	1341.94	1243.14
38	1342.89	1244.90
39	1343.85	1246.65
40	1344.80	1248.41
41	1345.76	1250.17
42	1346.71	1251.93
43	1347.67	1253.69
44	1348.62	1255.44
45	1349.57	1257.20
46	1350.53	1258.96
47	1351.48	1260.72
48	1352.44	1262.47
49	1353.39	1264.23
50	1354.35	1265.99
51	1355.30	1267.75
52	1356.26	1269.50
53	1357.21	1271.26
54	1358.16	1273.02
55	1359.12	1274.78
56	1360.07	1276.54
57	1361.03	1278.29
58	1361.95	1280.00

** Corrected JANBU FOS = 1.577 ** (Fo factor = 1.074)

Failure surface No. 7 specified by 62 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1195.49	1184.03
2	1195.78	1183.85
3	1197.45	1182.76
4	1199.13	1181.67
5	1200.81	1180.58
6	1202.49	1179.49
7	1204.16	1178.40
8	1205.84	1177.31
9	1207.52	1176.22
10	1209.20	1175.13
11	1210.87	1174.04
12	1212.55	1172.95
13	1214.23	1171.86
14	1215.91	1170.77

15	1217.58	1169.69
16	1219.26	1168.60
17	1220.94	1167.51
18	1222.62	1166.42
19	1224.29	1165.33
20	1225.97	1164.24
21	1227.65	1163.15
22	1229.32	1162.06
23	1325.38	1212.52
24	1326.33	1214.27
25	1327.29	1216.03
26	1328.24	1217.79
27	1329.20	1219.55
28	1330.15	1221.30
29	1331.10	1223.06
30	1332.06	1224.82
31	1333.01	1226.58
32	1333.97	1228.33
33	1334.92	1230.09
34	1335.88	1231.85
35	1336.83	1233.61
36	1337.78	1235.37
37	1338.74	1237.12
38	1339.69	1238.88
39	1340.65	1240.64
40	1341.60	1242.40
41	1342.56	1244.15
42	1343.51	1245.91
43	1344.47	1247.67
44	1345.42	1249.43
45	1346.37	1251.18
46	1347.33	1252.94
47	1348.28	1254.70
48	1349.24	1256.46
49	1350.19	1258.22
50	1351.15	1259.97
51	1352.10	1261.73
52	1353.05	1263.49
53	1354.01	1265.25
54	1354.96	1267.00
55	1355.92	1268.76
56	1356.87	1270.52
57	1357.83	1272.28
58	1358.78	1274.03
59	1359.73	1275.79
60	1360.69	1277.55
61	1361.64	1279.31
62	1362.02	1280.00

** Corrected JANBU FOS = 1.585 ** (Fo factor = 1.074)

Failure surface No. 8 specified by 57 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1197.19	1184.40
2	1197.54	1184.17
3	1199.22	1183.08
4	1200.90	1181.99
5	1202.58	1180.90
6	1204.25	1179.81
7	1205.93	1178.72
8	1207.61	1177.63
9	1209.29	1176.54
10	1210.96	1175.45
11	1212.64	1174.37
12	1214.32	1173.28
13	1216.00	1172.19
14	1217.67	1171.10

15	1219.35	1170.01
16	1221.03	1168.92
17	1222.71	1167.83
18	1224.38	1166.74
19	1226.06	1165.65
20	1227.74	1164.56
21	1229.41	1163.47
22	1329.86	1219.48
23	1330.82	1221.23
24	1331.77	1222.99
25	1332.73	1224.75
26	1333.68	1226.51
27	1334.63	1228.27
28	1335.59	1230.02
29	1336.54	1231.78
30	1337.50	1233.54
31	1338.45	1235.30
32	1339.41	1237.05
33	1340.36	1238.81
34	1341.31	1240.57
35	1342.27	1242.33
36	1343.22	1244.08
37	1344.18	1245.84
38	1345.13	1247.60
39	1346.09	1249.36
40	1347.04	1251.12
41	1347.99	1252.87
42	1348.95	1254.63
43	1349.90	1256.39
44	1350.86	1258.15
45	1351.81	1259.90
46	1352.77	1261.66
47	1353.72	1263.42
48	1354.68	1265.18
49	1355.63	1266.93
50	1356.58	1268.69
51	1357.54	1270.45
52	1358.49	1272.21
53	1359.45	1273.97
54	1360.40	1275.72
55	1361.36	1277.48
56	1362.31	1279.24
57	1362.72	1280.00

** Corrected JANBU FOS = 1.592 ** (Fo factor = 1.069)

Failure surface No. 9 specified by 62 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1204.57	1187.29
2	1205.15	1186.92
3	1206.82	1185.83
4	1208.50	1184.74
5	1210.18	1183.65
6	1211.86	1182.56
7	1213.53	1181.47
8	1215.21	1180.38
9	1216.89	1179.29
10	1218.56	1178.20
11	1220.24	1177.11
12	1221.92	1176.02
13	1223.60	1174.93
14	1225.27	1173.85
15	1226.95	1172.76
16	1228.63	1171.67
17	1230.31	1170.58
18	1231.98	1169.49
19	1233.66	1168.40

20	1235.34	1167.31
21	1237.02	1166.22
22	1238.69	1165.13
23	1325.10	1212.39
24	1326.05	1214.15
25	1327.01	1215.91
26	1327.96	1217.67
27	1328.92	1219.43
28	1329.87	1221.18
29	1330.82	1222.94
30	1331.78	1224.70
31	1332.73	1226.46
32	1333.69	1228.21
33	1334.64	1229.97
34	1335.60	1231.73
35	1336.55	1233.49
36	1337.51	1235.24
37	1338.46	1237.00
38	1339.41	1238.76
39	1340.37	1240.52
40	1341.32	1242.28
41	1342.28	1244.03
42	1343.23	1245.79
43	1344.19	1247.55
44	1345.14	1249.31
45	1346.09	1251.06
46	1347.05	1252.82
47	1348.00	1254.58
48	1348.96	1256.34
49	1349.91	1258.09
50	1350.87	1259.85
51	1351.82	1261.61
52	1352.77	1263.37
53	1353.73	1265.13
54	1354.68	1266.88
55	1355.64	1268.64
56	1356.59	1270.40
57	1357.55	1272.16
58	1358.50	1273.91
59	1359.46	1275.67
60	1360.41	1277.43
61	1361.36	1279.19
62	1361.81	1280.00

** Corrected JANBU FOS = 1.612 ** (Fo factor = 1.076)

Failure surface No.10 specified by 57 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1201.01	1185.50
2	1201.16	1185.41
3	1202.83	1184.32
4	1204.51	1183.23
5	1206.19	1182.14
6	1207.87	1181.05
7	1209.54	1179.96
8	1211.22	1178.87
9	1212.90	1177.78
10	1214.58	1176.69
11	1216.25	1175.61
12	1217.93	1174.52
13	1219.61	1173.43
14	1221.29	1172.34
15	1222.96	1171.25
16	1224.64	1170.16
17	1226.32	1169.07
18	1228.00	1167.98
19	1229.67	1166.89

20	1231.35	1165.80
21	1331.29	1217.92
22	1332.24	1219.67
23	1333.19	1221.43
24	1334.15	1223.19
25	1335.10	1224.95
26	1336.06	1226.71
27	1337.01	1228.46
28	1337.97	1230.22
29	1338.92	1231.98
30	1339.88	1233.74
31	1340.83	1235.49
32	1341.78	1237.25
33	1342.74	1239.01
34	1343.69	1240.77
35	1344.65	1242.52
36	1345.60	1244.28
37	1346.56	1246.04
38	1347.51	1247.80
39	1348.46	1249.56
40	1349.42	1251.31
41	1350.37	1253.07
42	1351.33	1254.83
43	1352.28	1256.59
44	1353.24	1258.34
45	1354.19	1260.10
46	1355.14	1261.86
47	1356.10	1263.62
48	1357.05	1265.37
49	1358.01	1267.13
50	1358.96	1268.89
51	1359.92	1270.65
52	1360.87	1272.41
53	1361.83	1274.16
54	1362.78	1275.92
55	1363.73	1277.68
56	1364.69	1279.44
57	1364.99	1280.00

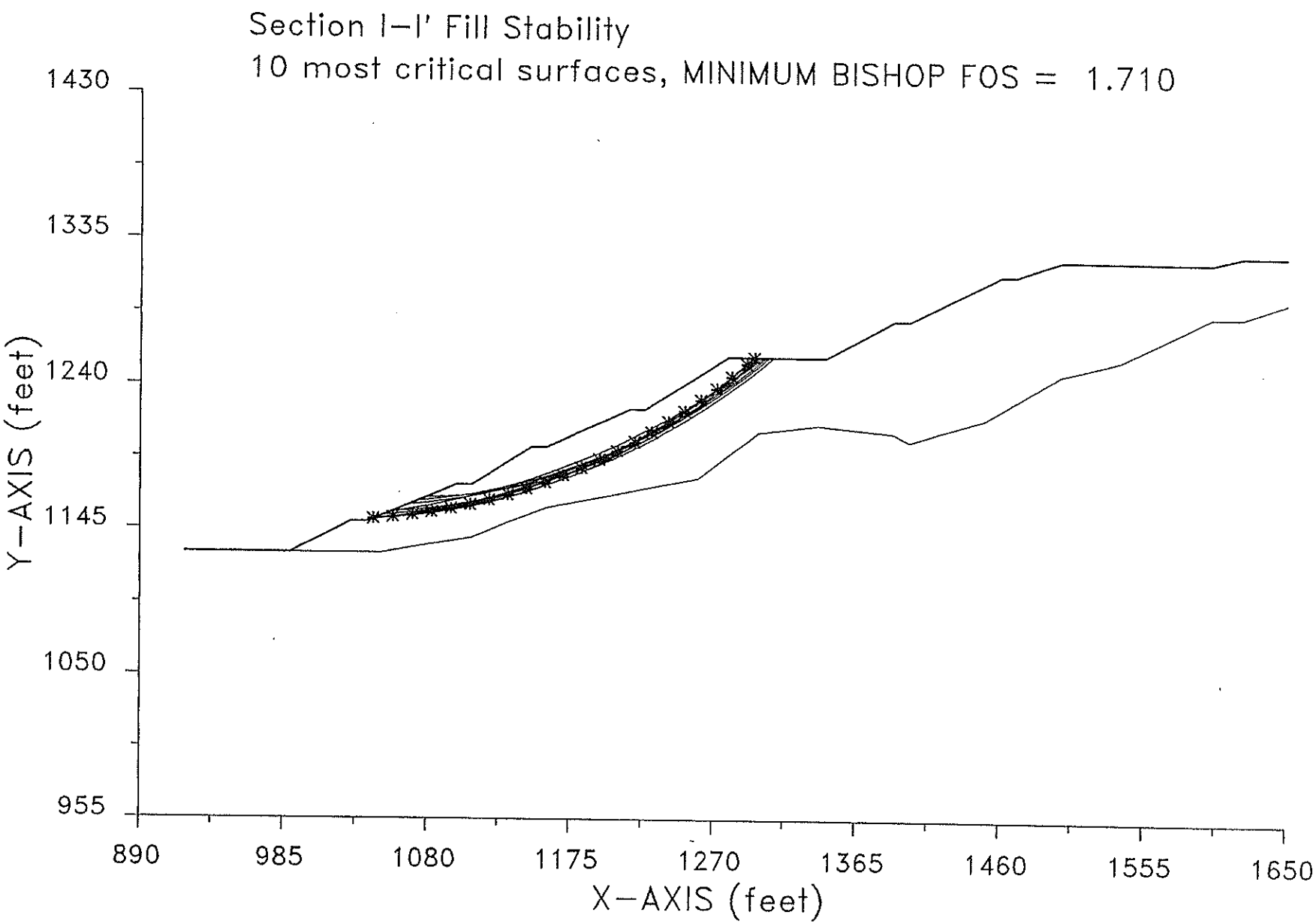
** Corrected JANBU FOS = 1.623 ** (Fo factor = 1.071)

The following is a summary of the TEN most critical surfaces

Problem Description : Section G-G (PS)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.506	1.071	1195.46	1360.55	6.208E+05
2.	1.527	1.071	1200.13	1359.51	6.353E+05
3.	1.558	1.070	1201.18	1358.77	6.447E+05
4.	1.567	1.071	1205.69	1359.76	6.379E+05
5.	1.572	1.072	1203.96	1361.10	6.487E+05
6.	1.577	1.074	1203.32	1361.95	6.614E+05
7.	1.585	1.074	1195.49	1362.02	7.071E+05
8.	1.592	1.069	1197.19	1362.72	6.770E+05
9.	1.612	1.076	1204.57	1361.81	6.977E+05
10.	1.623	1.071	1201.01	1364.99	6.831E+05

* * * END OF FILE * * *


Section I-I' Fill Stability
10 most critical surfaces, MINIMUM BISHOP FOS = 1.710
1430
1335
1240
1145
1050
955
Y-AXIS (feet)
890
985
1080
1175
1270
1365
1460
1555
1650
X-AXIS (feet)

XSTABL File: SECTI-I 10-05-** 10:42

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section I-I' Fill Stability

SEGMENT BOUNDARY COORDINATES
---

19 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	920.0	1130.0	990.0	1130.0	1
2	990.0	1130.0	1030.0	1150.0	1
3	1030.0	1150.0	1040.0	1150.0	1
4	1040.0	1150.0	1100.0	1175.0	1
5	1100.0	1175.0	1110.0	1175.0	1
6	1110.0	1175.0	1150.0	1200.0	1
7	1150.0	1200.0	1160.0	1200.0	1
8	1160.0	1200.0	1215.0	1225.0	1
9	1215.0	1225.0	1225.0	1225.0	1
10	1225.0	1225.0	1280.0	1260.0	1
11	1280.0	1260.0	1345.0	1260.0	1
12	1345.0	1260.0	1390.0	1285.0	1
13	1390.0	1285.0	1400.0	1285.0	1
14	1400.0	1285.0	1460.0	1315.0	1
15	1460.0	1315.0	1470.0	1315.0	1
16	1470.0	1315.0	1500.0	1325.0	1
17	1500.0	1325.0	1600.0	1325.0	1
18	1600.0	1325.0	1620.0	1330.0	1
19	1620.0	1330.0	1650.0	1330.0	1

15 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	990.0	1130.0	1050.0	1130.0	2
2	1050.0	1130.0	1110.0	1140.0	2
3	1110.0	1140.0	1160.0	1160.0	2
4	1160.0	1160.0	1260.0	1180.0	2
5	1260.0	1180.0	1300.0	1210.0	2
6	1300.0	1210.0	1340.0	1215.0	2
7	1340.0	1215.0	1390.0	1210.0	2
8	1390.0	1210.0	1400.0	1205.0	2
9	1400.0	1205.0	1450.0	1220.0	2
10	1450.0	1220.0	1500.0	1250.0	2
11	1500.0	1250.0	1540.0	1260.0	2
12	1540.0	1260.0	1580.0	1280.0	2

13	1580.0	1280.0	1600.0	1290.0	2
14	1600.0	1290.0	1620.0	1290.0	2
15	1620.0	1290.0	1650.0	1300.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1010.0 ft
and x = 1120.0 ft

Each surface terminates between x = 1230.0 ft
and x = 1310.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

13.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -15.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1044.74	1151.97
2	1057.68	1153.16
3	1070.59	1154.75
4	1083.43	1156.73
5	1096.22	1159.09
6	1108.92	1161.85
7	1121.54	1164.99
8	1134.05	1168.51
9	1146.45	1172.42
10	1158.73	1176.69
11	1170.87	1181.34
12	1182.86	1186.36
13	1194.69	1191.74
14	1206.36	1197.48
15	1217.84	1203.57
16	1229.14	1210.01
17	1240.23	1216.79
18	1251.11	1223.90
19	1261.77	1231.35
20	1272.20	1239.11
21	1282.38	1247.19
22	1292.32	1255.57
23	1297.26	1260.00

**** Simplified BISHOP FOS = 1.710 ****

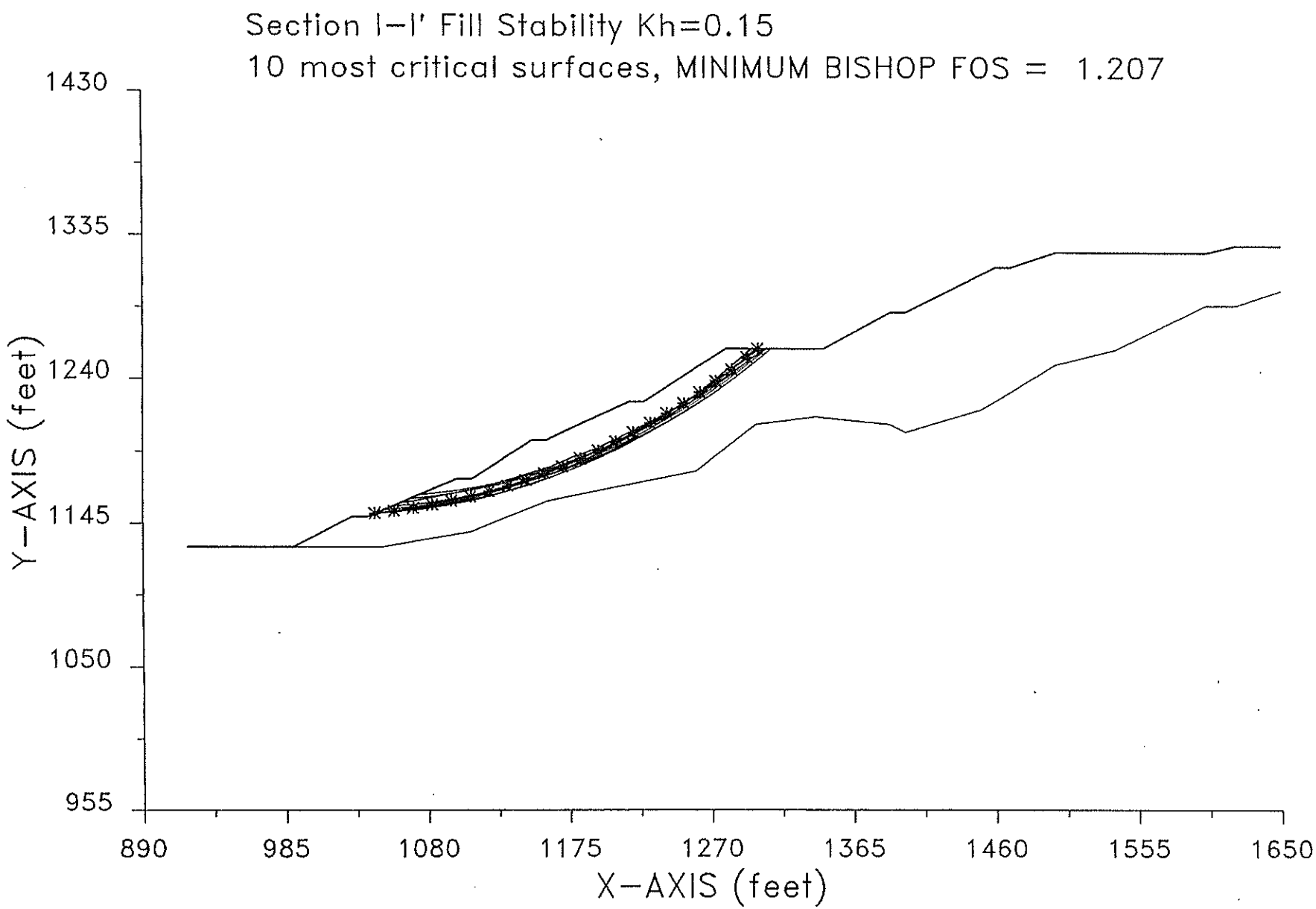
The following is a summary of the TEN most critical surfaces

Problem Description : Section I-I' Fill Stability

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.710	1012.12	1577.51	426.79	1044.74	1297.26	1.448E+08
2.	1.711	995.05	1627.56	478.17	1044.74	1300.89	1.571E+08
3.	1.711	1035.22	1535.54	379.33	1056.32	1295.84	1.231E+08
4.	1.712	1025.75	1550.49	398.97	1044.74	1299.16	1.506E+08
5.	1.713	1072.95	1488.14	321.76	1079.47	1299.81	1.012E+08
6.	1.713	1037.87	1575.88	413.40	1073.68	1304.51	1.223E+08
7.	1.714	1032.18	1582.50	422.39	1067.89	1304.95	1.318E+08
8.	1.716	1012.27	1611.66	458.87	1050.53	1306.99	1.669E+08
9.	1.720	981.30	1683.17	531.69	1056.32	1303.16	1.482E+08
10.	1.721	1013.34	1608.76	457.87	1044.74	1309.89	1.867E+08

* * * END OF FILE * * *

SECTI-I3 10-05-** 10:43



XSTABL File: SECTI-I3 10-05-** 10:43

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*           Method of Slices            *
*                                       *
*         Copyright (C) 1992 Â 95       *
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*        Moscow, ID 83843, U.S.A.       *
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*                                       *
*  Ver. 5.105                95 Â 1437  *
*****************************************
```

Problem Description : Section I-I' Fill Stability Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

19 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	920.0	1130.0	990.0	1130.0	1
2	990.0	1130.0	1030.0	1150.0	1
3	1030.0	1150.0	1040.0	1150.0	1
4	1040.0	1150.0	1100.0	1175.0	1
5	1100.0	1175.0	1110.0	1175.0	1
6	1110.0	1175.0	1150.0	1200.0	1
7	1150.0	1200.0	1160.0	1200.0	1
8	1160.0	1200.0	1215.0	1225.0	1
9	1215.0	1225.0	1225.0	1225.0	1
10	1225.0	1225.0	1280.0	1260.0	1
11	1280.0	1260.0	1345.0	1260.0	1
12	1345.0	1260.0	1390.0	1285.0	1
13	1390.0	1285.0	1400.0	1285.0	1
14	1400.0	1285.0	1460.0	1315.0	1
15	1460.0	1315.0	1470.0	1315.0	1
16	1470.0	1315.0	1500.0	1325.0	1
17	1500.0	1325.0	1600.0	1325.0	1
18	1600.0	1325.0	1620.0	1330.0	1
19	1620.0	1330.0	1650.0	1330.0	1

15 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	990.0	1130.0	1050.0	1130.0	2
2	1050.0	1130.0	1110.0	1140.0	2
3	1110.0	1140.0	1160.0	1160.0	2
4	1160.0	1160.0	1260.0	1180.0	2
5	1260.0	1180.0	1300.0	1210.0	2
6	1300.0	1210.0	1340.0	1215.0	2
7	1340.0	1215.0	1390.0	1210.0	2
8	1390.0	1210.0	1400.0	1205.0	2
9	1400.0	1205.0	1450.0	1220.0	2
10	1450.0	1220.0	1500.0	1250.0	2
11	1500.0	1250.0	1540.0	1260.0	2
12	1540.0	1260.0	1580.0	1280.0	2

13	1580.0	1280.0	1600.0	1290.0	2
14	1600.0	1290.0	1620.0	1290.0	2
15	1620.0	1290.0	1650.0	1300.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1010.0 ft
and x = 1120.0 ft

Each surface terminates between x = 1230.0 ft
and x = 1310.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

13.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -15.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self

weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 23 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1044.74	1151.97
2	1057.65	1153.50
3	1070.51	1155.38
4	1083.32	1157.60
5	1096.06	1160.18
6	1108.73	1163.09
7	1121.31	1166.36
8	1133.80	1169.96
9	1146.19	1173.90
10	1158.47	1178.17
11	1170.63	1182.78
12	1182.65	1187.72
13	1194.54	1192.98
14	1206.28	1198.56
15	1217.87	1204.46
16	1229.28	1210.67
17	1240.53	1217.19
18	1251.60	1224.02
19	1262.47	1231.14
20	1273.15	1238.55
21	1283.62	1246.25
22	1293.88	1254.24
23	1300.89	1260.00

**** Simplified BISHOP FOS = 1.207 ****

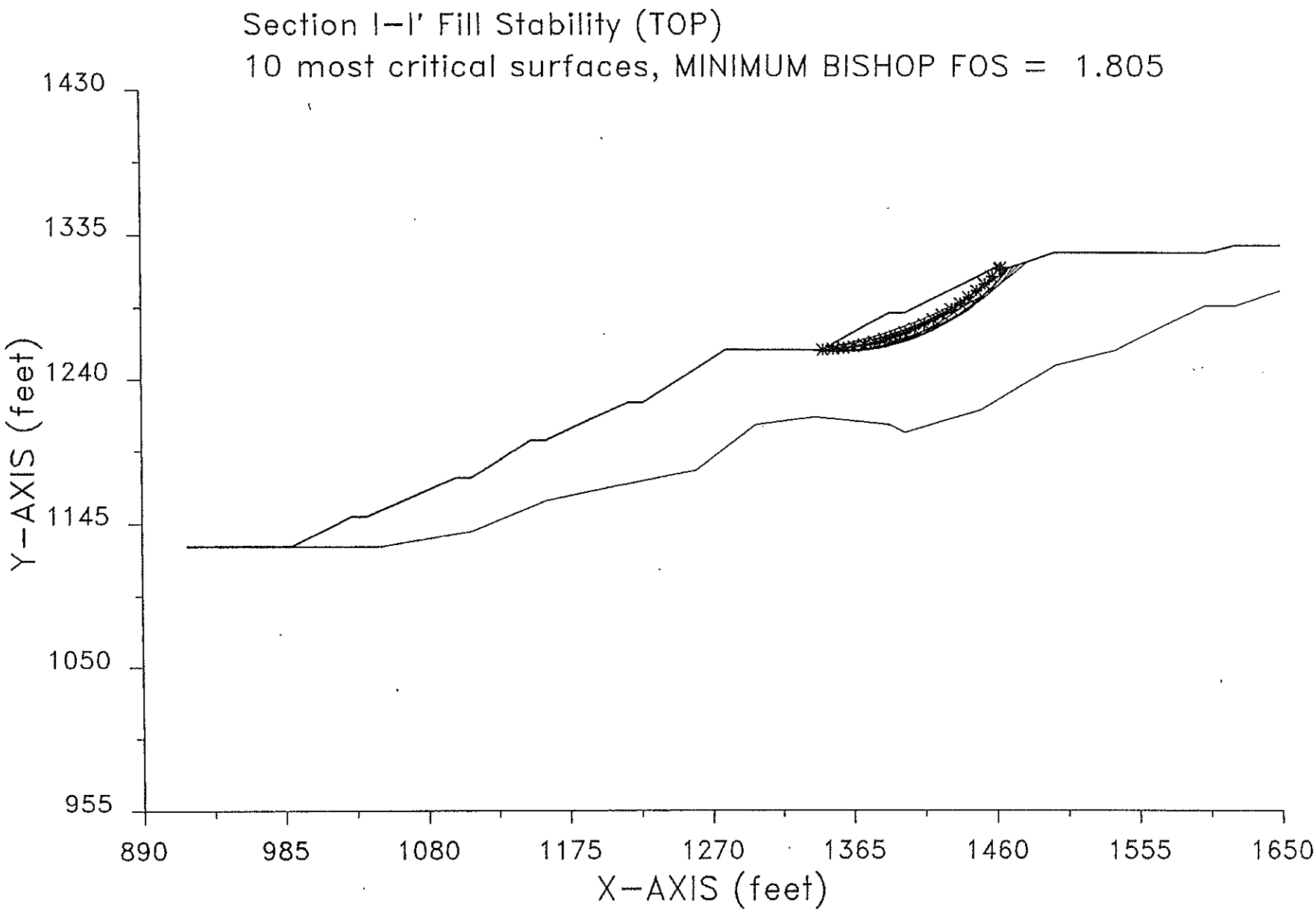
The following is a summary of the TEN most critical surfaces

Problem Description : Section I-I' Fill Stability Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.207	995.05	1627.56	478.17	1044.74	1300.89	1.484E+08
2.	1.208	1012.12	1577.51	426.79	1044.74	1297.26	1.368E+08
3.	1.208	1012.27	1611.66	458.87	1050.53	1306.99	1.577E+08
4.	1.209	1025.75	1550.49	398.97	1044.74	1299.16	1.423E+08
5.	1.210	1032.18	1582.50	422.39	1067.89	1304.95	1.246E+08
6.	1.210	1013.34	1608.76	457.87	1044.74	1309.89	1.765E+08
7.	1.210	1037.87	1575.88	413.40	1073.68	1304.51	1.156E+08
8.	1.211	1035.22	1535.54	379.33	1056.32	1295.84	1.163E+08
9.	1.212	1025.99	1594.14	438.39	1056.32	1309.72	1.558E+08
10.	1.213	993.54	1670.02	515.39	1062.10	1305.76	1.390E+08

* * * END OF FILE * * *

SECTI-IT 10-05-** 10:44



XSTABL File: SECTI-IT 10-05-** 10:44

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*        Moscow, ID 83843, U.S.A.       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section I-I' Fill Stability (TOP)

SEGMENT BOUNDARY COORDINATES
---

19 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	920.0	1130.0	990.0	1130.0	1
2	990.0	1130.0	1030.0	1150.0	1
3	1030.0	1150.0	1040.0	1150.0	1
4	1040.0	1150.0	1100.0	1175.0	1
5	1100.0	1175.0	1110.0	1175.0	1
6	1110.0	1175.0	1150.0	1200.0	1
7	1150.0	1200.0	1160.0	1200.0	1
8	1160.0	1200.0	1215.0	1225.0	1
9	1215.0	1225.0	1225.0	1225.0	1
10	1225.0	1225.0	1280.0	1260.0	1
11	1280.0	1260.0	1345.0	1260.0	1
12	1345.0	1260.0	1390.0	1285.0	1
13	1390.0	1285.0	1400.0	1285.0	1
14	1400.0	1285.0	1460.0	1315.0	1
15	1460.0	1315.0	1470.0	1315.0	1
16	1470.0	1315.0	1500.0	1325.0	1
17	1500.0	1325.0	1600.0	1325.0	1
18	1600.0	1325.0	1620.0	1330.0	1
19	1620.0	1330.0	1650.0	1330.0	1

15 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	990.0	1130.0	1050.0	1130.0	2
2	1050.0	1130.0	1110.0	1140.0	2
3	1110.0	1140.0	1160.0	1160.0	2
4	1160.0	1160.0	1260.0	1180.0	2
5	1260.0	1180.0	1300.0	1210.0	2
6	1300.0	1210.0	1340.0	1215.0	2
7	1340.0	1215.0	1390.0	1210.0	2
8	1390.0	1210.0	1400.0	1205.0	2
9	1400.0	1205.0	1450.0	1220.0	2
10	1450.0	1220.0	1500.0	1250.0	2
11	1500.0	1250.0	1540.0	1260.0	2
12	1540.0	1260.0	1580.0	1280.0	2

13	1580.0	1280.0	1600.0	1290.0	2
14	1600.0	1290.0	1620.0	1290.0	2
15	1620.0	1290.0	1650.0	1300.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1320.0 ft
and x = 1380.0 ft

Each surface terminates between x = 1450.0 ft
and x = 1520.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

7.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -15.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1345.26	1260.15
2	1352.25	1260.55
3	1359.22	1261.25
4	1366.15	1262.23
5	1373.03	1263.50
6	1379.86	1265.05
7	1386.61	1266.89
8	1393.29	1268.99
9	1399.87	1271.38
10	1406.35	1274.03
11	1412.71	1276.94
12	1418.95	1280.12
13	1425.05	1283.55
14	1431.01	1287.23
15	1436.80	1291.15
16	1442.44	1295.31
17	1447.89	1299.70
18	1453.16	1304.31
19	1458.23	1309.13
20	1463.11	1314.15
21	1463.86	1315.00

**** Simplified BISHOP FOS = 1.805 ****

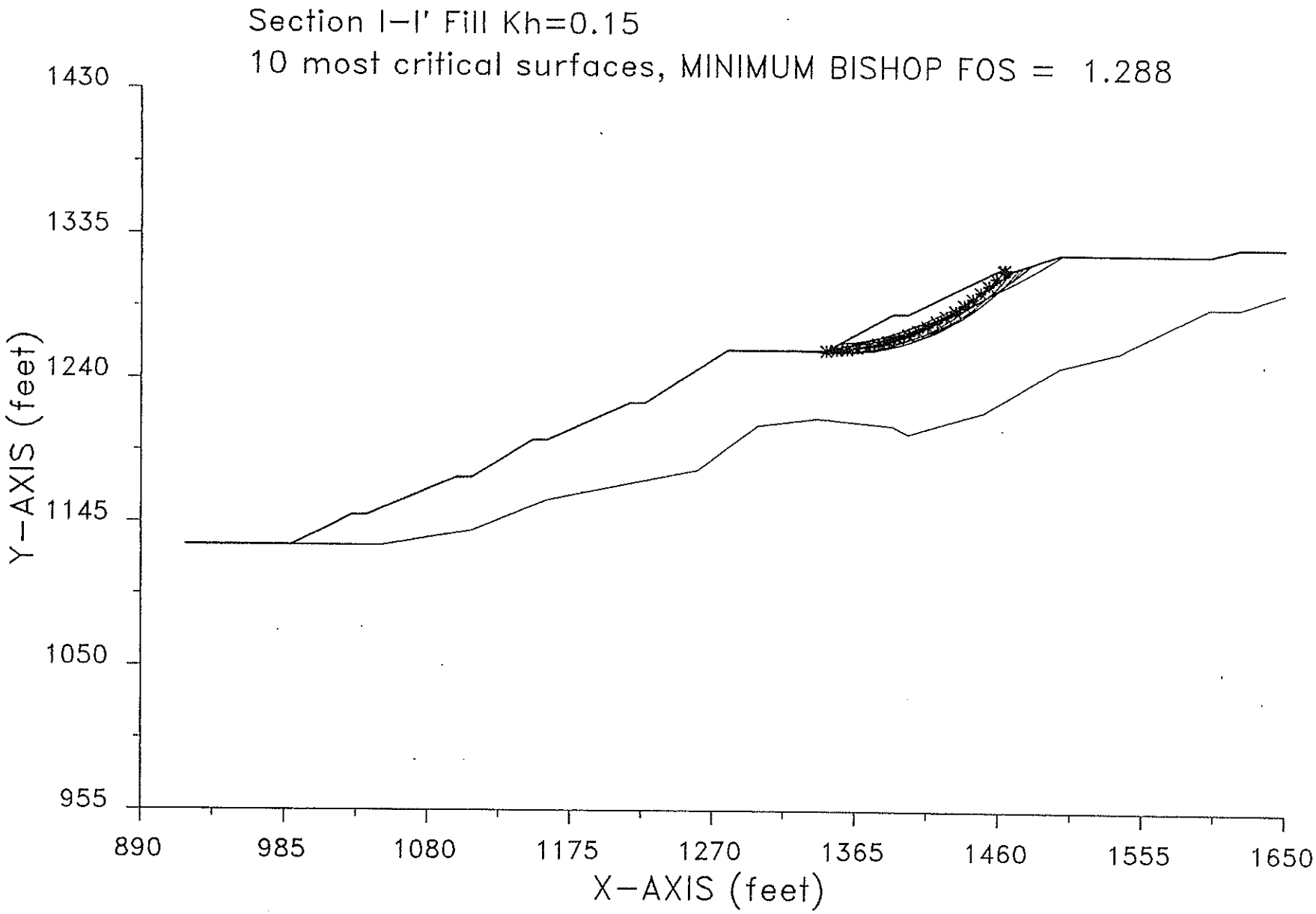
The following is a summary of the TEN most critical surfaces

Problem Description : Section I-I' Fill Stability (TOP)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.805	1338.84	1429.84	169.82	1345.26	1463.86	1.886E+07
2.	1.819	1327.92	1470.54	209.64	1348.42	1468.46	2.138E+07
3.	1.841	1304.56	1529.13	270.80	1348.42	1470.55	2.478E+07
4.	1.841	1355.08	1393.46	133.67	1345.26	1463.36	1.832E+07
5.	1.845	1326.99	1497.33	236.40	1348.42	1482.28	2.996E+07
6.	1.850	1353.99	1404.72	145.86	1335.79	1468.93	2.319E+07
7.	1.857	1354.87	1422.72	160.95	1348.42	1476.26	2.451E+07
8.	1.857	1353.64	1392.40	133.59	1335.79	1462.48	1.884E+07
9.	1.859	1357.33	1399.36	140.56	1338.95	1469.61	2.337E+07
10.	1.859	1354.46	1411.30	152.45	1335.79	1473.47	2.592E+07

* * * END OF FILE * * *

Sec I-I4 10-05-** 10:44



XSTABL File: SECTI-I4 10-05-** 10:44

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*      Copyright (C) 1992 Ã 95          *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437 *
*****************************************
```

Problem Description : Section I-I' Fill Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

19 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	920.0	1130.0	990.0	1130.0	1
2	990.0	1130.0	1030.0	1150.0	1
3	1030.0	1150.0	1040.0	1150.0	1
4	1040.0	1150.0	1100.0	1175.0	1
5	1100.0	1175.0	1110.0	1175.0	1
6	1110.0	1175.0	1150.0	1200.0	1
7	1150.0	1200.0	1160.0	1200.0	1
8	1160.0	1200.0	1215.0	1225.0	1
9	1215.0	1225.0	1225.0	1225.0	1
10	1225.0	1225.0	1280.0	1260.0	1
11	1280.0	1260.0	1345.0	1260.0	1
12	1345.0	1260.0	1390.0	1285.0	1
13	1390.0	1285.0	1400.0	1285.0	1
14	1400.0	1285.0	1460.0	1315.0	1
15	1460.0	1315.0	1470.0	1315.0	1
16	1470.0	1315.0	1500.0	1325.0	1
17	1500.0	1325.0	1600.0	1325.0	1
18	1600.0	1325.0	1620.0	1330.0	1
19	1620.0	1330.0	1650.0	1330.0	1

15 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	990.0	1130.0	1050.0	1130.0	2
2	1050.0	1130.0	1110.0	1140.0	2
3	1110.0	1140.0	1160.0	1160.0	2
4	1160.0	1160.0	1260.0	1180.0	2
5	1260.0	1180.0	1300.0	1210.0	2
6	1300.0	1210.0	1340.0	1215.0	2
7	1340.0	1215.0	1390.0	1210.0	2
8	1390.0	1210.0	1400.0	1205.0	2
9	1400.0	1205.0	1450.0	1220.0	2
10	1450.0	1220.0	1500.0	1250.0	2
11	1500.0	1250.0	1540.0	1260.0	2
12	1540.0	1260.0	1580.0	1280.0	2

13	1580.0	1280.0	1600.0	1290.0	2
14	1600.0	1290.0	1620.0	1290.0	2
15	1620.0	1290.0	1650.0	1300.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1320.0 ft
and x = 1380.0 ft

Each surface terminates between x = 1450.0 ft
and x = 1520.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

7.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -15.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1345.26	1260.15
2	1352.25	1260.55
3	1359.22	1261.25
4	1366.15	1262.23
5	1373.03	1263.50
6	1379.86	1265.05
7	1386.61	1266.89
8	1393.29	1268.99
9	1399.87	1271.38
10	1406.35	1274.03
11	1412.71	1276.94
12	1418.95	1280.12
13	1425.05	1283.55
14	1431.01	1287.23
15	1436.80	1291.15
16	1442.44	1295.31
17	1447.89	1299.70
18	1453.16	1304.31
19	1458.23	1309.13
20	1463.11	1314.15
21	1463.86	1315.00

**** Simplified BISHOP FOS = 1.288 ****

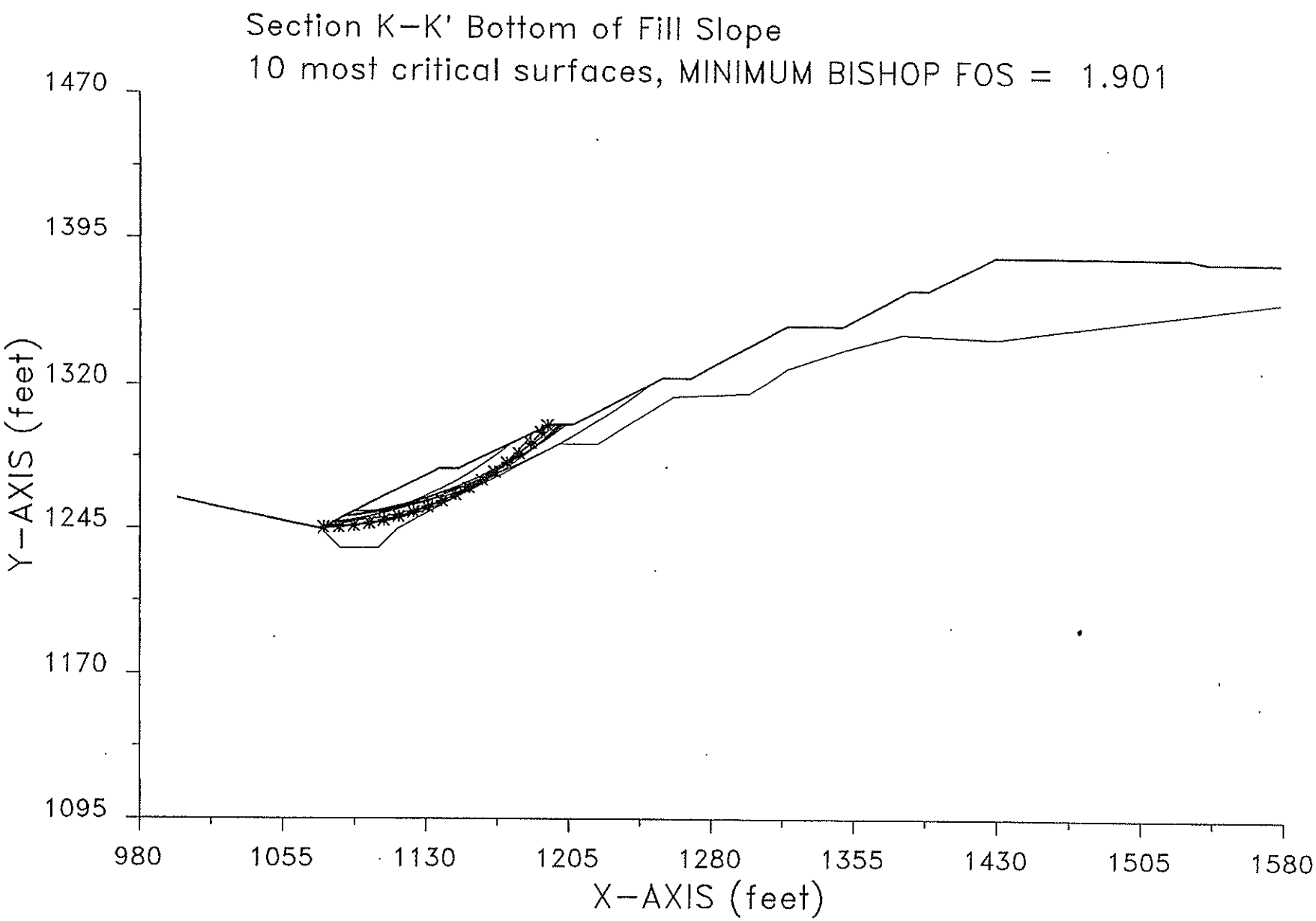
The following is a summary of the TEN most critical surfaces

Problem Description : Section I-I' Fill Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.288	1338.84	1429.84	169.82	1345.26	1463.86	1.788E+07
2.	1.292	1327.92	1470.54	209.64	1348.42	1468.46	2.027E+07
3.	1.300	1326.99	1497.33	236.40	1348.42	1482.28	2.843E+07
4.	1.305	1304.56	1529.13	270.80	1348.42	1470.55	2.350E+07
5.	1.316	1354.87	1422.72	160.95	1348.42	1476.26	2.330E+07
6.	1.317	1355.08	1393.46	133.67	1345.26	1463.36	1.741E+07
7.	1.320	1353.99	1404.72	145.86	1335.79	1468.93	2.206E+07
8.	1.323	1340.08	1476.34	211.44	1354.74	1480.88	2.331E+07
9.	1.323	1354.46	1411.30	152.45	1335.79	1473.47	2.467E+07
10.	1.324	1252.54	1704.99	454.40	1345.26	1501.78	5.503E+07

* * * END OF FILE * * *

SEC/K-K1 10-06-** 10:06



XSTABL File: SECTK-K1 10-06-** 10:06

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section K-K' Bottom of Fill Slope

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1260.0	1050.0	1250.0	2
2	1050.0	1250.0	1075.0	1245.0	2
3	1075.0	1245.0	1137.0	1277.0	1
4	1137.0	1277.0	1147.0	1277.0	1
5	1147.0	1277.0	1195.0	1300.0	1
6	1195.0	1300.0	1207.0	1300.0	1
7	1207.0	1300.0	1254.0	1325.0	1
8	1254.0	1325.0	1269.0	1325.0	1
9	1269.0	1325.0	1320.0	1352.0	1
10	1320.0	1352.0	1349.0	1352.0	1
11	1349.0	1352.0	1384.0	1371.0	1
12	1384.0	1371.0	1394.0	1371.0	1
13	1394.0	1371.0	1429.0	1388.0	1
14	1429.0	1388.0	1530.0	1388.0	1
15	1530.0	1388.0	1540.0	1386.0	1
16	1540.0	1386.0	1578.0	1386.0	1

12 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1075.0	1245.0	1085.0	1235.0	2
2	1085.0	1235.0	1105.0	1235.0	2
3	1105.0	1235.0	1115.0	1245.0	2
4	1115.0	1245.0	1200.0	1290.0	2
5	1200.0	1290.0	1220.0	1290.0	2
6	1220.0	1290.0	1260.0	1315.0	2
7	1260.0	1315.0	1300.0	1317.0	2
8	1300.0	1317.0	1320.0	1330.0	2
9	1320.0	1330.0	1350.0	1340.0	2
10	1350.0	1340.0	1380.0	1348.0	2
11	1380.0	1348.0	1430.0	1346.0	2
12	1430.0	1346.0	1578.0	1366.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	110.0	120.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ĩ-value (degrees)
1	.00	4000.0	28.00
2	20.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1050.0 ft
and x = 1100.0 ft

Each surface terminates between x = 1170.0 ft
and x = 1250.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

8.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

```
*********************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
*********************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*********************************************************************

   ----------------------------------------------------------
   USER SELECTED option to maintain strength greater than zero
   ----------------------------------------------------------


   Factors of safety have been calculated by the :

   * * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


     The most critical circular failure surface
     is specified by 18 coordinate points

          Point      x-surf      y-surf
           No.        (ft)        (ft)

            1       1076.32     1245.68
            2       1084.31     1246.04
            3       1092.27     1246.80
            4       1100.19     1247.94
            5       1108.04     1249.48
            6       1115.81     1251.39
            7       1123.47     1253.69
            8       1131.01     1256.36
            9       1138.41     1259.40
           10       1145.66     1262.79
           11       1152.72     1266.54
           12       1159.60     1270.63
           13       1166.27     1275.06
           14       1172.71     1279.80
           15       1178.91     1284.86
           16       1184.85     1290.21
           17       1190.52     1295.85
           18       1193.76     1299.41

   ****  Simplified BISHOP FOS =   1.901  ****

   The following is a summary of the TEN most critical surfaces

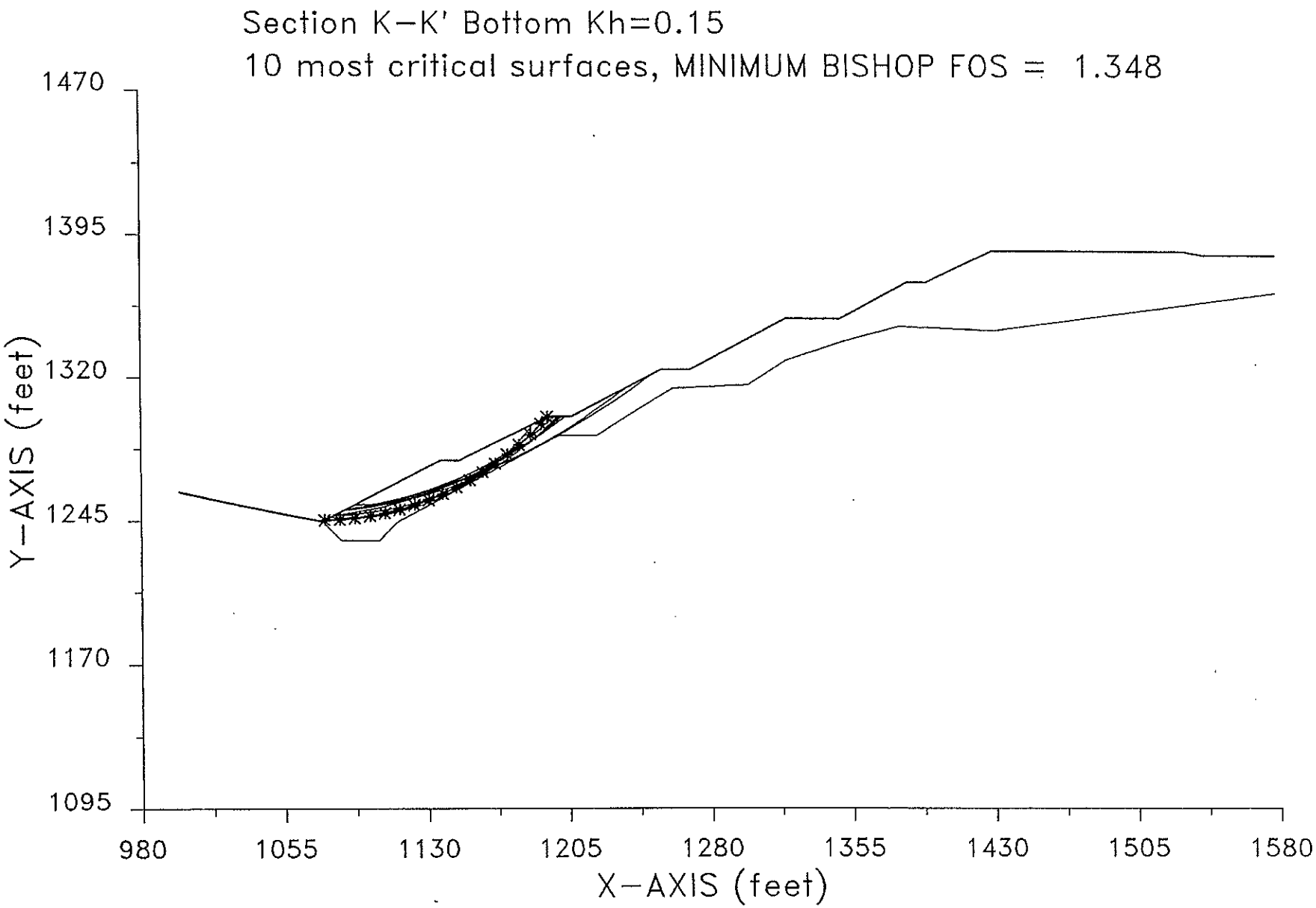
   Problem Description : Section K-K' Bottom of Fill Slope

         FOS      Circle Center    Radius  Initial Terminal  Resisting
      (BISHOP)  x-coord  y-coord           x-coord  x-coord   Moment
                  (ft)     (ft)     (ft)     (ft)     (ft)   (ft-lb)

   1.    1.901   1072.92  1408.49  162.84  1076.32  1193.76  1.632E+07
   2.    1.913   1077.88  1417.02  168.67  1081.58  1199.28  1.725E+07
   3.    1.924   1053.61  1480.98  234.27  1081.58  1202.33  2.075E+07
   4.    1.951   1086.12  1373.98  127.14  1078.95  1186.38  1.269E+07
   5.    1.951   1069.65  1449.90  199.53  1086.84  1201.32  1.693E+07
   6.    1.972   1065.02  1451.87  201.94  1086.84  1198.07  1.502E+07
   7.    1.976   1049.99  1504.21  255.76  1086.84  1203.99  2.021E+07
   8.    1.984   1090.68  1406.97  153.15  1092.11  1200.24  1.345E+07
   9.    1.996   1041.22  1455.21  212.45  1076.32  1175.70  1.176E+07
  10.    1.998   1028.15  1605.55  359.26  1086.84  1249.33  4.015E+07

                  * * *  END OF FILE  * * *
```

SECTK-K5 10-06-** 10:05



XSTABL File: SECTK-K5 10-06-** 10:05

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                 95 Ã 1437 *
*****************************************
```

Problem Description : Section K-K' Bottom Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1260.0	1050.0	1250.0	2
2	1050.0	1250.0	1075.0	1245.0	2
3	1075.0	1245.0	1137.0	1277.0	1
4	1137.0	1277.0	1147.0	1277.0	1
5	1147.0	1277.0	1195.0	1300.0	1
6	1195.0	1300.0	1207.0	1300.0	1
7	1207.0	1300.0	1254.0	1325.0	1
8	1254.0	1325.0	1269.0	1325.0	1
9	1269.0	1325.0	1320.0	1352.0	1
10	1320.0	1352.0	1349.0	1352.0	1
11	1349.0	1352.0	1384.0	1371.0	1
12	1384.0	1371.0	1394.0	1371.0	1
13	1394.0	1371.0	1429.0	1388.0	1
14	1429.0	1388.0	1530.0	1388.0	1
15	1530.0	1388.0	1540.0	1386.0	1
16	1540.0	1386.0	1578.0	1386.0	1

12 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1075.0	1245.0	1085.0	1235.0	2
2	1085.0	1235.0	1105.0	1235.0	2
3	1105.0	1235.0	1115.0	1245.0	2
4	1115.0	1245.0	1200.0	1290.0	2
5	1200.0	1290.0	1220.0	1290.0	2
6	1220.0	1290.0	1260.0	1315.0	2
7	1260.0	1315.0	1300.0	1317.0	2
8	1300.0	1317.0	1320.0	1330.0	2
9	1320.0	1330.0	1350.0	1340.0	2
10	1350.0	1340.0	1380.0	1348.0	2
11	1380.0	1348.0	1430.0	1346.0	2
12	1430.0	1346.0	1578.0	1366.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	110.0	120.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	.00	4000.0	28.00
2	20.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1050.0 ft
and x = 1100.0 ft

Each surface terminates between x = 1170.0 ft
and x = 1250.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

8.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined

within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1076.32	1245.68
2	1084.31	1246.04
3	1092.27	1246.80
4	1100.19	1247.94
5	1108.04	1249.48
6	1115.81	1251.39
7	1123.47	1253.69
8	1131.01	1256.36
9	1138.41	1259.40
10	1145.66	1262.79
11	1152.72	1266.54
12	1159.60	1270.63
13	1166.27	1275.06
14	1172.71	1279.80
15	1178.91	1284.86
16	1184.85	1290.21
17	1190.52	1295.85
18	1193.76	1299.41

**** Simplified BISHOP FOS = 1.348 ****

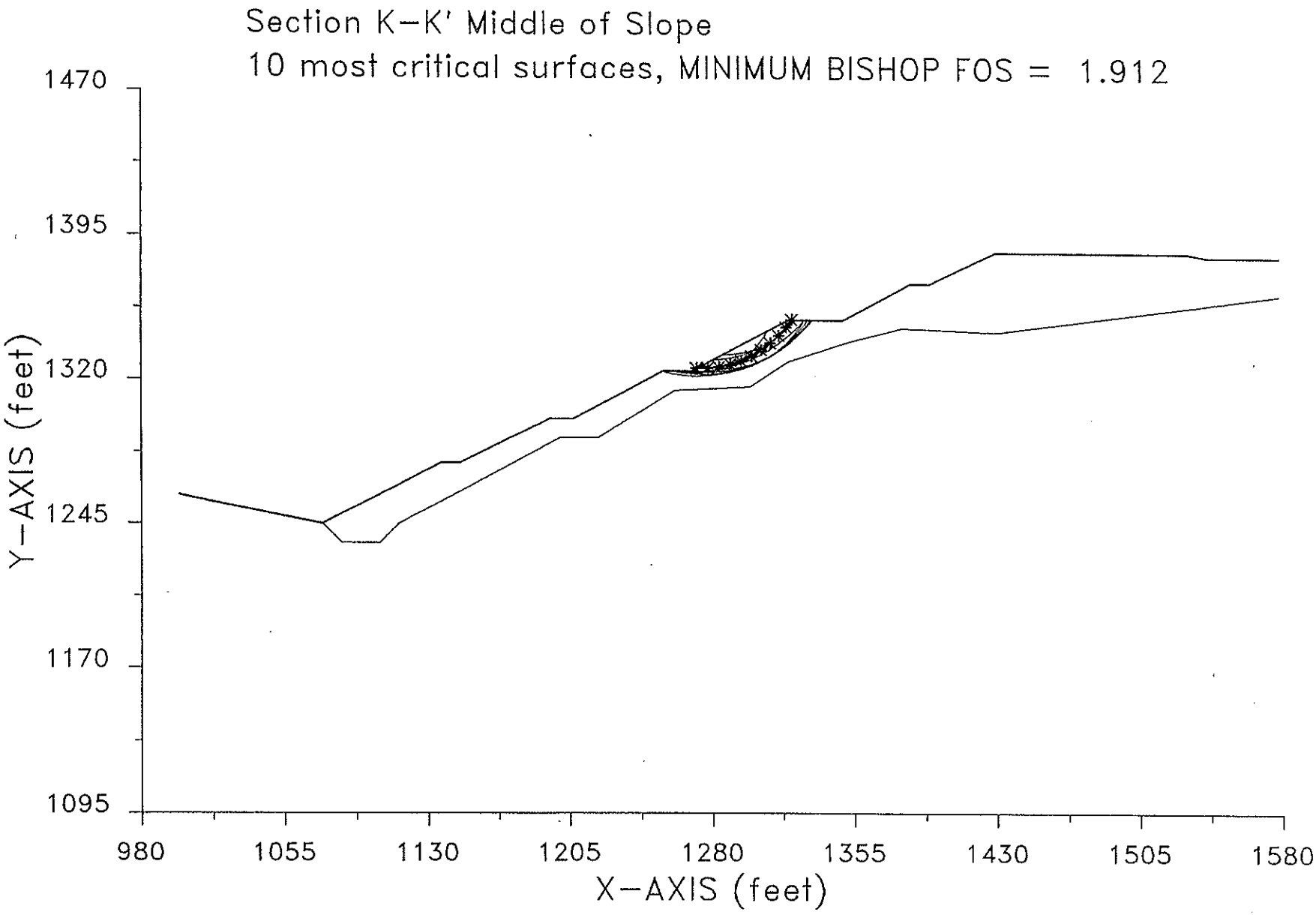
The following is a summary of the TEN most critical surfaces

Problem Description : Section K-K' Bottom Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.348	1072.92	1408.49	162.84	1076.32	1193.76	1.551E+07
2.	1.352	1077.88	1417.02	168.67	1081.58	1199.28	1.641E+07
3.	1.356	1053.61	1480.98	234.27	1081.58	1202.33	1.973E+07
4.	1.375	1069.65	1449.90	199.53	1086.84	1201.32	1.611E+07
5.	1.383	1086.12	1373.98	127.14	1078.95	1186.38	1.209E+07
6.	1.389	1049.99	1504.21	255.76	1086.84	1203.99	1.923E+07
7.	1.392	1065.02	1451.87	201.94	1086.84	1198.07	1.430E+07
8.	1.395	1028.15	1605.55	359.26	1086.84	1249.33	3.820E+07
9.	1.396	1043.01	1557.90	309.90	1086.84	1236.06	3.161E+07
10.	1.397	1090.68	1406.97	153.15	1092.11	1200.24	1.282E+07

* * * END OF FILE * * *

SLOPK-K2 10-06-** 10:03



XSTABL File: SECTK-K2 10-06-** 10:03

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*           Method of Slices            *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section K-K' Middle of Slope

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1260.0	1050.0	1250.0	2
2	1050.0	1250.0	1075.0	1245.0	2
3	1075.0	1245.0	1137.0	1277.0	1
4	1137.0	1277.0	1147.0	1277.0	1
5	1147.0	1277.0	1195.0	1300.0	1
6	1195.0	1300.0	1207.0	1300.0	1
7	1207.0	1300.0	1254.0	1325.0	1
8	1254.0	1325.0	1269.0	1325.0	1
9	1269.0	1325.0	1320.0	1352.0	1
10	1320.0	1352.0	1349.0	1352.0	1
11	1349.0	1352.0	1384.0	1371.0	1
12	1384.0	1371.0	1394.0	1371.0	1
13	1394.0	1371.0	1429.0	1388.0	1
14	1429.0	1388.0	1530.0	1388.0	1
15	1530.0	1388.0	1540.0	1386.0	1
16	1540.0	1386.0	1578.0	1386.0	1

12 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1075.0	1245.0	1085.0	1235.0	2
2	1085.0	1235.0	1105.0	1235.0	2
3	1105.0	1235.0	1115.0	1245.0	2
4	1115.0	1245.0	1200.0	1290.0	2
5	1200.0	1290.0	1220.0	1290.0	2
6	1220.0	1290.0	1260.0	1315.0	2
7	1260.0	1315.0	1300.0	1317.0	2
8	1300.0	1317.0	1320.0	1330.0	2
9	1320.0	1330.0	1350.0	1340.0	2
10	1350.0	1340.0	1380.0	1348.0	2
11	1380.0	1348.0	1430.0	1346.0	2
12	1430.0	1346.0	1578.0	1366.0	2

```
************************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
************************************************************************

   ------------------------------------------------------------
   USER SELECTED option to maintain strength greater than zero
   ------------------------------------------------------------


   Factors of safety have been calculated by the :

   * * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


     The most critical circular failure surface
     is specified by 11 coordinate points

          Point      x-surf      y-surf
           No.        (ft)        (ft)

            1       1271.58     1326.37
            2       1277.58     1326.46
            3       1283.54     1327.17
            4       1289.39     1328.49
            5       1295.07     1330.41
            6       1300.53     1332.91
            7       1305.70     1335.96
            8       1310.52     1339.52
            9       1314.96     1343.57
           10       1318.95     1348.05
           11       1321.80     1352.00

   ****  Simplified BISHOP FOS =   1.912  ****


   The following is a summary of the TEN most critical surfaces

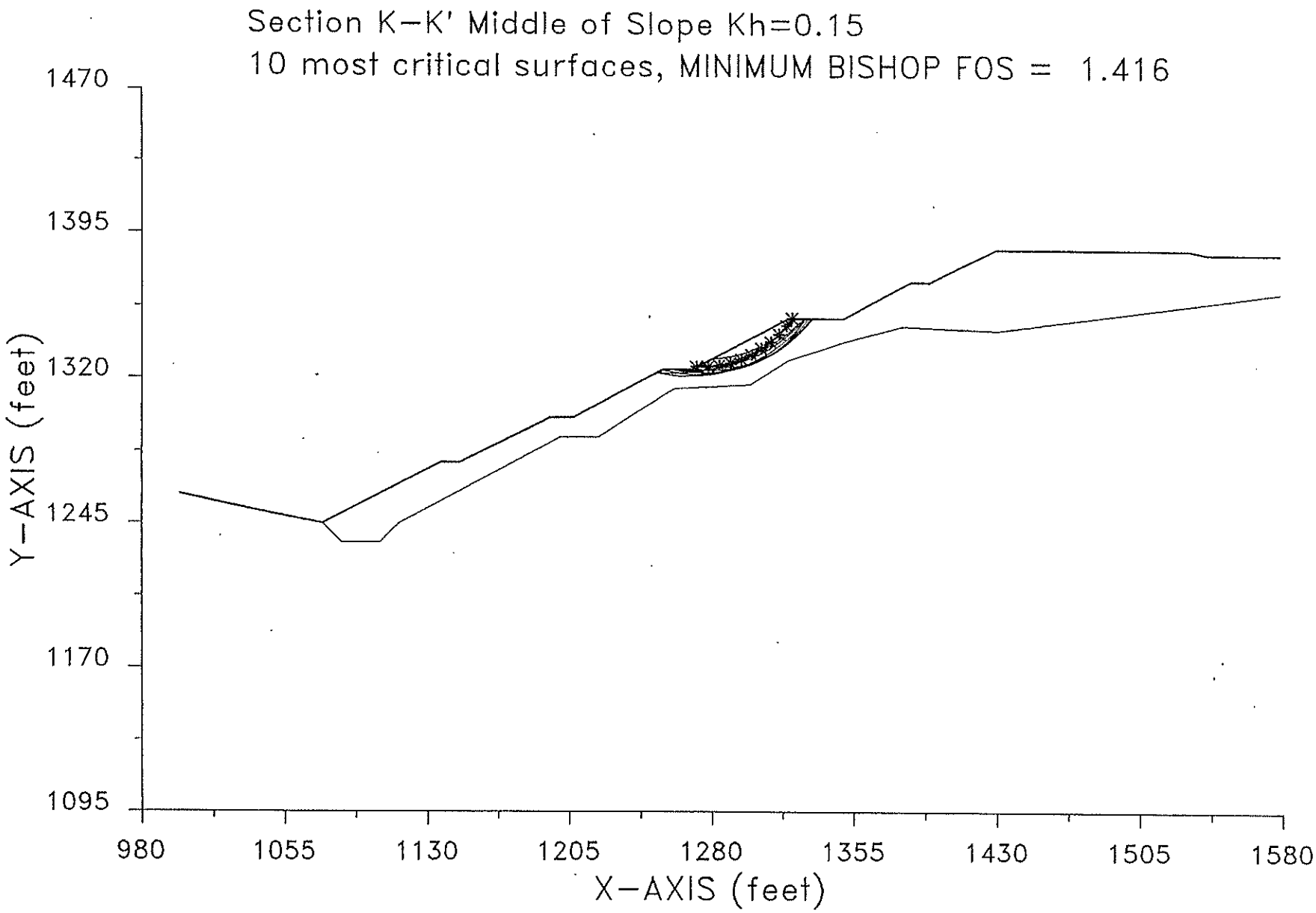
   Problem Description : Section K-K' Middle of Slope

        FOS      Circle Center    Radius  Initial Terminal  Resisting
     (BISHOP)  x-coord  y-coord           x-coord  x-coord   Moment
                 (ft)     (ft)     (ft)     (ft)     (ft)    (ft-lb)

   1.   1.912   1273.68  1384.34   58.02  1271.58  1321.80  1.567E+06
   2.   1.964   1278.44  1387.58   63.30  1268.95  1330.47  3.063E+06
   3.   1.969   1268.40  1403.76   79.39  1258.42  1328.62  3.159E+06
   4.   2.000   1269.45  1385.33   61.33  1258.42  1320.89  1.948E+06
   5.   2.009   1276.98  1392.20   61.70  1279.47  1323.69  1.219E+06
   6.   2.022   1274.70  1394.76   71.64  1258.42  1332.04  3.866E+06
   7.   2.064   1286.33  1373.14   46.97  1274.21  1328.16  2.074E+06
   8.   2.077   1285.30  1382.48   49.16  1284.74  1323.75  8.542E+05
   9.   2.082   1271.88  1399.72   77.47  1253.16  1332.79  4.500E+06
  10.   2.086   1273.81  1363.22   38.95  1266.32  1308.58  8.390E+05

                  * * *  END OF FILE  * * *
```

SECTK-K6 10-06-** 10:02



XSTABL File: SECTK-K6 10-06-** 10:02

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
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*****************************************
```

Problem Description : Section K-K' Middle of Slope Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1260.0	1050.0	1250.0	2
2	1050.0	1250.0	1075.0	1245.0	2
3	1075.0	1245.0	1137.0	1277.0	1
4	1137.0	1277.0	1147.0	1277.0	1
5	1147.0	1277.0	1195.0	1300.0	1
6	1195.0	1300.0	1207.0	1300.0	1
7	1207.0	1300.0	1254.0	1325.0	1
8	1254.0	1325.0	1269.0	1325.0	1
9	1269.0	1325.0	1320.0	1352.0	1
10	1320.0	1352.0	1349.0	1352.0	1
11	1349.0	1352.0	1384.0	1371.0	1
12	1384.0	1371.0	1394.0	1371.0	1
13	1394.0	1371.0	1429.0	1388.0	1
14	1429.0	1388.0	1530.0	1388.0	1
15	1530.0	1388.0	1540.0	1386.0	1
16	1540.0	1386.0	1578.0	1386.0	1

12 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1075.0	1245.0	1085.0	1235.0	2
2	1085.0	1235.0	1105.0	1235.0	2
3	1105.0	1235.0	1115.0	1245.0	2
4	1115.0	1245.0	1200.0	1290.0	2
5	1200.0	1290.0	1220.0	1290.0	2
6	1220.0	1290.0	1260.0	1315.0	2
7	1260.0	1315.0	1300.0	1317.0	2
8	1300.0	1317.0	1320.0	1330.0	2
9	1320.0	1330.0	1350.0	1340.0	2
10	1350.0	1340.0	1380.0	1348.0	2
11	1380.0	1348.0	1430.0	1346.0	2
12	1430.0	1346.0	1578.0	1366.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	110.0	120.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	.00	4000.0	28.00
2	20.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1240.0 ft
and x = 1290.0 ft

Each surface terminates between x = 1300.0 ft
and x = 1400.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

6.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1271.58	1326.37
2	1277.58	1326.46
3	1283.54	1327.17
4	1289.39	1328.49
5	1295.07	1330.41
6	1300.53	1332.91
7	1305.70	1335.96
8	1310.52	1339.52
9	1314.96	1343.57
10	1318.95	1348.05
11	1321.80	1352.00

**** Simplified BISHOP FOS = 1.416 ****

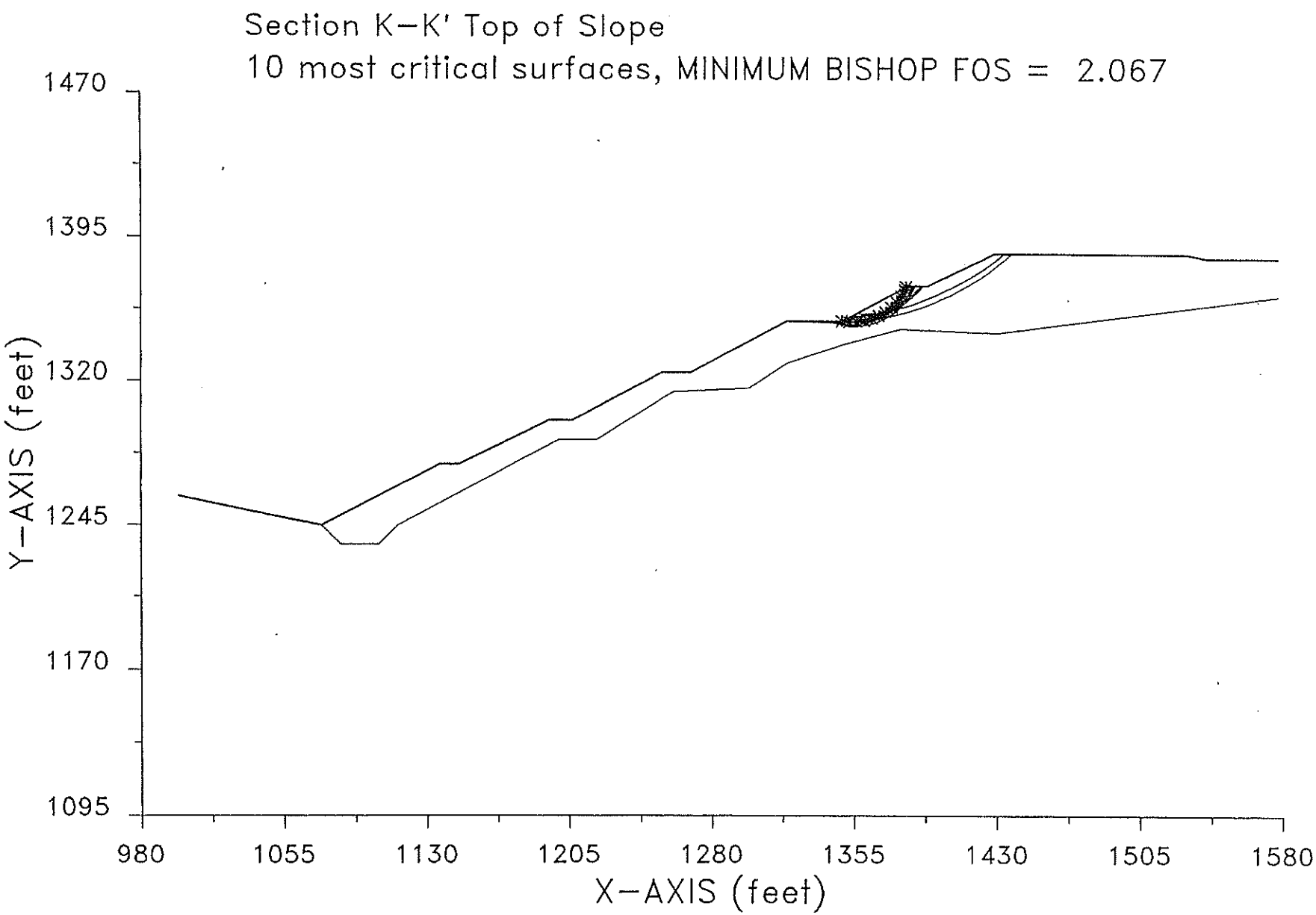
The following is a summary of the TEN most critical surfaces

Problem Description : Section K-K' Middle of Slope Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.416	1273.68	1384.34	58.02	1271.58	1321.80	1.492E+06
2.	1.430	1278.44	1387.58	63.30	1268.95	1330.47	2.927E+06
3.	1.438	1268.40	1403.76	79.39	1258.42	1328.62	3.019E+06
4.	1.464	1274.70	1394.76	71.64	1258.42	1332.04	3.703E+06
5.	1.482	1269.45	1385.33	61.33	1258.42	1320.89	1.862E+06
6.	1.483	1276.98	1392.20	61.70	1279.47	1323.69	1.163E+06
7.	1.495	1271.88	1399.72	77.47	1253.16	1332.79	4.316E+06
8.	1.504	1267.34	1399.11	77.79	1250.53	1329.24	4.087E+06
9.	1.516	1286.33	1373.14	46.97	1274.21	1328.16	1.988E+06
10.	1.517	1258.15	1421.79	98.93	1250.53	1328.16	3.760E+06

* * * END OF FILE * * *

SEcIK-K3 10-06-** 10:00



XSTABL File: SECTK-K3 10-06-** 10:00

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*              using the                *
*           Method of Slices            *
*                                       *
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*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section K-K' Top of Slope

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1260.0	1050.0	1250.0	2
2	1050.0	1250.0	1075.0	1245.0	2
3	1075.0	1245.0	1137.0	1277.0	1
4	1137.0	1277.0	1147.0	1277.0	1
5	1147.0	1277.0	1195.0	1300.0	1
6	1195.0	1300.0	1207.0	1300.0	1
7	1207.0	1300.0	1254.0	1325.0	1
8	1254.0	1325.0	1269.0	1325.0	1
9	1269.0	1325.0	1320.0	1352.0	1
10	1320.0	1352.0	1349.0	1352.0	1
11	1349.0	1352.0	1384.0	1371.0	1
12	1384.0	1371.0	1394.0	1371.0	1
13	1394.0	1371.0	1429.0	1388.0	1
14	1429.0	1388.0	1530.0	1388.0	1
15	1530.0	1388.0	1540.0	1386.0	1
16	1540.0	1386.0	1578.0	1386.0	1

12 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1075.0	1245.0	1085.0	1235.0	2
2	1085.0	1235.0	1105.0	1235.0	2
3	1105.0	1235.0	1115.0	1245.0	2
4	1115.0	1245.0	1200.0	1290.0	2
5	1200.0	1290.0	1220.0	1290.0	2
6	1220.0	1290.0	1260.0	1315.0	2
7	1260.0	1315.0	1300.0	1317.0	2
8	1300.0	1317.0	1320.0	1330.0	2
9	1320.0	1330.0	1350.0	1340.0	2
10	1350.0	1340.0	1380.0	1348.0	2
11	1380.0	1348.0	1430.0	1346.0	2
12	1430.0	1346.0	1578.0	1366.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	.00	4000.0	28.00
2	20.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1320.0 ft
and x = 1370.0 ft

Each surface terminates between x = 1375.0 ft
and x = 1500.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

4.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

```
*********************************************************************
    --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
*********************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*********************************************************************
```

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 12 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1348.95	1352.00
2	1352.92	1351.53
3	1356.92	1351.59
4	1360.88	1352.17
5	1364.73	1353.25
6	1368.40	1354.83
7	1371.84	1356.88
8	1374.98	1359.35
9	1377.78	1362.22
10	1380.17	1365.42
11	1382.13	1368.90
12	1382.69	1370.29

**** Simplified BISHOP FOS = 2.067 ****

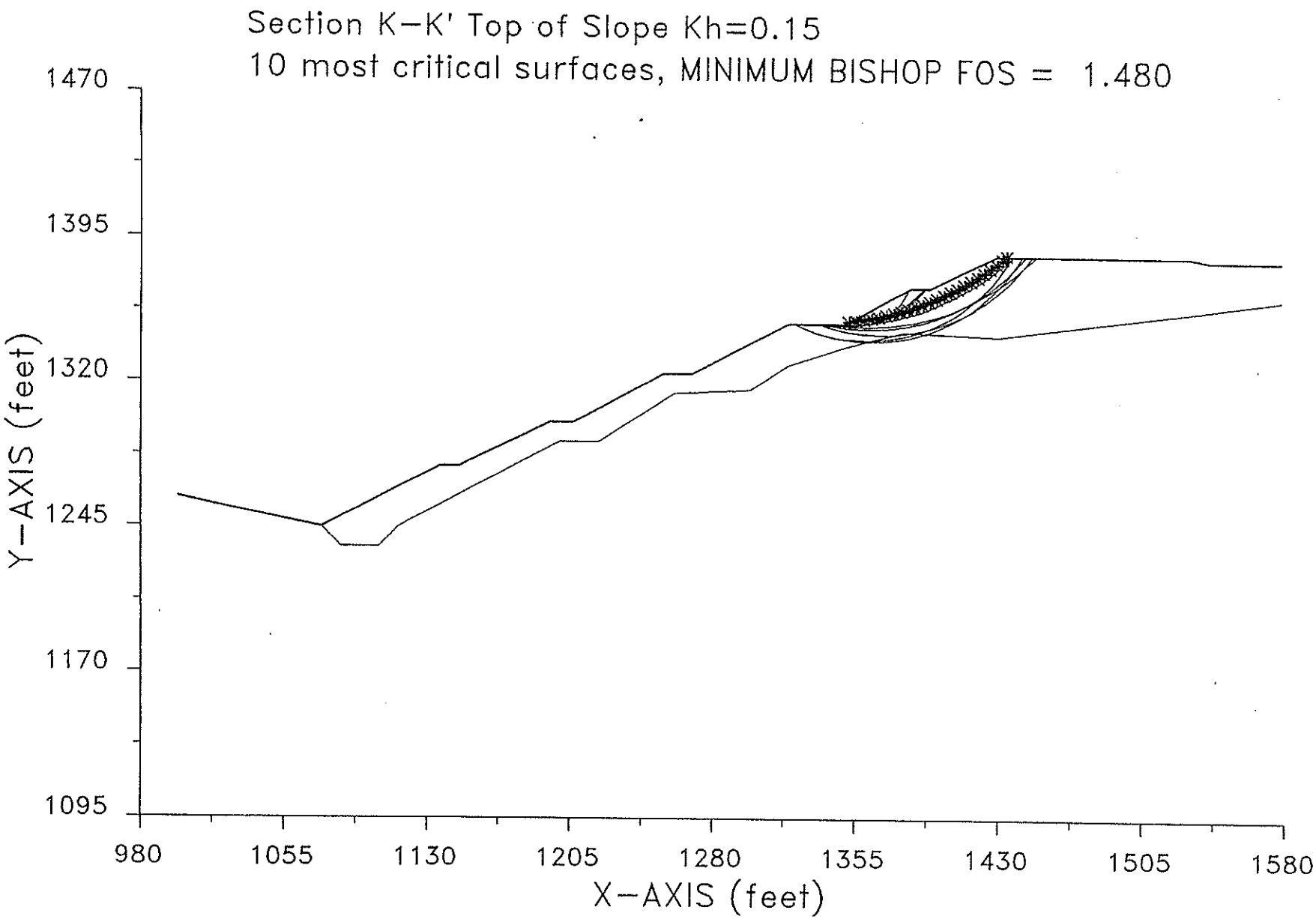
The following is a summary of the TEN most critical surfaces

Problem Description : Section K-K' Top of Slope

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	2.067	1354.49	1382.06	30.57	1348.95	1382.69	5.524E+05
2.	2.094	1350.13	1405.26	54.03	1341.05	1391.82	1.433E+06
3.	2.110	1353.05	1387.65	37.61	1341.05	1386.62	9.936E+05
4.	2.111	1355.13	1402.80	47.98	1354.21	1391.00	8.547E+05
5.	2.111	1335.30	1507.92	155.37	1351.58	1434.18	7.585E+06
6.	2.136	1356.27	1382.74	33.22	1343.68	1387.30	1.004E+06
7.	2.139	1361.46	1386.40	30.50	1356.84	1387.76	4.706E+05
8.	2.150	1343.32	1490.09	138.95	1327.89	1437.84	1.026E+07
9.	2.150	1356.26	1379.97	26.98	1351.58	1381.05	3.822E+05
10.	2.173	1356.28	1380.17	30.86	1343.68	1385.65	8.979E+05

* * * END OF FILE * * *

SECTK-K7 10-06-** 9:59



XSTABL File: SECTK-K7 10-06-** 9:59

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section K-K' Top of Slope Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1260.0	1050.0	1250.0	2
2	1050.0	1250.0	1075.0	1245.0	2
3	1075.0	1245.0	1137.0	1277.0	1
4	1137.0	1277.0	1147.0	1277.0	1
5	1147.0	1277.0	1195.0	1300.0	1
6	1195.0	1300.0	1207.0	1300.0	1
7	1207.0	1300.0	1254.0	1325.0	1
8	1254.0	1325.0	1269.0	1325.0	1
9	1269.0	1325.0	1320.0	1352.0	1
10	1320.0	1352.0	1349.0	1352.0	1
11	1349.0	1352.0	1384.0	1371.0	1
12	1384.0	1371.0	1394.0	1371.0	1
13	1394.0	1371.0	1429.0	1388.0	1
14	1429.0	1388.0	1530.0	1388.0	1
15	1530.0	1388.0	1540.0	1386.0	1
16	1540.0	1386.0	1578.0	1386.0	1

12 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1075.0	1245.0	1085.0	1235.0	2
2	1085.0	1235.0	1105.0	1235.0	2
3	1105.0	1235.0	1115.0	1245.0	2
4	1115.0	1245.0	1200.0	1290.0	2
5	1200.0	1290.0	1220.0	1290.0	2
6	1220.0	1290.0	1260.0	1315.0	2
7	1260.0	1315.0	1300.0	1317.0	2
8	1300.0	1317.0	1320.0	1330.0	2
9	1320.0	1330.0	1350.0	1340.0	2
10	1350.0	1340.0	1380.0	1348.0	2
11	1380.0	1348.0	1430.0	1346.0	2
12	1430.0	1346.0	1578.0	1366.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	.00	4000.0	28.00
2	20.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1320.0 ft
and x = 1370.0 ft

Each surface terminates between x = 1375.0 ft
and x = 1500.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

4.0 ft line segments define each trial failure surface.
ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter. In such
cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 24 coordinate points

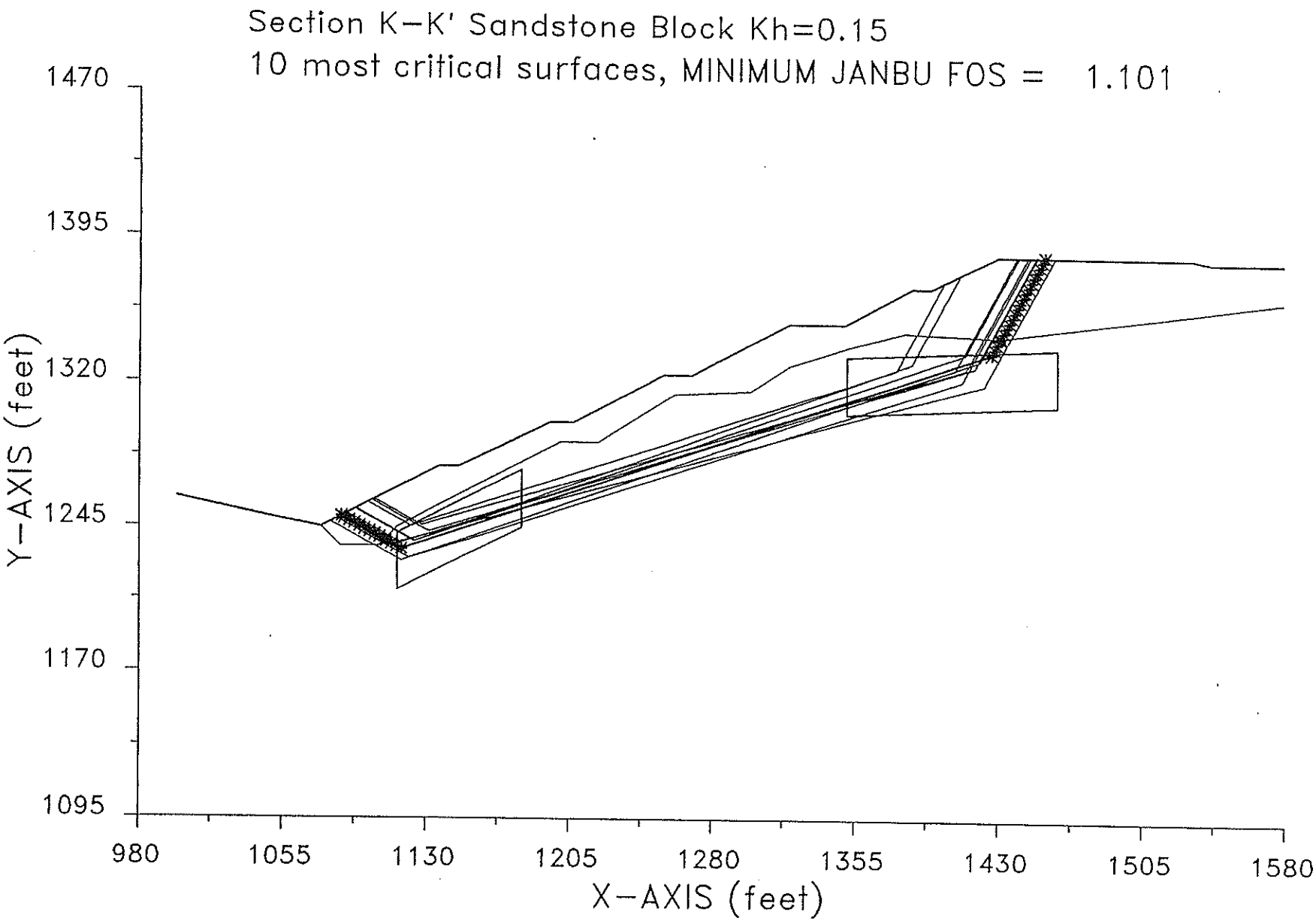
Point No.	x-surf (ft)	y-surf (ft)
1	1351.58	1353.40
2	1355.55	1353.87
3	1359.51	1354.44
4	1363.45	1355.12
5	1367.38	1355.89
6	1371.28	1356.77
7	1375.16	1357.74
8	1379.01	1358.82
9	1382.84	1359.99
10	1386.63	1361.26
11	1390.39	1362.63
12	1394.11	1364.09
13	1397.80	1365.65
14	1401.44	1367.30
15	1405.04	1369.05
16	1408.59	1370.89
17	1412.09	1372.81
18	1415.55	1374.83
19	1418.95	1376.94
20	1422.30	1379.13
21	1425.58	1381.41
22	1428.81	1383.77
23	1431.98	1386.21
24	1434.18	1388.00

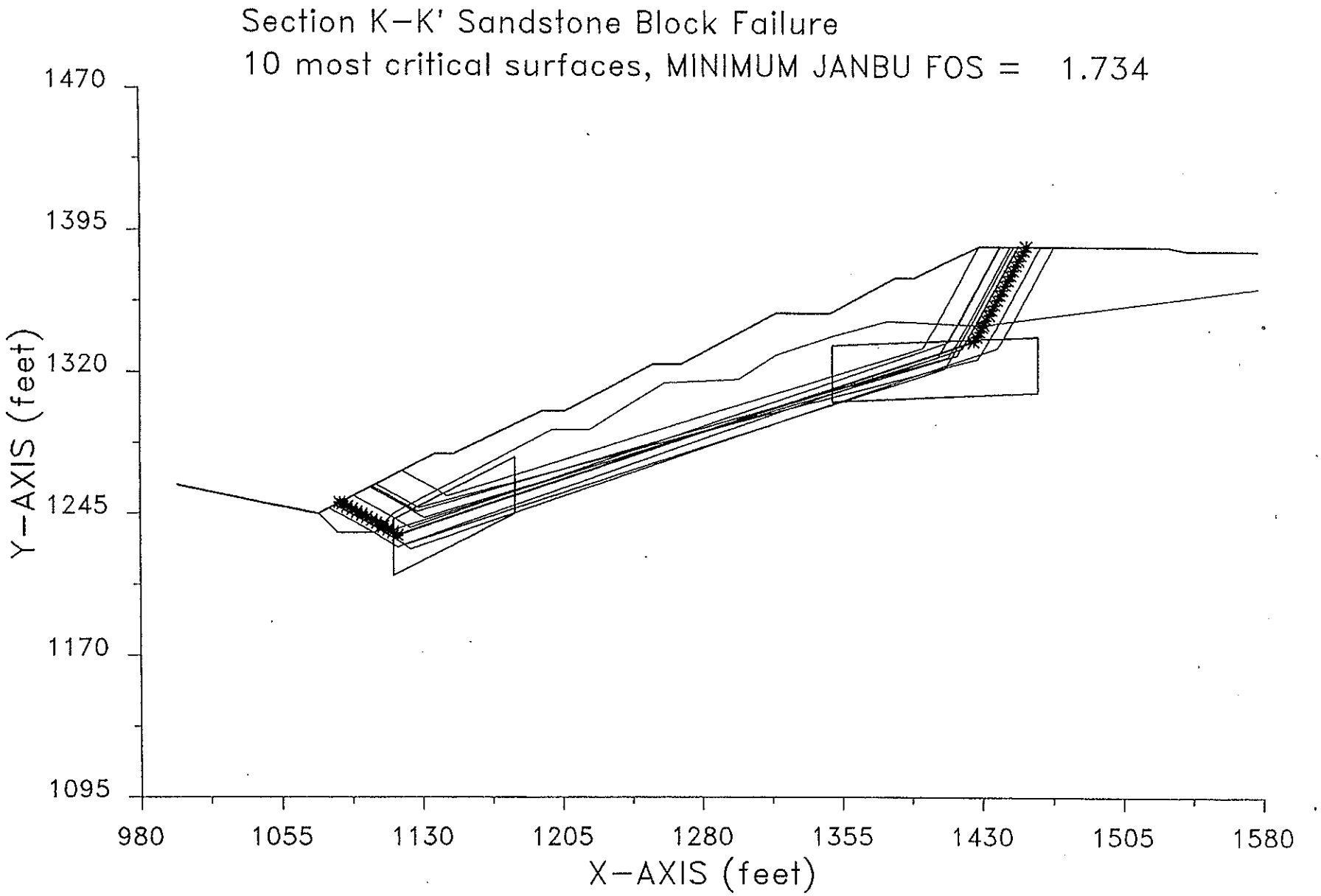
**** Simplified BISHOP FOS = 1.480 ****
The following is a summary of the TEN most critical surfaces

Problem Description : Section K-K' Top of Slope Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.480	1335.30	1507.92	155.37	1351.58	1434.18	7.242E+06
2.	1.503	1343.32	1490.09	138.95	1327.89	1437.84	9.835E+06
3.	1.511	1360.46	1431.76	88.27	1322.63	1436.96	1.135E+07
4.	1.513	1361.97	1455.36	106.01	1338.42	1444.04	1.163E+07
5.	1.513	1360.01	1475.55	124.99	1341.05	1449.22	1.368E+07
6.	1.524	1362.81	1435.01	92.23	1322.63	1442.14	1.349E+07
7.	1.529	1350.13	1405.26	54.03	1341.05	1391.82	1.374E+06
8.	1.538	1355.13	1402.80	47.98	1354.21	1391.00	8.181E+05
9.	1.542	1368.09	1443.13	96.68	1335.79	1447.28	1.336E+07
10.	1.547	1354.49	1382.06	30.57	1348.95	1382.69	5.283E+05

* * * END OF FILE * * *


Section K-K' Sandstone Block Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.101
1470
1395
1320
1245
1170
1095
Y-AXIS (feet)
980
1055
1130
1205
1280
1355
1430
1505
1580
X-AXIS (feet)


Section K-K' Sandstone Block Failure
10 most critical surfaces, MINIMUM JANBU FOS = 1.734
1470
1395
1320
1245
1170
1095
Y-AXIS (feet)
980
1055
1130
1205
1280
1355
1430
1505
1580
X-AXIS (feet)

XSTABL File: SECTK-K4 10-06-** 9:57

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*****************************************
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*               using the               *
*            Method of Slices           *
*                                       *
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*****************************************
```

Problem Description : Section K-K' Sandstone Block Failure

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1260.0	1050.0	1250.0	2
2	1050.0	1250.0	1075.0	1245.0	2
3	1075.0	1245.0	1137.0	1277.0	1
4	1137.0	1277.0	1147.0	1277.0	1
5	1147.0	1277.0	1195.0	1300.0	1
6	1195.0	1300.0	1207.0	1300.0	1
7	1207.0	1300.0	1254.0	1325.0	1
8	1254.0	1325.0	1269.0	1325.0	1
9	1269.0	1325.0	1320.0	1352.0	1
10	1320.0	1352.0	1349.0	1352.0	1
11	1349.0	1352.0	1384.0	1371.0	1
12	1384.0	1371.0	1394.0	1371.0	1
13	1394.0	1371.0	1429.0	1388.0	1
14	1429.0	1388.0	1530.0	1388.0	1
15	1530.0	1388.0	1540.0	1386.0	1
16	1540.0	1386.0	1578.0	1386.0	1

12 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1075.0	1245.0	1085.0	1235.0	2
2	1085.0	1235.0	1105.0	1235.0	2
3	1105.0	1235.0	1115.0	1245.0	2
4	1115.0	1245.0	1200.0	1290.0	2
5	1200.0	1290.0	1220.0	1290.0	2
6	1220.0	1290.0	1260.0	1315.0	2
7	1260.0	1315.0	1300.0	1317.0	2
8	1300.0	1317.0	1320.0	1330.0	2
9	1320.0	1330.0	1350.0	1340.0	2
10	1350.0	1340.0	1380.0	1348.0	2
11	1380.0	1348.0	1430.0	1346.0	2
12	1430.0	1346.0	1578.0	1366.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	.00	4000.0	28.00
2	20.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

200 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 3.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1115.0	1227.0	1180.0	1260.0	30.0
2	1350.0	1320.0	1460.0	1325.0	30.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 35 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1086.27	1250.82
2	1087.57	1250.11
3	1090.21	1248.68
4	1092.84	1247.25
5	1095.48	1245.82
6	1098.12	1244.39
7	1100.75	1242.96
8	1103.39	1241.52
9	1106.03	1240.09
10	1108.66	1238.66
11	1109.49	1238.16
12	1112.06	1236.62
13	1114.64	1235.07
14	1117.21	1233.53
15	1425.81	1337.36
16	1427.36	1339.93
17	1428.91	1342.50
18	1430.45	1345.07
19	1431.10	1346.15
20	1432.53	1348.78
21	1433.96	1351.42
22	1435.39	1354.06
23	1436.82	1356.69
24	1438.25	1359.33
25	1439.69	1361.97
26	1441.12	1364.60
27	1442.55	1367.24
28	1443.98	1369.88
29	1445.41	1372.51
30	1446.84	1375.15
31	1448.27	1377.79
32	1449.71	1380.42
33	1451.14	1383.06
34	1452.57	1385.70
35	1453.82	1388.00

** Corrected JANBU FOS = 1.734 ** (Fo factor = 1.042)

Failure surface No. 2 specified by 35 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1093.64	1254.62
2	1095.26	1253.74
3	1097.90	1252.31
4	1100.54	1250.88
5	1103.17	1249.44
6	1105.81	1248.01
7	1108.45	1246.58
8	1111.08	1245.15
9	1113.72	1243.72

10	1113.76	1243.69
11	1116.33	1242.15
12	1118.90	1240.60
13	1121.47	1239.06
14	1124.04	1237.51
15	1411.92	1336.96
16	1413.47	1339.54
17	1415.01	1342.11
18	1416.56	1344.68
19	1417.65	1346.49
20	1419.08	1349.13
21	1420.51	1351.77
22	1421.94	1354.40
23	1423.37	1357.04
24	1424.80	1359.68
25	1426.24	1362.31
26	1427.67	1364.95
27	1429.10	1367.59
28	1430.53	1370.22
29	1431.96	1372.86
30	1433.39	1375.50
31	1434.82	1378.13
32	1436.26	1380.77
33	1437.69	1383.40
34	1439.12	1386.04
35	1440.18	1388.00

** Corrected JANBU FOS = 1.782 ** (Fo factor = 1.043)

Failure surface No. 3 specified by 37 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1088.15	1251.79
2	1088.86	1251.40
3	1091.49	1249.97
4	1094.13	1248.54
5	1096.77	1247.11
6	1099.40	1245.68
7	1102.04	1244.24
8	1104.68	1242.81
9	1107.31	1241.38
10	1109.95	1239.95
11	1110.58	1239.57
12	1113.15	1238.02
13	1115.72	1236.48
14	1406.60	1328.97
15	1408.15	1331.54
16	1409.69	1334.11
17	1411.24	1336.68
18	1412.78	1339.25
19	1414.33	1341.82
20	1415.87	1344.40
21	1417.15	1346.51
22	1418.58	1349.15
23	1420.01	1351.79
24	1421.44	1354.42
25	1422.87	1357.06
26	1424.30	1359.70
27	1425.73	1362.33
28	1427.17	1364.97
29	1428.60	1367.61
30	1430.03	1370.24
31	1431.46	1372.88
32	1432.89	1375.52
33	1434.32	1378.15
34	1435.76	1380.79
35	1437.19	1383.42
36	1438.62	1386.06

37	1439.67	1388.00

** Corrected JANBU FOS = 1.806 ** (Fo factor = 1.048)

Failure surface No. 4 specified by 38 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1084.06	1249.68
2	1086.05	1248.59
3	1088.69	1247.16
4	1091.32	1245.73
5	1093.96	1244.30
6	1096.60	1242.87
7	1099.23	1241.44
8	1101.87	1240.01
9	1104.51	1238.57
10	1107.14	1237.14
11	1108.14	1236.54
12	1110.71	1235.00
13	1113.29	1233.45
14	1115.86	1231.91
15	1118.43	1230.36
16	1121.00	1228.82
17	1419.61	1333.66
18	1421.15	1336.23
19	1422.70	1338.80
20	1424.24	1341.37
21	1425.79	1343.95
22	1427.09	1346.12
23	1428.52	1348.75
24	1429.95	1351.39
25	1431.38	1354.03
26	1432.82	1356.66
27	1434.25	1359.30
28	1435.68	1361.94
29	1437.11	1364.57
30	1438.54	1367.21
31	1439.97	1369.84
32	1441.40	1372.48
33	1442.84	1375.12
34	1444.27	1377.75
35	1445.70	1380.39
36	1447.13	1383.03
37	1448.56	1385.66
38	1449.83	1388.00

** Corrected JANBU FOS = 1.811 ** (Fo factor = 1.044)

Failure surface No. 5 specified by 35 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1103.33	1259.62
2	1104.28	1259.11
3	1106.91	1257.68
4	1109.55	1256.25
5	1112.19	1254.82
6	1114.82	1253.39
7	1117.46	1251.96
8	1120.09	1250.52
9	1122.73	1249.09
10	1125.14	1247.64
11	1127.71	1246.10
12	1412.22	1328.76
13	1413.77	1331.33
14	1415.31	1333.90

15	1416.86	1336.47
16	1418.40	1339.04
17	1419.95	1341.61
18	1421.50	1344.19
19	1422.76	1346.29
20	1424.19	1348.93
21	1425.62	1351.56
22	1427.05	1354.20
23	1428.49	1356.84
24	1429.92	1359.47
25	1431.35	1362.11
26	1432.78	1364.74
27	1434.21	1367.38
28	1435.64	1370.02
29	1437.07	1372.65
30	1438.51	1375.29
31	1439.94	1377.93
32	1441.37	1380.56
33	1442.80	1383.20
34	1444.23	1385.84
35	1445.41	1388.00

** Corrected JANBU FOS = 1.866 ** (Fo factor = 1.050)

Failure surface No. 6 specified by 40 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1083.77	1249.52
2	1085.85	1248.39
3	1088.49	1246.96
4	1091.12	1245.53
5	1093.76	1244.10
6	1096.40	1242.67
7	1099.03	1241.24
8	1101.67	1239.80
9	1104.31	1238.37
10	1106.94	1236.94
11	1109.03	1235.69
12	1111.60	1234.14
13	1114.17	1232.60
14	1116.74	1231.05
15	1119.32	1229.51
16	1121.89	1227.96
17	1124.46	1226.42
18	1438.29	1333.86
19	1439.83	1336.43
20	1441.38	1339.00
21	1442.93	1341.57
22	1444.47	1344.14
23	1446.02	1346.71
24	1446.96	1348.29
25	1448.40	1350.93
26	1449.83	1353.57
27	1451.26	1356.20
28	1452.69	1358.84
29	1454.12	1361.47
30	1455.55	1364.11
31	1456.99	1366.75
32	1458.42	1369.38
33	1459.85	1372.02
34	1461.28	1374.66
35	1462.71	1377.29
36	1464.14	1379.93
37	1465.57	1382.57
38	1467.01	1385.20
39	1468.44	1387.84
40	1468.52	1388.00

** Corrected JANBU FOS = 1.889 ** (Fo factor = 1.043)

Failure surface No. 7 specified by 37 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1102.42	1259.15
2	1103.38	1258.64
3	1106.01	1257.21
4	1108.65	1255.77
5	1111.28	1254.34
6	1113.92	1252.91
7	1116.56	1251.48
8	1119.19	1250.05
9	1121.83	1248.62
10	1123.74	1247.47
11	1126.31	1245.93
12	1128.88	1244.38
13	1131.45	1242.83
14	1416.92	1330.03
15	1418.47	1332.60
16	1420.01	1335.17
17	1421.56	1337.74
18	1423.10	1340.32
19	1424.65	1342.89
20	1426.19	1345.46
21	1426.60	1346.14
22	1428.03	1348.77
23	1429.46	1351.41
24	1430.90	1354.05
25	1432.33	1356.68
26	1433.76	1359.32
27	1435.19	1361.95
28	1436.62	1364.59
29	1438.05	1367.23
30	1439.48	1369.86
31	1440.92	1372.50
32	1442.35	1375.14
33	1443.78	1377.77
34	1445.21	1380.41
35	1446.64	1383.05
36	1448.07	1385.68
37	1449.33	1388.00

** Corrected JANBU FOS = 1.893 ** (Fo factor = 1.049)

Failure surface No. 8 specified by 43 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1080.70	1247.94
2	1080.81	1247.88
3	1083.45	1246.45
4	1086.09	1245.02
5	1088.72	1243.59
6	1091.36	1242.16
7	1094.00	1240.73
8	1096.63	1239.29
9	1099.27	1237.86
10	1101.91	1236.43
11	1104.54	1235.00
12	1107.03	1233.51
13	1109.60	1231.96
14	1112.17	1230.42
15	1114.74	1228.87
16	1117.31	1227.33
17	1410.31	1322.79

18	1411.86	1325.36
19	1413.40	1327.93
20	1414.95	1330.50
21	1416.49	1333.07
22	1418.04	1335.64
23	1419.58	1338.22
24	1421.13	1340.79
25	1422.67	1343.36
26	1424.22	1345.93
27	1424.39	1346.22
28	1425.83	1348.86
29	1427.26	1351.50
30	1428.69	1354.13
31	1430.12	1356.77
32	1431.55	1359.41
33	1432.98	1362.04
34	1434.41	1364.68
35	1435.85	1367.32
36	1437.28	1369.95
37	1438.71	1372.59
38	1440.14	1375.23
39	1441.57	1377.86
40	1443.00	1380.50
41	1444.44	1383.13
42	1445.87	1385.77
43	1447.08	1388.00

** Corrected JANBU FOS = 1.896 ** (Fo factor = 1.051)

Failure surface No. 9 specified by 34 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1119.41	1267.92
2	1120.15	1267.52
3	1122.79	1266.09
4	1125.43	1264.66
5	1128.06	1263.22
6	1130.70	1261.79
7	1133.34	1260.36
8	1135.97	1258.93
9	1138.61	1257.50
10	1141.17	1255.96
11	1143.74	1254.41
12	1398.61	1333.87
13	1400.16	1336.44
14	1401.70	1339.01
15	1403.25	1341.58
16	1404.79	1344.15
17	1406.34	1346.73
18	1406.47	1346.94
19	1407.90	1349.58
20	1409.33	1352.21
21	1410.76	1354.85
22	1412.19	1357.49
23	1413.62	1360.12
24	1415.05	1362.76
25	1416.49	1365.40
26	1417.92	1368.03
27	1419.35	1370.67
28	1420.78	1373.31
29	1422.21	1375.94
30	1423.64	1378.58
31	1425.07	1381.22
32	1426.51	1383.85
33	1427.94	1386.49
34	1428.67	1387.84

** Corrected JANBU FOS = 1.911 ** (Fo factor = 1.050)

Failure surface No.10 specified by 36 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1105.48	1260.73
2	1106.40	1260.24
3	1109.03	1258.80
4	1111.67	1257.37
5	1114.31	1255.94
6	1116.94	1254.51
7	1119.58	1253.08
8	1122.22	1251.65
9	1124.85	1250.22
10	1125.94	1249.56
11	1128.51	1248.01
12	1428.04	1328.26
13	1429.59	1330.83
14	1431.13	1333.40
15	1432.68	1335.98
16	1434.22	1338.55
17	1435.77	1341.12
18	1437.31	1343.69
19	1438.86	1346.26
20	1439.47	1347.28
21	1440.90	1349.92
22	1442.33	1352.55
23	1443.77	1355.19
24	1445.20	1357.83
25	1446.63	1360.46
26	1448.06	1363.10
27	1449.49	1365.74
28	1450.92	1368.37
29	1452.35	1371.01
30	1453.79	1373.64
31	1455.22	1376.28
32	1456.65	1378.92
33	1458.08	1381.55
34	1459.51	1384.19
35	1460.94	1386.83
36	1461.58	1388.00

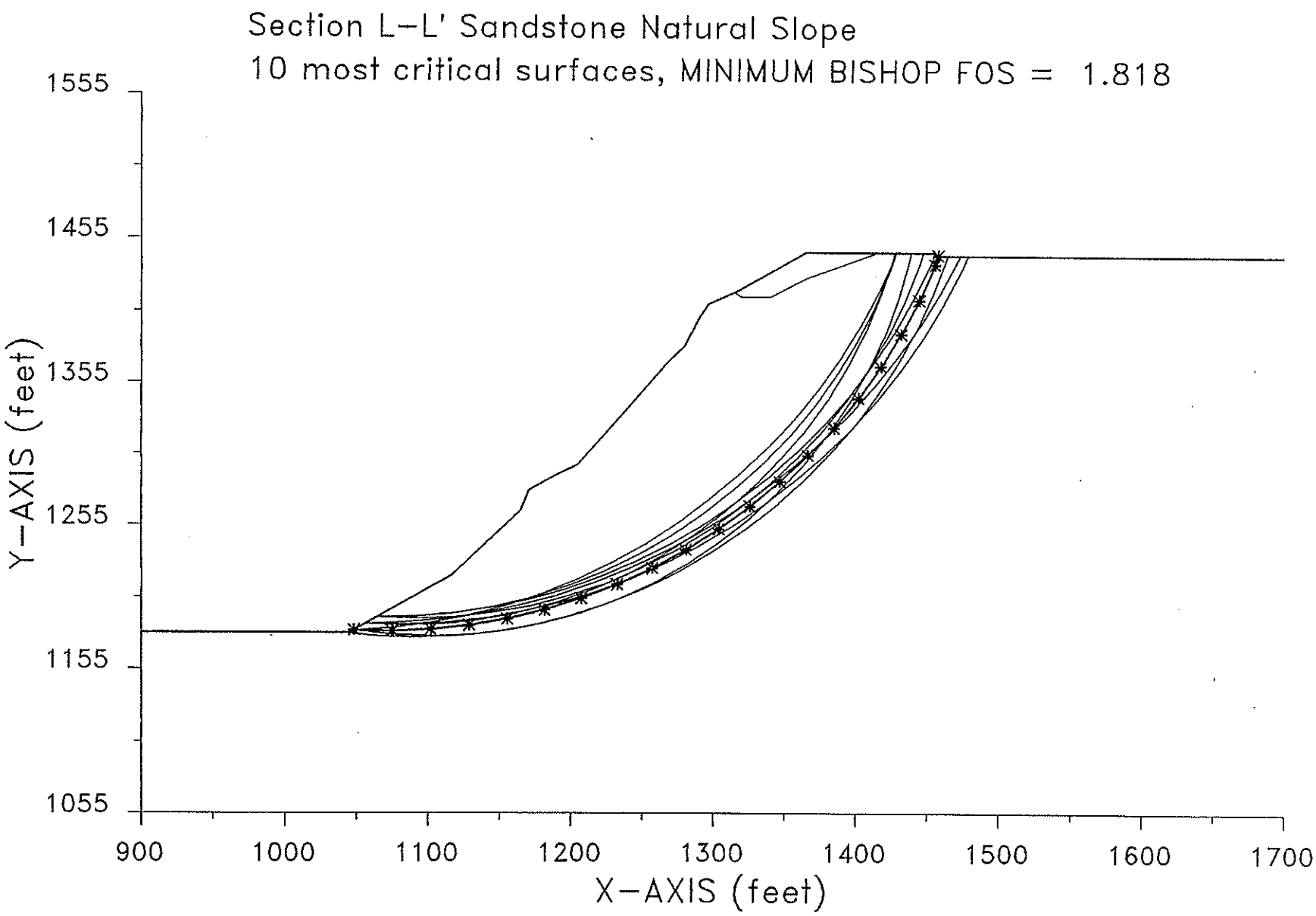
** Corrected JANBU FOS = 1.911 ** (Fo factor = 1.050)

The following is a summary of the TEN most critical surfaces

Problem Description : Section K-K' Sandstone Block Failure

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.734	1.042	1086.27	1453.82	9.152E+05
2.	1.782	1.043	1093.64	1440.18	8.276E+05
3.	1.806	1.048	1088.15	1439.67	8.713E+05
4.	1.811	1.044	1084.06	1449.83	1.024E+06
5.	1.866	1.050	1103.33	1445.41	8.304E+05
6.	1.889	1.043	1083.77	1468.52	1.194E+06
7.	1.893	1.049	1102.42	1449.33	9.057E+05
8.	1.896	1.051	1080.70	1447.08	1.122E+06
9.	1.911	1.050	1119.41	1428.67	6.425E+05
10.	1.911	1.050	1105.48	1461.58	9.039E+05

* * * END OF FILE * * *


Section L-L' Sandstone Natural Slope
10 most critical surfaces, MINIMUM BISHOP FOS = 1.818
1555
1455
1355
1255
1155
1055
Y-AXIS (feet)
900
1000
1100
1200
1300
1400
1500
1600
1700
X-AXIS (feet)

XSTABL File: SECTL-L 10-05-** 10:55

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*****************************************
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Problem Description : Section L-L' Sandstone Natural Slope

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	900.0	1180.0	1045.0	1180.0	2
2	1045.0	1180.0	1117.0	1220.0	2
3	1117.0	1220.0	1165.0	1265.0	2
4	1165.0	1265.0	1171.0	1279.0	2
5	1171.0	1279.0	1190.0	1290.0	2
6	1190.0	1290.0	1205.0	1297.0	2
7	1205.0	1297.0	1269.0	1370.0	2
8	1269.0	1370.0	1280.0	1380.0	2
9	1280.0	1380.0	1290.0	1400.0	2
10	1290.0	1400.0	1297.0	1410.0	2
11	1297.0	1410.0	1315.0	1418.0	2
12	1315.0	1418.0	1365.0	1446.0	1
13	1365.0	1446.0	1415.0	1446.0	1
14	1415.0	1446.0	1455.0	1446.0	2
15	1455.0	1446.0	1457.0	1444.0	2
16	1457.0	1444.0	1700.0	1444.0	2

4 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1315.0	1418.0	1320.0	1415.0	2
2	1320.0	1415.0	1340.0	1415.0	2
3	1340.0	1415.0	1365.0	1428.0	2
4	1365.0	1428.0	1415.0	1446.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1040.0 ft
and x = 1200.0 ft

Each surface terminates between x = 1300.0 ft
and x = 1500.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

27.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1048.42	1181.90
2	1075.41	1181.22
3	1102.39	1182.30

4	1129.24	1185.14
5	1155.85	1189.71
6	1182.11	1196.00
7	1207.90	1203.99
8	1233.12	1213.63
9	1257.66	1224.90
10	1281.41	1237.73
11	1304.28	1252.09
12	1326.17	1267.90
13	1346.98	1285.10
14	1366.63	1303.61
15	1385.04	1323.37
16	1402.12	1344.28
17	1417.80	1366.25
18	1432.03	1389.20
19	1444.73	1413.03
20	1455.86	1437.63
21	1458.25	1444.00

**** Simplified BISHOP FOS = 1.818 ****

The following is a summary of the TEN most critical surfaces

Problem Description : Section L-L' Sandstone Natural Slope

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.818	1072.30	1596.30	415.09	1048.42	1458.25	1.746E+09
2.	1.825	1085.97	1539.16	353.78	1056.84	1427.13	1.335E+09
3.	1.827	1102.64	1522.63	345.02	1048.42	1438.85	1.479E+09
4.	1.831	1092.33	1565.24	374.96	1065.26	1447.59	1.475E+09
5.	1.832	1091.26	1571.18	394.52	1040.00	1464.63	1.811E+09
6.	1.835	1073.25	1566.46	375.29	1065.26	1428.43	1.324E+09
7.	1.835	1071.26	1608.98	417.76	1065.26	1455.50	1.611E+09
8.	1.842	1056.83	1652.63	466.05	1056.84	1473.51	1.924E+09
9.	1.843	1079.00	1625.19	439.17	1056.84	1478.84	1.921E+09
10.	1.845	1034.94	1607.04	425.36	1048.42	1428.51	1.499E+09

* * * END OF FILE * * *

XSTABL File: SECTK-K8 10-06-** 9:48

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section K-K' Sandstone Block Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1260.0	1050.0	1250.0	2
2	1050.0	1250.0	1075.0	1245.0	2
3	1075.0	1245.0	1137.0	1277.0	1
4	1137.0	1277.0	1147.0	1277.0	1
5	1147.0	1277.0	1195.0	1300.0	1
6	1195.0	1300.0	1207.0	1300.0	1
7	1207.0	1300.0	1254.0	1325.0	1
8	1254.0	1325.0	1269.0	1325.0	1
9	1269.0	1325.0	1320.0	1352.0	1
10	1320.0	1352.0	1349.0	1352.0	1
11	1349.0	1352.0	1384.0	1371.0	1
12	1384.0	1371.0	1394.0	1371.0	1
13	1394.0	1371.0	1429.0	1388.0	1
14	1429.0	1388.0	1530.0	1388.0	1
15	1530.0	1388.0	1540.0	1386.0	1
16	1540.0	1386.0	1578.0	1386.0	1

12 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1075.0	1245.0	1085.0	1235.0	2
2	1085.0	1235.0	1105.0	1235.0	2
3	1105.0	1235.0	1115.0	1245.0	2
4	1115.0	1245.0	1200.0	1290.0	2
5	1200.0	1290.0	1220.0	1290.0	2
6	1220.0	1290.0	1260.0	1315.0	2
7	1260.0	1315.0	1300.0	1317.0	2
8	1300.0	1317.0	1320.0	1330.0	2
9	1320.0	1330.0	1350.0	1340.0	2
10	1350.0	1340.0	1380.0	1348.0	2
11	1380.0	1348.0	1430.0	1346.0	2
12	1430.0	1346.0	1578.0	1366.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	1000.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ĩ-value (degrees)
1	.00	1000.0	33.00
2	20.00	150.0	24.00
3	90.00	1000.0	33.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

200 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 3.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1115.0	1227.0	1180.0	1260.0	30.0
2	1350.0	1320.0	1460.0	1325.0	30.0

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 35 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1085.81	1250.58
2	1087.25	1249.79
3	1089.89	1248.36
4	1092.52	1246.93
5	1095.16	1245.50
6	1097.80	1244.07
7	1100.43	1242.64
8	1103.07	1241.20
9	1105.70	1239.77
10	1108.34	1238.34
11	1109.30	1237.82
12	1111.93	1236.39
13	1114.57	1234.96
14	1117.21	1233.53
15	1425.81	1337.36
16	1427.25	1339.99
17	1428.68	1342.63
18	1430.11	1345.27
19	1430.55	1346.07
20	1431.98	1348.71
21	1433.41	1351.35
22	1434.84	1353.98
23	1436.27	1356.62
24	1437.70	1359.26
25	1439.14	1361.89
26	1440.57	1364.53
27	1442.00	1367.17
28	1443.43	1369.80
29	1444.86	1372.44
30	1446.29	1375.08
31	1447.73	1377.71
32	1449.16	1380.35
33	1450.59	1382.98
34	1452.02	1385.62
35	1453.31	1388.00

** Corrected JANBU FOS = 1.101 ** (Fo factor = 1.042)

Failure surface No. 2 specified by 37 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1087.83	1251.62
2	1088.64	1251.18
3	1091.28	1249.75
4	1093.91	1248.32
5	1096.55	1246.89
6	1099.19	1245.46
7	1101.82	1244.03
8	1104.46	1242.60
9	1107.10	1241.16
10	1109.73	1239.73
11	1110.45	1239.34
12	1113.09	1237.91
13	1115.72	1236.48
14	1406.60	1328.97
15	1408.03	1331.60

16	1409.47	1334.24
17	1410.90	1336.88
18	1412.33	1339.51
19	1413.76	1342.15
20	1415.19	1344.79
21	1416.15	1346.55
22	1417.58	1349.19
23	1419.01	1351.83
24	1420.45	1354.46
25	1421.88	1357.10
26	1423.31	1359.74
27	1424.74	1362.37
28	1426.17	1365.01
29	1427.60	1367.65
30	1429.03	1370.28
31	1430.47	1372.92
32	1431.90	1375.56
33	1433.33	1378.19
34	1434.76	1380.83
35	1436.19	1383.46
36	1437.62	1386.10
37	1438.65	1388.00

** Corrected JANBU FOS = 1.112 ** (Fo factor = 1.048)

Failure surface No. 3 specified by 35 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1093.07	1254.33
2	1094.88	1253.35
3	1097.51	1251.92
4	1100.15	1250.49
5	1102.78	1249.06
6	1105.42	1247.63
7	1108.06	1246.19
8	1110.69	1244.76
9	1113.33	1243.33
10	1113.50	1243.24
11	1116.13	1241.81
12	1118.77	1240.38
13	1121.41	1238.95
14	1124.04	1237.51
15	1411.92	1336.96
16	1413.35	1339.60
17	1414.78	1342.24
18	1416.21	1344.87
19	1417.11	1346.52
20	1418.54	1349.15
21	1419.97	1351.79
22	1421.40	1354.43
23	1422.83	1357.06
24	1424.26	1359.70
25	1425.70	1362.33
26	1427.13	1364.97
27	1428.56	1367.61
28	1429.99	1370.24
29	1431.42	1372.88
30	1432.85	1375.52
31	1434.28	1378.15
32	1435.72	1380.79
33	1437.15	1383.43
34	1438.58	1386.06
35	1439.63	1388.00

** Corrected JANBU FOS = 1.115 ** (Fo factor = 1.043)

Failure surface No. 4 specified by 38 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1083.30	1249.28
2	1085.53	1248.07
3	1088.17	1246.64
4	1090.80	1245.21
5	1093.44	1243.78
6	1096.08	1242.35
7	1098.71	1240.92
8	1101.35	1239.49
9	1103.99	1238.05
10	1106.62	1236.62
11	1107.82	1235.97
12	1110.45	1234.54
13	1113.09	1233.11
14	1115.73	1231.68
15	1118.36	1230.25
16	1121.00	1228.82
17	1419.61	1333.66
18	1421.04	1336.30
19	1422.47	1338.93
20	1423.90	1341.57
21	1425.33	1344.21
22	1426.38	1346.14
23	1427.82	1348.78
24	1429.25	1351.42
25	1430.68	1354.05
26	1432.11	1356.69
27	1433.54	1359.33
28	1434.97	1361.96
29	1436.40	1364.60
30	1437.84	1367.24
31	1439.27	1369.87
32	1440.70	1372.51
33	1442.13	1375.15
34	1443.56	1377.78
35	1444.99	1380.42
36	1446.43	1383.06
37	1447.86	1385.69
38	1449.11	1388.00

** Corrected JANBU FOS = 1.130 ** (Fo factor = 1.044)

Failure surface No. 5 specified by 31 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1099.79	1257.79
2	1100.77	1257.26
3	1103.41	1255.83
4	1106.05	1254.40
5	1108.68	1252.96
6	1111.32	1251.53
7	1113.96	1250.10
8	1116.59	1248.67
9	1119.23	1247.24
10	1119.73	1246.96
11	1122.37	1245.53
12	1375.89	1328.47
13	1377.32	1331.11
14	1378.75	1333.74
15	1380.18	1336.38
16	1381.61	1339.02
17	1383.04	1341.65
18	1384.48	1344.29
19	1385.91	1346.93
20	1386.35	1347.75

21	1387.78	1350.38
22	1389.22	1353.02
23	1390.65	1355.66
24	1392.08	1358.29
25	1393.51	1360.93
26	1394.94	1363.56
27	1396.37	1366.20
28	1397.80	1368.84
29	1399.24	1371.47
30	1400.67	1374.11
31	1400.76	1374.28

** Corrected JANBU FOS = 1.132 ** (Fo factor = 1.045)

Failure surface No. 6 specified by 35 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1103.06	1259.48
2	1104.01	1258.97
3	1106.64	1257.54
4	1109.28	1256.11
5	1111.92	1254.68
6	1114.55	1253.24
7	1117.19	1251.81
8	1119.83	1250.38
9	1122.46	1248.95
10	1125.08	1247.53
11	1127.71	1246.10
12	1412.22	1328.76
13	1413.66	1331.39
14	1415.09	1334.03
15	1416.52	1336.67
16	1417.95	1339.30
17	1419.38	1341.94
18	1420.81	1344.57
19	1421.77	1346.33
20	1423.20	1348.97
21	1424.63	1351.60
22	1426.06	1354.24
23	1427.49	1356.88
24	1428.92	1359.51
25	1430.36	1362.15
26	1431.79	1364.78
27	1433.22	1367.42
28	1434.65	1370.06
29	1436.08	1372.69
30	1437.51	1375.33
31	1438.94	1377.97
32	1440.38	1380.60
33	1441.81	1383.24
34	1443.24	1385.88
35	1444.39	1388.00

** Corrected JANBU FOS = 1.136 ** (Fo factor = 1.050)

Failure surface No. 7 specified by 33 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1093.52	1254.56
2	1095.18	1253.66
3	1097.82	1252.22
4	1100.45	1250.79
5	1103.09	1249.36
6	1105.73	1247.93
7	1108.36	1246.50

8	1111.00	1245.07
9	1113.64	1243.64
10	1116.24	1242.22
11	1118.88	1240.79
12	1121.52	1239.36
13	1124.15	1237.93
14	1383.79	1331.65
15	1385.22	1334.29
16	1386.65	1336.93
17	1388.09	1339.56
18	1389.52	1342.20
19	1390.95	1344.84
20	1392.38	1347.47
21	1392.40	1347.50
22	1393.83	1350.14
23	1395.26	1352.78
24	1396.69	1355.41
25	1398.12	1358.05
26	1399.55	1360.69
27	1400.99	1363.32
28	1402.42	1365.96
29	1403.85	1368.60
30	1405.28	1371.23
31	1406.71	1373.87
32	1408.14	1376.51
33	1409.15	1378.36

** Corrected JANBU FOS = 1.149 ** (Fo factor = 1.043)

Failure surface No. 8 specified by 37 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1101.90	1258.88
2	1102.86	1258.36
3	1105.49	1256.93
4	1108.13	1255.50
5	1110.77	1254.07
6	1113.40	1252.64
7	1116.04	1251.20
8	1118.67	1249.77
9	1121.31	1248.34
10	1123.54	1247.13
11	1126.18	1245.70
12	1128.82	1244.27
13	1131.45	1242.83
14	1416.92	1330.03
15	1418.35	1332.67
16	1419.79	1335.30
17	1421.22	1337.94
18	1422.65	1340.57
19	1424.08	1343.21
20	1425.51	1345.85
21	1425.69	1346.17
22	1427.12	1348.81
23	1428.55	1351.45
24	1429.98	1354.08
25	1431.41	1356.72
26	1432.85	1359.35
27	1434.28	1361.99
28	1435.71	1364.63
29	1437.14	1367.26
30	1438.57	1369.90
31	1440.00	1372.54
32	1441.44	1375.17
33	1442.87	1377.81
34	1444.30	1380.45
35	1445.73	1383.08
36	1447.16	1385.72

37	1448.40	1388.00

** Corrected JANBU FOS = 1.151 ** (Fo factor = 1.049)

Failure surface No. 9 specified by 42 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1080.01	1247.58
2	1082.09	1246.45
3	1084.72	1245.02
4	1087.36	1243.59
5	1090.00	1242.16
6	1092.63	1240.73
7	1095.27	1239.29
8	1097.91	1237.86
9	1100.54	1236.43
10	1103.18	1235.00
11	1104.13	1234.48
12	1106.77	1233.05
13	1109.40	1231.62
14	1112.04	1230.19
15	1114.68	1228.76
16	1117.31	1227.33
17	1410.31	1322.79
18	1411.74	1325.42
19	1413.17	1328.06
20	1414.61	1330.70
21	1416.04	1333.33
22	1417.47	1335.97
23	1418.90	1338.61
24	1420.33	1341.24
25	1421.76	1343.88
26	1423.07	1346.28
27	1424.50	1348.91
28	1425.93	1351.55
29	1427.36	1354.19
30	1428.79	1356.82
31	1430.22	1359.46
32	1431.66	1362.10
33	1433.09	1364.73
34	1434.52	1367.37
35	1435.95	1370.01
36	1437.38	1372.64
37	1438.81	1375.28
38	1440.24	1377.92
39	1441.68	1380.55
40	1443.11	1383.19
41	1444.54	1385.82
42	1445.72	1388.00

** Corrected JANBU FOS = 1.151 ** (Fo factor = 1.051)

Failure surface No.10 specified by 40 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1088.94	1252.19
2	1089.40	1251.94
3	1092.04	1250.51
4	1094.67	1249.08
5	1097.31	1247.65
6	1099.95	1246.22
7	1102.58	1244.79
8	1105.22	1243.36
9	1107.86	1241.92
10	1110.49	1240.49

11	1111.04	1240.19
12	1113.68	1238.76
13	1116.32	1237.33
14	1421.86	1320.77
15	1423.29	1323.40
16	1424.73	1326.04
17	1426.16	1328.68
18	1427.59	1331.31
19	1429.02	1333.95
20	1430.45	1336.59
21	1431.88	1339.22
22	1433.31	1341.86
23	1434.75	1344.50
24	1436.00	1346.81
25	1437.44	1349.45
26	1438.87	1352.08
27	1440.30	1354.72
28	1441.73	1357.36
29	1443.16	1359.99
30	1444.59	1362.63
31	1446.02	1365.27
32	1447.46	1367.90
33	1448.89	1370.54
34	1450.32	1373.18
35	1451.75	1375.81
36	1453.18	1378.45
37	1454.61	1381.09
38	1456.05	1383.72
39	1457.48	1386.36
40	1458.37	1388.00

** Corrected JANBU FOS = 1.152 ** (Fo factor = 1.053)

The following is a summary of the TEN most critical surfaces

Problem Description : Section K-K' Sandstone Block Kh=0.15

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.101	1.042	1085.81	1453.31	8.322E+05
2.	1.112	1.048	1087.83	1438.65	7.722E+05
3.	1.115	1.043	1093.07	1439.63	7.397E+05
4.	1.130	1.044	1083.30	1449.11	9.153E+05
5.	1.132	1.045	1099.79	1400.76	5.334E+05
6.	1.136	1.050	1103.06	1444.39	7.338E+05
7.	1.149	1.043	1093.52	1409.15	6.354E+05
8.	1.151	1.049	1101.90	1448.40	7.981E+05
9.	1.151	1.051	1080.01	1445.72	9.838E+05
10.	1.152	1.053	1088.94	1458.37	9.431E+05

* * * END OF FILE * * *

No.	(ft)	(ft)
1	1147.06	1476.03
2	1160.06	1468.97
3	1246.86	1503.30
4	1251.21	1510.00
5	1255.39	1517.69

** Corrected JANBU FOS = 1.220 ** (Fo factor = 1.042)

Failure surface No. 7 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.80	1475.90
2	1160.07	1468.69
3	1160.20	1468.61
4	1252.80	1504.17
5	1256.59	1510.00
6	1262.77	1521.38

** Corrected JANBU FOS = 1.220 ** (Fo factor = 1.043)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.46	1475.73
2	1160.06	1468.34
3	1247.23	1501.16
4	1252.96	1510.00
5	1257.80	1518.90

** Corrected JANBU FOS = 1.223 ** (Fo factor = 1.045)

Failure surface No. 9 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.66	1475.83
2	1160.07	1468.54
3	1160.11	1468.52
4	1250.72	1507.13
5	1252.58	1510.00
6	1257.27	1518.63

** Corrected JANBU FOS = 1.224 ** (Fo factor = 1.042)

Failure surface No.10 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.91	1475.95
2	1160.08	1468.80
3	1160.14	1468.76
4	1251.29	1500.19
5	1257.66	1510.00
6	1264.24	1522.12

** Corrected JANBU FOS = 1.225 ** (Fo factor = 1.051)

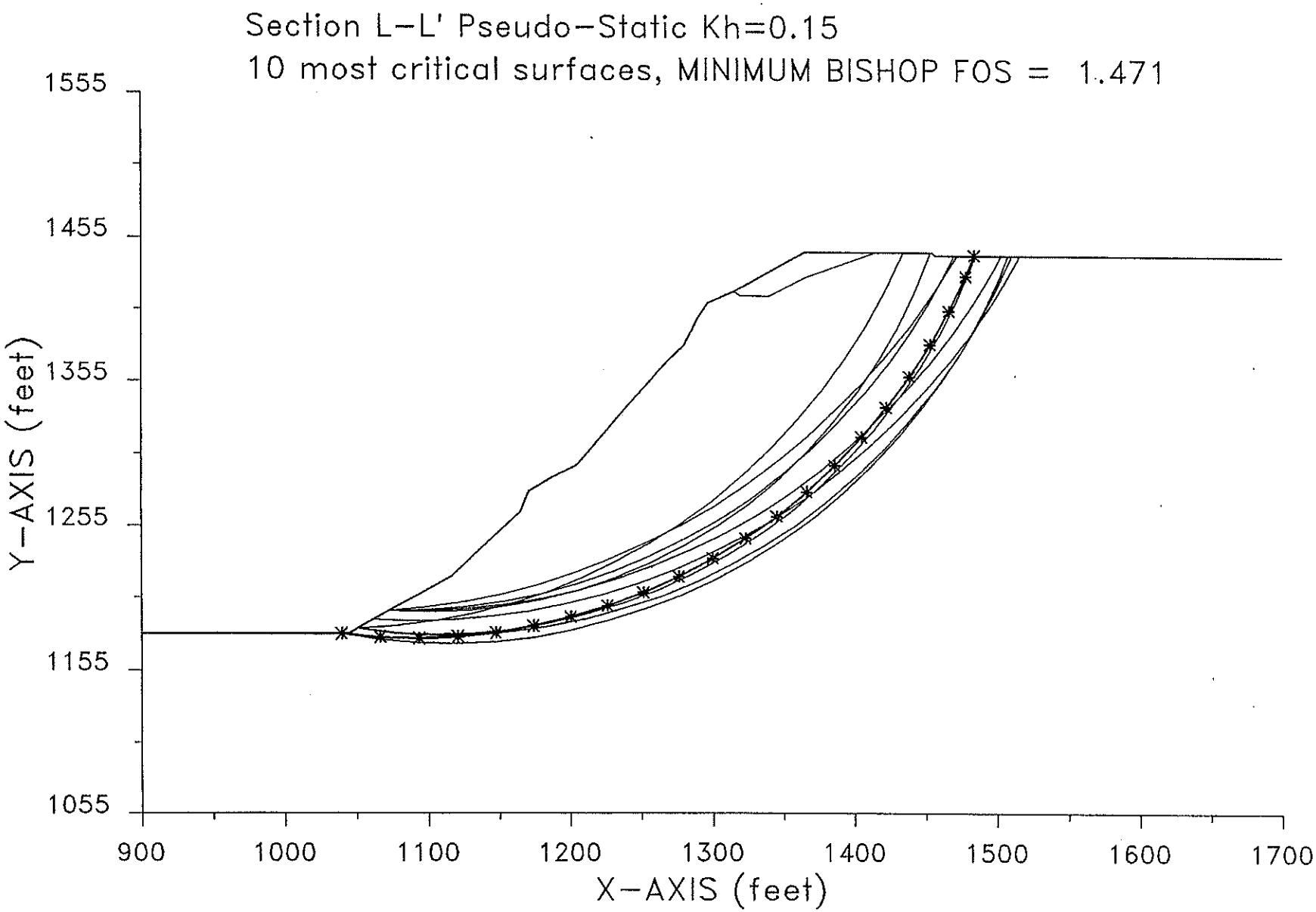
The following is a summary of the TEN most critical surfaces

Problem Description : Section P-P (PS)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.211	1.039	1147.46	1260.88	9.463E+04
2.	1.211	1.053	1144.76	1271.21	1.370E+05
3.	1.216	1.052	1145.06	1267.85	1.295E+05
4.	1.216	1.046	1146.83	1261.63	1.085E+05
5.	1.218	1.046	1144.72	1265.66	1.235E+05
6.	1.220	1.042	1147.06	1255.39	9.659E+04
7.	1.220	1.043	1146.80	1262.77	1.079E+05
8.	1.223	1.045	1146.46	1257.80	1.062E+05
9.	1.224	1.042	1146.66	1257.27	9.474E+04
10.	1.225	1.051	1146.91	1264.24	1.166E+05

* * * END OF FILE * * *

SECTL-L2 10-05-** 10:55



XSTABL File: SECTL-L2 10-05-** 10:55

```
*****************************************
*              X S T A B L              *
*                                       *
*       Slope Stability Analysis        *
*              using the                *
*           Method of Slices            *
*                                       *
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*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section L-L' Pseudo-Static Kh=0.15

SEGMENT BOUNDARY COORDINATES

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	900.0	1180.0	1045.0	1180.0	2
2	1045.0	1180.0	1117.0	1220.0	2
3	1117.0	1220.0	1165.0	1265.0	2
4	1165.0	1265.0	1171.0	1279.0	2
5	1171.0	1279.0	1190.0	1290.0	2
6	1190.0	1290.0	1205.0	1297.0	2
7	1205.0	1297.0	1269.0	1370.0	2
8	1269.0	1370.0	1280.0	1380.0	2
9	1280.0	1380.0	1290.0	1400.0	2
10	1290.0	1400.0	1297.0	1410.0	2
11	1297.0	1410.0	1315.0	1418.0	2
12	1315.0	1418.0	1365.0	1446.0	1
13	1365.0	1446.0	1415.0	1446.0	1
14	1415.0	1446.0	1455.0	1446.0	2
15	1455.0	1446.0	1457.0	1444.0	2
16	1457.0	1444.0	1700.0	1444.0	2

4 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1315.0	1418.0	1320.0	1415.0	2
2	1320.0	1415.0	1340.0	1415.0	2
3	1340.0	1415.0	1365.0	1428.0	2
4	1365.0	1428.0	1415.0	1446.0	2

ISOTROPIC Soil Parameters

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1040.0 ft
and x = 1250.0 ft

Each surface terminates between x = 1260.0 ft
and x = 1560.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1100.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

27.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

```
************************************************************************
   -- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
************************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter. In such
cases, this effect can only be eliminated by reducing the "c" value.
************************************************************************
   ----------------------------------------------------------
   USER SELECTED option to maintain strength greater than zero
   ----------------------------------------------------------

   ************************************************************
   **     Factor of safety calculation for surface #   323    **
   **     failed to converge within FIFTY iterations          **
   **                                                         **
   **    The last calculated value of the FOS was     .0038   **
   **    This will be ignored for final summary of results   **
   ************************************************************
```

Circular surface (FOS= .0038) is defined by: xcenter = 1048.27
ycenter = 1509.38 Init. Pt. = 1216.84 Seg. Length = 27.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 22 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1040.00	1180.00
2	1066.89	1177.54
3	1093.88	1176.81
4	1120.86	1177.80

5	1147.72	1180.52
6	1174.36	1184.96
7	1200.65	1191.09
8	1226.50	1198.89
9	1251.79	1208.33
10	1276.43	1219.37
11	1300.32	1231.97
12	1323.34	1246.06
13	1345.42	1261.61
14	1366.46	1278.53
15	1386.37	1296.77
16	1405.07	1316.25
17	1422.48	1336.88
18	1438.54	1358.58
19	1453.18	1381.27
20	1466.34	1404.85
21	1477.95	1429.22
22	1483.87	1444.00

**** Simplified BISHOP FOS = 1.471 ****

```
*******************************************************************
**                                                               **
**  Out of the    400 surfaces generated and analyzed by XSTABL,  **
**        1 surfaces were found to have MISLEADING FOS values.    **
**                                                               **
*******************************************************************
```

The following is a summary of the TEN most critical surfaces

Problem Description : Section L-L' Pseudo-Static Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.471	1091.83	1598.32	421.52	1040.00	1483.87	1.969E+09
2.	1.479	1078.89	1627.63	432.03	1073.16	1469.74	1.649E+09
3.	1.479	1108.02	1579.67	400.38	1051.05	1484.54	1.880E+09
4.	1.485	1100.18	1568.50	373.83	1073.16	1453.26	1.414E+09
5.	1.489	1092.07	1668.16	479.59	1062.11	1515.86	2.254E+09
6.	1.490	1039.17	1694.79	500.30	1073.16	1471.98	1.806E+09
7.	1.491	1090.23	1662.38	467.05	1073.16	1502.86	2.016E+09
8.	1.492	1114.24	1606.67	428.00	1051.05	1510.07	2.179E+09
9.	1.493	1037.20	1614.45	431.31	1051.05	1434.14	1.482E+09
10.	1.495	1114.65	1594.41	421.08	1040.00	1507.76	2.215E+09

* * * END OF FILE * * *

For tech support on MIRASLOPE, contact TC Mirafi, 365 South Holland Drive, Pendergrass, GA 30567 (800) 234-0484, (706) 693-2226, fax (706) 693-4400

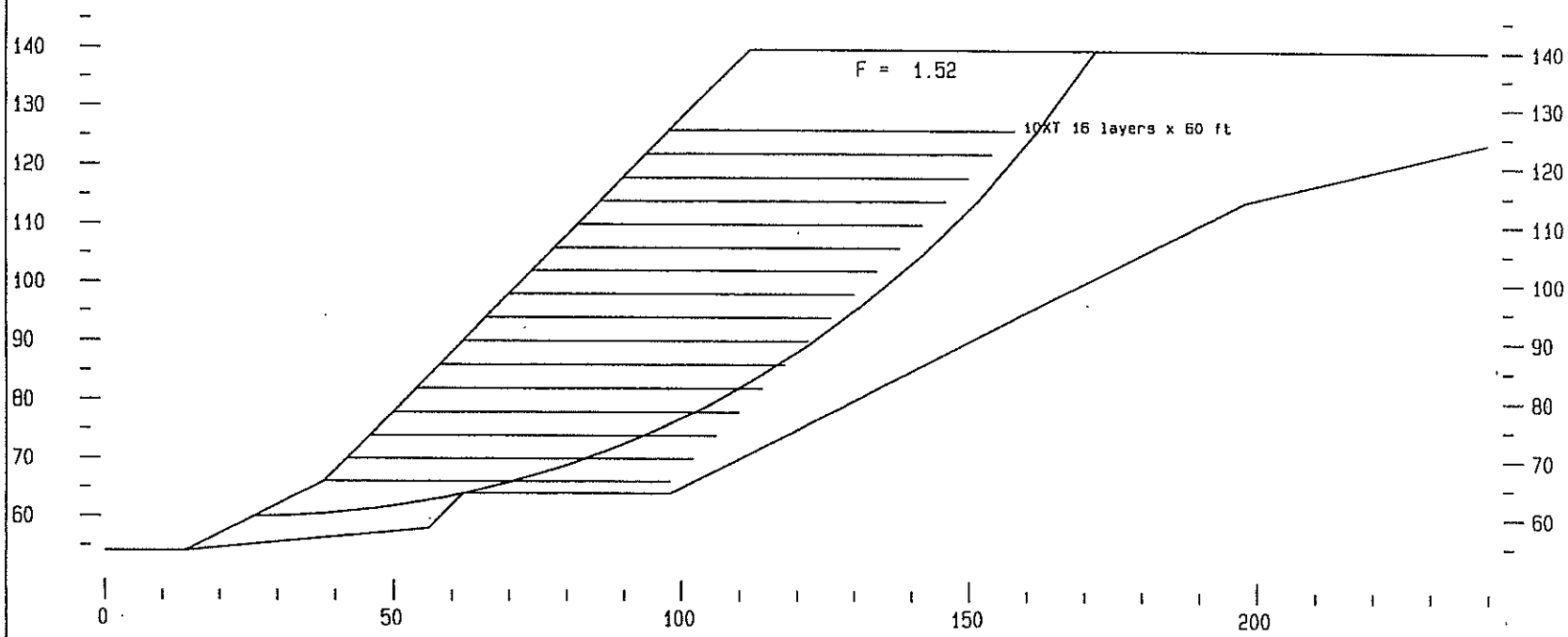
Material	Unit Wt pcf	C psf	Phi deg	Piezo Surf.	Ru
Engineered Fill	130	120	33	0	0
Bedrock	130	4000	28	0	0

Mirafi Geosynthetic Reinforcement: -
10XT: MIRAGRID 10XT

TC MIRAFI WESTERN REGION
Lake Forest, CA

58-9194-02
Presidio
10/9/01
Section M-M'

geogrid2.gsl



Printed at 08:54 on 10-09-2001

DATA FILE NAME..... u:\tslegers\slope\presidio\geogrid2.gsl

Job No.	58-9194-02
Title	Presidio
Date	10/9/01
Label A	Section M-M'
Label B	

Max Slice Width	20
No. of Materials	2
Seismic Acceleration	0
External Forces	0
Piezometric Surfaces	0
Unit Wt. of Pore Fluid	62.4
No. of Reinf. Layers	16
FoS for Reinf. Pullout	1.5

Material	Unit Wt	Cohesion	Friction Angle	Piezo Surf.	Ru	Interaction Coefficient
1 Engineered Fill	130	120	33	0	0	.8
2 Bedrock	130	4000	28	0	0	.8

Upper Surface of Material # 1 (Engineered Fill)

X-Coord	Y-Coord
0	54
14	54
38	66
98	126
112	140
240	140

Upper Surface of Material # 2 (Bedrock)

X-Coord	Y-Coord
0	54
14	54
56	58
62	64
98	64
198	114
240	124

There are no explicit external forces in the data set.

Geosynthetic Layer No.	Horizontal Extents X1 <-------> X2		Geosynthetic Layer Elevation	Force per unit width
1	38.00	98.00	66.00	4116
2	42.00	102.00	70.00	4116
3	46.00	106.00	74.00	4116
4	50.00	110.00	78.00	4116
5	54.00	114.00	82.00	4116
6	58.00	118.00	86.00	4116
7	62.00	122.00	90.00	4116

8	66.00	126.00	94.00	4116
9	70.00	130.00	98.00	4116
10	74.00	134.00	102.00	4116
11	78.00	138.00	106.00	4116
12	82.00	142.00	110.00	4116
13	86.00	146.00	114.00	4116
14	90.00	150.00	118.00	4116
15	94.00	154.00	122.00	4116
16	98.00	158.00	126.00	4116

MIRASLOPE LIMIT EQUILIBRIUM SLOPE STABILITY ANALYSIS

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TC MIRAFI WESTERN REGION
22672 LAMBERT ST.
22672 LAMBERT ST.
Lake Forest, CA

92630
Tel: 949-859-8984
Fax: 949-859-1841

File u:\tslegers\slope\presidio\geogrid2.gsl Output dated 10-09-2001 at 08:54:18

Material	Unit Wt	Cohesion	Friction Angle	Piezo Surf.	Ru	Interaction Coefficient
1 Engineered Fill	130	120	33	0	0	.8
2 Bedrock	130	4000	28	0	0	.8

X-centre	Y-centre	Radius	Factor of Safety	Iterations	Slices	M Alpha Warnings
15.00	200.00	130.00	1.8310	6	6	0
15.00	200.00	132.00	1.7999	6	7	0
15.00	200.00	134.00	1.7304	6	7	0
15.00	200.00	136.00	1.6673	5	8	0
15.00	200.00	138.00	1.6627	5	8	0
15.00	200.00	140.00	1.6064	5	8	0
20.00	200.00	130.00	1.7974	6	7	0
20.00	200.00	132.00	1.7079	5	7	0
20.00	200.00	134.00	1.6992	5	7	0
20.00	200.00	136.00	1.6626	5	8	0
20.00	200.00	138.00	1.6418	5	8	0
20.00	200.00	140.00	1.6036	5	8	0
25.00	200.00	130.00	1.7441	5	7	0
25.00	200.00	132.00	1.7146	5	7	0
25.00	200.00	134.00	1.6780	5	7	0
25.00	200.00	136.00	1.6869	5	8	0
25.00	200.00	138.00	1.6473	5	8	0
25.00	200.00	140.00	1.6202	5	8	0
30.00	200.00	130.00	1.7232	5	7	0
30.00	200.00	132.00	1.7323	5	7	0
30.00	200.00	134.00	1.6853	5	7	0
30.00	200.00	136.00	1.7131	5	9	0
30.00	200.00	138.00	1.6837	5	9	0
30.00	200.00	140.00	1.6962	5	11	0
35.00	200.00	130.00	1.7326	5	7	0
35.00	200.00	132.00	1.7629	5	8	0
35.00	200.00	134.00	1.7269	5	8	0
35.00	200.00	136.00	1.7466	5	9	0
35.00	200.00	138.00	1.7236	5	9	0
35.00	200.00	140.00	1.7042	5	11	0
40.00	200.00	130.00	1.7800	5	8	0
40.00	200.00	132.00	1.8005	5	8	0
40.00	200.00	134.00	1.7715	5	8	0

40.00	200.00	136.00	1.6923	5	9	0
40.00	200.00	138.00	1.5855	5	11	0
40.00	200.00	140.00	1.6999	5	11	0
45.00	200.00	130.00	1.8297	5	8	0
45.00	200.00	132.00	1.8231	5	8	0
45.00	200.00	134.00	1.6090	5	8	0
45.00	200.00	136.00	1.5658	5	9	0
45.00	200.00	138.00	1.6612	5	11	0
45.00	200.00	140.00	1.7966	5	10	0
50.00	200.00	130.00	1.6735	5	8	0
50.00	200.00	132.00	1.6223	5	8	0
50.00	200.00	134.00	1.5982	5	8	0
50.00	200.00	136.00	1.5968	5	10	0
50.00	200.00	138.00	1.7682	5	12	0
50.00	200.00	140.00	1.9039	5	12	0
55.00	200.00	130.00	1.6602	5	8	0
55.00	200.00	132.00	1.6540	5	9	0
55.00	200.00	134.00	1.6305	5	9	0
55.00	200.00	136.00	1.6588	5	10	0
55.00	200.00	138.00	1.9059	5	11	0
55.00	200.00	140.00	2.0151	5	12	0
15.00	205.00	135.00	1.8160	6	7	0
15.00	205.00	137.00	1.7734	6	7	0
15.00	205.00	139.00	1.7284	6	7	0
15.00	205.00	141.00	1.6640	5	8	0
15.00	205.00	143.00	1.6623	5	8	0
15.00	205.00	145.00	1.6119	5	8	0
20.00	205.00	135.00	1.7996	6	7	0
20.00	205.00	137.00	1.7066	5	7	0
20.00	205.00	139.00	1.7004	5	7	0
20.00	205.00	141.00	1.6733	5	8	0
20.00	205.00	143.00	1.6507	5	8	0
20.00	205.00	145.00	1.6155	5	8	0
25.00	205.00	135.00	1.7469	5	7	0
25.00	205.00	137.00	1.7286	5	7	0
25.00	205.00	139.00	1.6887	5	7	0
25.00	205.00	141.00	1.6987	5	8	0
25.00	205.00	143.00	1.6733	5	9	0
25.00	205.00	145.00	1.6480	5	9	0
30.00	205.00	135.00	1.7357	5	7	0
30.00	205.00	137.00	1.7458	5	7	0
30.00	205.00	139.00	1.7149	5	8	0
30.00	205.00	141.00	1.7311	5	9	0
30.00	205.00	143.00	1.7029	5	9	0
30.00	205.00	145.00	1.7297	5	11	0
35.00	205.00	135.00	1.7662	5	8	0
35.00	205.00	137.00	1.7829	5	8	0
35.00	205.00	139.00	1.7480	5	8	0
35.00	205.00	141.00	1.7675	5	9	0
35.00	205.00	143.00	1.6571	5	9	0
35.00	205.00	145.00	1.6582	5	11	0
40.00	205.00	135.00	1.8032	5	8	0
40.00	205.00	137.00	1.8234	5	8	0
40.00	205.00	139.00	1.7732	5	8	0
40.00	205.00	141.00	1.6003	5	9	0
40.00	205.00	143.00	1.5626	5	11	0
40.00	205.00	145.00	1.7064	5	11	0
45.00	205.00	135.00	1.8522	5	8	0
45.00	205.00	137.00	1.6625	5	8	0
45.00	205.00	139.00	1.5770	5	8	0
45.00	205.00	141.00	1.5728	5	9	0
45.00	205.00	143.00	1.6675	5	12	0
45.00	205.00	145.00	1.8118	5	11	0
50.00	205.00	135.00	1.6371	5	8	0
50.00	205.00	137.00	1.6462	5	8	0
50.00	205.00	139.00	1.6012	5	9	0

50.00	205.00	141.00	1.6143	5	10	0
50.00	205.00	143.00	1.7848	5	12	0
50.00	205.00	145.00	1.9100	5	12	0
55.00	205.00	135.00	1.6616	5	9	0
55.00	205.00	137.00	1.6738	5	9	0
55.00	205.00	139.00	1.6544	5	9	0
55.00	205.00	141.00	1.6682	5	10	0
55.00	205.00	143.00	1.9118	5	11	0
55.00	205.00	145.00	2.0376	5	12	0
15.00	210.00	140.00	1.7955	6	7	0
15.00	210.00	142.00	1.7580	6	7	0
15.00	210.00	144.00	1.7338	5	7	0
15.00	210.00	146.00	1.6662	5	8	0
15.00	210.00	148.00	1.6663	5	8	0
15.00	210.00	150.00	1.6204	5	8	0
20.00	210.00	140.00	1.7920	5	7	0
20.00	210.00	142.00	1.7109	5	7	0
20.00	210.00	144.00	1.7058	5	7	0
20.00	210.00	146.00	1.6871	5	8	0
20.00	210.00	148.00	1.6621	5	8	0
20.00	210.00	150.00	1.6400	5	9	0
25.00	210.00	140.00	1.7539	5	7	0
25.00	210.00	142.00	1.7459	5	7	0
25.00	210.00	144.00	1.7018	5	7	0
25.00	210.00	146.00	1.7256	5	9	0
25.00	210.00	148.00	1.6906	5	9	0
25.00	210.00	150.00	1.6664	5	9	0
30.00	210.00	140.00	1.7506	5	7	0
30.00	210.00	142.00	1.7764	5	8	0
30.00	210.00	144.00	1.7340	5	8	0
30.00	210.00	146.00	1.7504	5	9	0
30.00	210.00	148.00	1.7231	5	9	0
30.00	210.00	150.00	1.6848	5	11	0
35.00	210.00	140.00	1.7873	5	8	0
35.00	210.00	142.00	1.8040	5	8	0
35.00	210.00	144.00	1.7700	5	8	0
35.00	210.00	146.00	1.7736	5	9	0
35.00	210.00	148.00	1.5616	5	9	0
35.00	210.00	150.00	1.6388	5	11	0
40.00	210.00	140.00	1.8272	5	8	0
40.00	210.00	142.00	1.8466	5	8	0
40.00	210.00	144.00	1.6158	5	8	0
40.00	210.00	146.00	1.5703	5	9	0
40.00	210.00	148.00	1.5662	5	11	0
40.00	210.00	150.00	1.7300	5	12	0
45.00	210.00	140.00	1.6983	5	8	0
45.00	210.00	142.00	1.6282	5	8	0
45.00	210.00	144.00	1.5901	5	8	0
45.00	210.00	146.00	1.5898	5	10	0
45.00	210.00	148.00	1.6945	5	12	0
45.00	210.00	150.00	1.8367	5	11	0
50.00	210.00	140.00	1.6592	5	8	0
50.00	210.00	142.00	1.6476	5	9	0
50.00	210.00	144.00	1.6254	5	9	0
50.00	210.00	146.00	1.6377	5	10	0
50.00	210.00	148.00	1.8100	5	12	0
50.00	210.00	150.00	1.9338	5	12	0
55.00	210.00	140.00	1.6871	5	9	0
55.00	210.00	142.00	1.6985	5	9	0
55.00	210.00	144.00	1.6783	5	9	0
55.00	210.00	146.00	1.6913	5	10	0
55.00	210.00	148.00	1.9238	5	11	0
55.00	210.00	150.00	2.2038	5	13	0
15.00	215.00	145.00	1.7865	6	7	0
15.00	215.00	147.00	1.7505	5	7	0
15.00	215.00	149.00	1.7400	5	7	0

15.00	215.00	151.00	1.6727	5	8	0
15.00	215.00	153.00	1.6736	5	8	0
15.00	215.00	155.00	1.6312	5	8	0
20.00	215.00	145.00	1.7909	5	7	0
20.00	215.00	147.00	1.7194	5	7	0
20.00	215.00	149.00	1.7146	5	7	0
20.00	215.00	151.00	1.7034	5	8	0
20.00	215.00	153.00	1.6872	5	9	0
20.00	215.00	155.00	1.6564	5	9	0
25.00	215.00	145.00	1.7641	5	7	0
25.00	215.00	147.00	1.7657	5	7	0
25.00	215.00	149.00	1.7303	5	8	0
25.00	215.00	151.00	1.7425	5	9	0
25.00	215.00	153.00	1.7090	5	9	0
25.00	215.00	155.00	1.6857	5	9	0
30.00	215.00	145.00	1.7827	5	8	0
30.00	215.00	147.00	1.7951	5	8	0
30.00	215.00	149.00	1.7543	5	8	0
30.00	215.00	151.00	1.7706	5	9	0
30.00	215.00	153.00	1.7340	5	9	0
30.00	215.00	155.00	1.5934	5	11	0
35.00	215.00	145.00	1.8094	5	8	0
35.00	215.00	147.00	1.8261	5	8	0
35.00	215.00	149.00	1.7927	5	8	0
35.00	215.00	151.00	1.6117	5	9	0
35.00	215.00	153.00	1.5353	5	9	0
35.00	215.00	155.00	1.6405	5	11	0
40.00	215.00	145.00	1.8518	5	8	0
40.00	215.00	147.00	1.6943	5	8	0
40.00	215.00	149.00	1.5854	5	8	0
40.00	215.00	151.00	1.5731	5	9	0
40.00	215.00	153.00	1.6003	5	12	0
40.00	215.00	155.00	1.7565	5	12	0
45.00	215.00	145.00	1.6468	5	8	0
45.00	215.00	147.00	1.6392	5	8	0
45.00	215.00	149.00	1.6027	5	9	0
45.00	215.00	151.00	1.6134	5	10	0
45.00	215.00	153.00	1.7214	5	12	0
45.00	215.00	155.00	1.8617	5	11	0
50.00	215.00	145.00	1.6632	5	9	0
50.00	215.00	147.00	1.6724	5	9	0
50.00	215.00	149.00	1.6496	5	9	0
50.00	215.00	151.00	1.6612	5	10	0
50.00	215.00	153.00	1.8353	5	12	0
50.00	215.00	155.00	1.9577	5	12	0
55.00	215.00	145.00	1.7127	5	9	0
55.00	215.00	147.00	1.7232	5	9	0
55.00	215.00	149.00	1.7023	5	9	0
55.00	215.00	151.00	1.7145	5	10	0
55.00	215.00	153.00	1.9477	5	11	0
55.00	215.00	155.00	2.3536	5	14	0
15.00	220.00	150.00	1.7858	5	7	0
15.00	220.00	152.00	1.7491	5	7	0
15.00	220.00	154.00	1.7424	5	7	0
15.00	220.00	156.00	1.6824	5	8	0
15.00	220.00	158.00	1.6835	5	8	0
15.00	220.00	160.00	1.6547	5	9	0
20.00	220.00	150.00	1.7944	5	7	0
20.00	220.00	152.00	1.7311	5	7	0
20.00	220.00	154.00	1.7258	5	7	0
20.00	220.00	156.00	1.7347	5	9	0
20.00	220.00	158.00	1.7034	5	9	0
20.00	220.00	160.00	1.6740	5	9	0
25.00	220.00	150.00	1.7769	5	7	0
25.00	220.00	152.00	1.7976	5	8	0
25.00	220.00	154.00	1.7481	5	8	0

25.00	220.00	156.00	1.7607	5	9	0
25.00	220.00	158.00	1.7284	5	9	0
25.00	220.00	160.00	1.6994	5	9	0
30.00	220.00	150.00	1.8023	5	8	0
30.00	220.00	152.00	1.8150	5	8	0
30.00	220.00	154.00	1.7754	5	8	0
30.00	220.00	156.00	1.7916	5	9	0
30.00	220.00	158.00	1.5756	5	9	0
30.00	220.00	160.00	1.5780	5	11	0
35.00	220.00	150.00	1.8324	5	8	0
35.00	220.00	152.00	1.8488	5	8	0
35.00	220.00	154.00	1.6516	5	8	0
35.00	220.00	156.00	1.5823	5	9	0
35.00	220.00	158.00	1.5309	5	9	0
35.00	220.00	160.00	1.6751	5	12	0
40.00	220.00	150.00	1.7676	5	8	0
40.00	220.00	152.00	1.6416	5	8	0
40.00	220.00	154.00	1.5886	5	8	0
40.00	220.00	156.00	1.5949	5	10	0
40.00	220.00	158.00	1.6292	5	12	0
40.00	220.00	160.00	1.7830	5	12	0
45.00	220.00	150.00	1.6501	5	8	0
45.00	220.00	152.00	1.6531	5	9	0
45.00	220.00	154.00	1.6269	5	9	0
45.00	220.00	156.00	1.6344	5	10	0
45.00	220.00	158.00	1.7481	5	12	0
45.00	220.00	160.00	1.8867	5	11	0
50.00	220.00	150.00	1.6889	5	9	0
50.00	220.00	152.00	1.6867	5	9	0
50.00	220.00	154.00	1.6716	5	9	0
50.00	220.00	156.00	1.6847	5	10	0
50.00	220.00	158.00	1.8606	5	12	0
50.00	220.00	160.00	1.9817	5	12	0
55.00	220.00	150.00	1.7254	5	9	0
55.00	220.00	152.00	1.7479	5	9	0
55.00	220.00	154.00	1.7263	5	9	0
55.00	220.00	156.00	1.7378	5	10	0
55.00	220.00	158.00	1.9717	5	11	0
55.00	220.00	160.00	2.4571	5	14	0
15.00	225.00	155.00	1.7917	5	7	0
15.00	225.00	157.00	1.7522	5	7	0
15.00	225.00	159.00	1.7485	5	7	0
15.00	225.00	161.00	1.6946	5	8	0
15.00	225.00	163.00	1.7072	5	9	0
15.00	225.00	165.00	1.6700	5	9	0
20.00	225.00	155.00	1.8016	5	7	0
20.00	225.00	157.00	1.7583	5	8	0
20.00	225.00	159.00	1.7525	5	8	0
20.00	225.00	161.00	1.7560	5	9	0
20.00	225.00	163.00	1.7207	5	9	0
20.00	225.00	165.00	1.6925	5	9	0
25.00	225.00	155.00	1.8069	5	8	0
25.00	225.00	157.00	1.8146	5	8	0
25.00	225.00	159.00	1.7670	5	8	0
25.00	225.00	161.00	1.7799	5	9	0
25.00	225.00	163.00	1.7485	5	9	0
25.00	225.00	165.00	1.5451	5	9	0
30.00	225.00	155.00	1.8229	5	8	0
30.00	225.00	157.00	1.8358	5	8	0
30.00	225.00	159.00	1.7972	5	8	0
30.00	225.00	161.00	1.6538	5	9	0
30.00	225.00	163.00	1.5487	5	9	0
30.00	225.00	165.00	1.5822	5	11	0
35.00	225.00	155.00	1.8559	5	8	0
35.00	225.00	157.00	1.7711	5	8	0
35.00	225.00	159.00	1.6005	5	8	0

35.00	225.00	161.00	1.5785	5	9	0
35.00	225.00	163.00	1.5597	5	10	0
35.00	225.00	165.00	1.6864	5	12	0
40.00	225.00	155.00	1.6670	5	8	0
40.00	225.00	157.00	1.6407	5	9	0
40.00	225.00	159.00	1.6104	5	9	0
40.00	225.00	161.00	1.5994	5	10	0
40.00	225.00	163.00	1.6308	5	12	0
40.00	225.00	165.00	1.7824	5	12	0
45.00	225.00	155.00	1.6720	5	9	0
45.00	225.00	157.00	1.6666	5	9	0
45.00	225.00	159.00	1.6220	5	9	0
45.00	225.00	161.00	1.6326	5	10	0
45.00	225.00	163.00	1.7498	5	12	0
45.00	225.00	165.00	1.9118	5	11	0
50.00	225.00	155.00	1.6824	5	9	0
50.00	225.00	157.00	1.6908	5	9	0
50.00	225.00	159.00	1.6689	5	9	0
50.00	225.00	161.00	1.7040	5	10	0
50.00	225.00	163.00	1.8859	5	12	0
50.00	225.00	165.00	2.0057	5	12	0
55.00	225.00	155.00	1.7310	5	9	0
55.00	225.00	157.00	1.7462	5	9	0
55.00	225.00	159.00	1.7502	5	9	0
55.00	225.00	161.00	1.7610	5	10	0
55.00	225.00	163.00	2.0021	5	12	0
55.00	225.00	165.00	2.5570	5	14	0
15.00	230.00	160.00	1.8026	5	7	0
15.00	230.00	162.00	1.7587	5	7	0
15.00	230.00	164.00	1.7696	5	8	0
15.00	230.00	166.00	1.7214	5	9	0
15.00	230.00	168.00	1.7219	5	9	0
15.00	230.00	170.00	1.6865	5	9	0
20.00	230.00	160.00	1.8255	5	8	0
20.00	230.00	162.00	1.7761	5	8	0
20.00	230.00	164.00	1.7686	5	8	0
20.00	230.00	166.00	1.7771	5	9	0
20.00	230.00	168.00	1.7390	5	9	0
20.00	230.00	170.00	1.7116	5	9	0
25.00	230.00	160.00	1.8245	5	8	0
25.00	230.00	162.00	1.8329	5	8	0
25.00	230.00	164.00	1.7869	5	8	0
25.00	230.00	166.00	1.7999	5	9	0
25.00	230.00	168.00	1.6219	5	9	0
25.00	230.00	170.00	1.5202	5	9	0
30.00	230.00	160.00	1.8445	5	8	0
30.00	230.00	162.00	1.8574	5	8	0
30.00	230.00	164.00	1.7300	5	8	0
30.00	230.00	166.00	1.6003	5	9	0
30.00	230.00	168.00	1.5435	5	9	0
30.00	230.00	170.00	1.6100	5	12	0
35.00	230.00	160.00	1.8264	5	8	0
35.00	230.00	162.00	1.6650	5	8	0
35.00	230.00	164.00	1.6001	5	9	0
35.00	230.00	166.00	1.6057	5	10	0
35.00	230.00	168.00	1.5560	5	10	0
35.00	230.00	170.00	1.7045	5	12	0
40.00	230.00	160.00	1.6624	5	9	0
40.00	230.00	162.00	1.6653	5	9	0
40.00	230.00	164.00	1.6060	5	9	0
40.00	230.00	166.00	1.6137	5	10	0
40.00	230.00	168.00	1.6590	5	12	0
40.00	230.00	170.00	1.8087	5	12	0
45.00	230.00	160.00	1.6667	5	9	0
45.00	230.00	162.00	1.6711	5	9	0
45.00	230.00	164.00	1.6462	5	9	0

45.00	230.00	166.00	1.6561	5	10	0
45.00	230.00	168.00	1.7737	5	12	0
45.00	230.00	170.00	1.9093	5	11	0
50.00	230.00	160.00	1.7072	5	9	0
50.00	230.00	162.00	1.7156	5	9	0
50.00	230.00	164.00	1.6930	5	9	0
50.00	230.00	166.00	1.7037	5	10	0
50.00	230.00	168.00	1.9111	5	12	0
50.00	230.00	170.00	2.1232	5	14	0
55.00	230.00	160.00	1.7564	5	9	0
55.00	230.00	162.00	1.7658	5	9	0
55.00	230.00	164.00	1.7797	5	10	0
55.00	230.00	166.00	1.7900	5	11	0
55.00	230.00	168.00	2.2222	5	12	0
55.00	230.00	170.00	2.6524	5	16	0
15.00	235.00	165.00	1.8176	5	7	0
15.00	235.00	167.00	1.7807	5	8	0
15.00	235.00	169.00	1.7818	5	8	0
15.00	235.00	171.00	1.7385	5	9	0
15.00	235.00	173.00	1.7378	5	9	0
15.00	235.00	175.00	1.7039	5	9	0
20.00	235.00	165.00	1.8390	5	8	0
20.00	235.00	167.00	1.7955	5	8	0
20.00	235.00	169.00	1.7859	5	8	0
20.00	235.00	171.00	1.7949	5	9	0
20.00	235.00	173.00	1.7580	5	9	0
20.00	235.00	175.00	1.5961	5	9	0
25.00	235.00	165.00	1.8433	5	8	0
25.00	235.00	167.00	1.8521	5	8	0
25.00	235.00	169.00	1.8074	5	8	0
25.00	235.00	171.00	1.7373	5	9	0
25.00	235.00	173.00	1.5675	5	9	0
25.00	235.00	175.00	1.5198	5	11	0
30.00	235.00	165.00	1.8666	5	8	0
30.00	235.00	167.00	1.8313	5	8	0
30.00	235.00	169.00	1.6248	5	8	0
30.00	235.00	171.00	1.5992	5	10	0
30.00	235.00	173.00	1.5619	5	10	0
30.00	235.00	175.00	1.6218	5	12	0
35.00	235.00	165.00	1.7113	5	8	0
35.00	235.00	167.00	1.6597	5	9	0
35.00	235.00	169.00	1.6156	5	9	0
35.00	235.00	171.00	1.6002	5	10	0
35.00	235.00	173.00	1.5788	5	10	0
35.00	235.00	175.00	1.7321	5	12	0
40.00	235.00	165.00	1.6722	5	9	0
40.00	235.00	167.00	1.6575	5	9	0
40.00	235.00	169.00	1.6289	5	9	0
40.00	235.00	171.00	1.6371	5	10	0
40.00	235.00	173.00	1.6868	5	12	0
40.00	235.00	175.00	1.8348	5	12	0
45.00	235.00	165.00	1.6896	5	9	0
45.00	235.00	167.00	1.6958	5	9	0
45.00	235.00	169.00	1.6703	5	9	0
45.00	235.00	171.00	1.6796	5	10	0
45.00	235.00	173.00	1.7999	5	12	0
45.00	235.00	175.00	1.9319	5	12	0
50.00	235.00	165.00	1.7326	5	9	0
50.00	235.00	167.00	1.7403	5	9	0
50.00	235.00	169.00	1.7170	5	9	0
50.00	235.00	171.00	1.7321	5	11	0
50.00	235.00	173.00	1.9287	5	13	0
50.00	235.00	175.00	2.3315	5	14	0
55.00	235.00	165.00	1.7815	5	9	0
55.00	235.00	167.00	1.7960	5	10	0
55.00	235.00	169.00	1.7796	5	10	0

55.00	235.00	171.00	1.8133	5	11	0
55.00	235.00	173.00	2.3870	5	14	0
55.00	235.00	175.00	2.7326	5	15	0
15.00	240.00	170.00	1.8497	5	8	0
15.00	240.00	172.00	1.7932	5	8	0
15.00	240.00	174.00	1.7957	5	8	0
15.00	240.00	176.00	1.7571	5	9	0
15.00	240.00	178.00	1.7547	5	9	0
15.00	240.00	180.00	1.7220	5	9	0
20.00	240.00	170.00	1.8541	5	8	0
20.00	240.00	172.00	1.8164	5	8	0
20.00	240.00	174.00	1.8042	5	8	0
20.00	240.00	176.00	1.8136	5	9	0
20.00	240.00	178.00	1.7040	5	9	0
20.00	240.00	180.00	1.5394	5	9	0
25.00	240.00	170.00	1.8631	5	8	0
25.00	240.00	172.00	1.8722	5	8	0
25.00	240.00	174.00	1.7876	5	8	0
25.00	240.00	176.00	1.6276	5	9	0
25.00	240.00	178.00	1.5667	5	10	0
25.00	240.00	180.00	1.5390	5	12	0
30.00	240.00	170.00	1.8744	5	8	0
30.00	240.00	172.00	1.7141	5	8	0
30.00	240.00	174.00	1.6199	5	9	0
30.00	240.00	176.00	1.6044	5	10	0
30.00	240.00	178.00	1.5671	5	10	0
30.00	240.00	180.00	1.6510	5	12	0
35.00	240.00	170.00	1.6899	5	9	0
35.00	240.00	172.00	1.6597	5	9	0
35.00	240.00	174.00	1.6173	5	9	0
35.00	240.00	176.00	1.6234	5	10	0
35.00	240.00	178.00	1.6016	5	10	0
35.00	240.00	180.00	1.7594	5	12	0
40.00	240.00	170.00	1.6784	5	9	0
40.00	240.00	172.00	1.6820	5	9	0
40.00	240.00	174.00	1.6529	5	9	0
40.00	240.00	176.00	1.6605	5	10	0
40.00	240.00	178.00	1.7144	5	12	0
40.00	240.00	180.00	1.8608	5	12	0
45.00	240.00	170.00	1.7149	5	9	0
45.00	240.00	172.00	1.7204	5	9	0
45.00	240.00	174.00	1.6943	5	9	0
45.00	240.00	176.00	1.7029	5	10	0
45.00	240.00	178.00	1.8310	5	13	0
45.00	240.00	180.00	1.9622	5	13	0
50.00	240.00	170.00	1.7579	5	9	0
50.00	240.00	172.00	1.7648	5	9	0
50.00	240.00	174.00	1.7461	5	10	0
50.00	240.00	176.00	1.7555	5	11	0
50.00	240.00	178.00	1.9387	5	13	0
50.00	240.00	180.00	2.4631	5	15	0
55.00	240.00	170.00	1.8124	5	10	0
55.00	240.00	172.00	1.8206	5	10	0
55.00	240.00	174.00	1.7981	5	10	0
55.00	240.00	176.00	1.8374	5	12	0
55.00	240.00	178.00	2.5094	5	14	0
55.00	240.00	180.00	2.8159	5	15	0

nimum Bishop Factor of Safety this run:

25.00	235.00	175.00	1.5198	5	11	0

For tech support on MIRASLOPE, contact TC Mirafi, 365 South Holland Drive, Pendergrass, GA 30567 (800) 234-0484, (706) 693-2226, fax (706) 693-4400

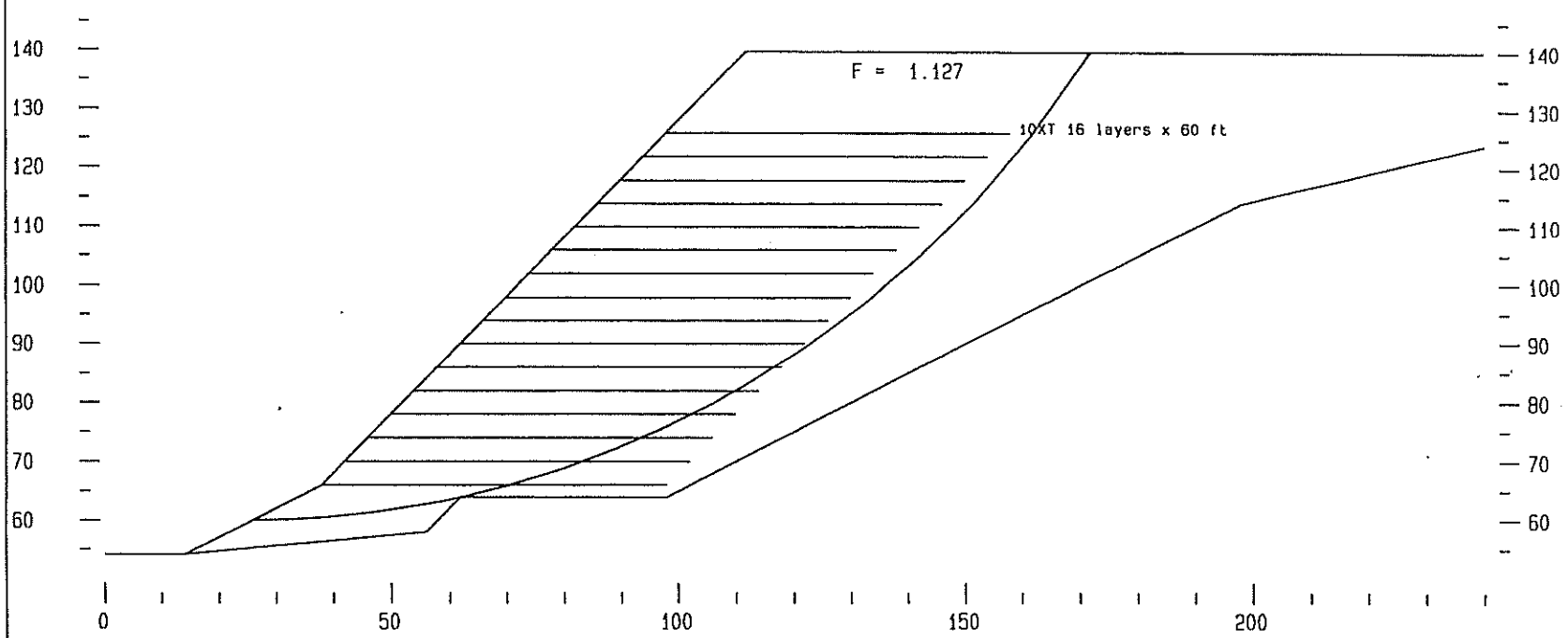
Material	Unit Wt pcf	C psf	Phi deg	Piezo Surf.	Ru
Engineered Fill	130	120	33	0	0
Bedrock	130	4000	28	0	0

Mirafi Geosynthetic Reinforcement: 15

10XT: MIRAGRID 10XT

TC MIRAFI WESTERN REGION
Lake Forest, CA

58-9194-02
Presidio
10/9/01
Section M-M'
Pseudostatic Case
geogridp.gsl



Printed at 08:56 on 10-09-2001

ATA FILE NAME..... u:\tslegers\slope\presidio\geogridp.gsl

ob No.	58-9194-02
ocle	Presidio
ate	10/9/01
abel A	Section M-M'
abel B	Pseudostatic Case

ax Slice Width	20
o. of Materials	2
eismic Acceleration	.15
xternal Forces	0
iezometric Surfaces	0
nit Wt. of Pore Fluid	62.4
o. of Reinf. Layers	16
oS for Reinf. Pullout	1.5

aterial	Unit Wt	Cohesion	Friction Angle	Piezo Surf.	Ru	Interaction Coefficient
1 Engineered Fill	130	120	33	0	0	.8
2 Bedrock	130	4000	28	0	0	.8

oper Surface of Material # 1 (Engineered Fill)

Coord	Y-Coord
0	54
14	54
38	66
98	126
112	140
240	140

oper Surface of Material # 2 (Bedrock)

-Coord	Y-Coord
0	54
14	54
56	58
62	64
98	64
198	114
240	124

here are no explicit external forces in the data set.

eosynthetic ayer o.	Horizontal Extents X1 <-------> X2		Geosynthetic Layer Elevation	Force per unit width
1	38.00	98.00	66.00	4116
2	42.00	102.00	70.00	4116
3	46.00	106.00	74.00	4116
4	50.00	110.00	78.00	4116
5	54.00	114.00	82.00	4116
6	58.00	118.00	86.00	4116
7	62.00	122.00	90.00	4116

8	66.00	126.00	94.00	4116
9	70.00	130.00	98.00	4116
10	74.00	134.00	102.00	4116
11	78.00	138.00	106.00	4116
12	82.00	142.00	110.00	4116
13	86.00	146.00	114.00	4116
14	90.00	150.00	118.00	4116
15	94.00	154.00	122.00	4116
16	98.00	158.00	126.00	4116

MIRASLOPE LIMIT EQUILIBRIUM SLOPE STABILITY ANALYSIS

ıblicensed to TC Mirafi for use by:-

RICH SACK
TC MIRAFI WESTERN REGION
22672 LAMBERT ST.
22672 LAMBERT ST.
Lake Forest, CA

92630
Tel: 949-859-8984
Fax: 949-859-1841

.le u:\tslegers\slope\presidio\geogridp.gsl Output dated 10-09-2001 at
3:55:57

ıterial	Unit Wt	Cohesion	Friction Angle	Piezo Surf.	Ru	Interaction Coefficient
. Engineered Fill	130	120	33	0	0	.8
! Bedrock	130	4000	28	0	0	.8

X-centre	Y-centre	Radius	Factor of Safety	Iterations	Slices	M Alpha Warnings
15.00	200.00	130.00	1.3326	4	6	0
15.00	200.00	132.00	1.3119	3	7	0
15.00	200.00	134.00	1.2691	4	7	0
15.00	200.00	136.00	1.2298	5	8	0
15.00	200.00	138.00	1.2283	5	8	0
15.00	200.00	140.00	1.1938	5	8	0
20.00	200.00	130.00	1.3089	3	7	0
20.00	200.00	132.00	1.2544	4	7	0
20.00	200.00	134.00	1.2495	4	7	0
20.00	200.00	136.00	1.2278	4	8	0
20.00	200.00	138.00	1.2159	5	8	0
20.00	200.00	140.00	1.1932	5	8	0
25.00	200.00	130.00	1.2760	4	7	0
25.00	200.00	132.00	1.2587	4	7	0
25.00	200.00	134.00	1.2371	4	7	0
25.00	200.00	136.00	1.2440	4	8	0
25.00	200.00	138.00	1.2210	4	8	0
25.00	200.00	140.00	1.2052	5	8	0
30.00	200.00	130.00	1.2637	4	7	0
30.00	200.00	132.00	1.2704	4	7	0
30.00	200.00	134.00	1.2429	4	7	0
30.00	200.00	136.00	1.2614	4	9	0
30.00	200.00	138.00	1.2450	4	9	0
30.00	200.00	140.00	1.2609	4	11	0
35.00	200.00	130.00	1.2706	4	7	0
35.00	200.00	132.00	1.2903	3	8	0
35.00	200.00	134.00	1.2698	4	8	0
35.00	200.00	136.00	1.2838	3	9	0
35.00	200.00	138.00	1.2715	4	9	0
35.00	200.00	140.00	1.2891	3	11	0
40.00	200.00	130.00	1.3006	1	8	0
40.00	200.00	132.00	1.3146	3	8	0
40.00	200.00	134.00	1.2992	1	8	0

40.00	200.00	136.00	1.2528	4	9	0
40.00	200.00	138.00	1.1942	4	11	0
40.00	200.00	140.00	1.3030	2	11	0
45.00	200.00	130.00	1.3325	4	8	0
45.00	200.00	132.00	1.3304	4	8	0
45.00	200.00	134.00	1.2021	4	8	0
45.00	200.00	136.00	1.1770	4	9	0
45.00	200.00	138.00	1.2615	4	11	0
45.00	200.00	140.00	1.3777	4	10	0
50.00	200.00	130.00	1.2412	4	8	0
50.00	200.00	132.00	1.2114	4	8	0
50.00	200.00	134.00	1.1983	4	8	0
50.00	200.00	136.00	1.1993	4	10	0
50.00	200.00	138.00	1.3444	4	12	0
50.00	200.00	140.00	1.4568	4	12	0
55.00	200.00	130.00	1.2360	4	8	0
55.00	200.00	132.00	1.2340	4	9	0
55.00	200.00	134.00	1.2214	4	9	0
55.00	200.00	136.00	1.2408	4	10	0
55.00	200.00	138.00	1.4430	4	11	0
55.00	200.00	140.00	1.5356	4	12	0
15.00	205.00	135.00	1.3177	3	7	0
15.00	205.00	137.00	1.2918	3	7	0
15.00	205.00	139.00	1.2642	4	7	0
15.00	205.00	141.00	1.2245	5	8	0
15.00	205.00	143.00	1.2249	5	8	0
15.00	205.00	145.00	1.1944	5	8	0
20.00	205.00	135.00	1.3062	3	7	0
20.00	205.00	137.00	1.2500	4	7	0
20.00	205.00	139.00	1.2469	4	7	0
20.00	205.00	141.00	1.2313	4	8	0
20.00	205.00	143.00	1.2184	5	8	0
20.00	205.00	145.00	1.1978	5	8	0
25.00	205.00	135.00	1.2740	4	7	0
25.00	205.00	137.00	1.2638	4	7	0
25.00	205.00	139.00	1.2404	4	7	0
25.00	205.00	141.00	1.2480	4	8	0
25.00	205.00	143.00	1.2337	4	9	0
25.00	205.00	145.00	1.2196	4	9	0
30.00	205.00	135.00	1.2678	4	7	0
30.00	205.00	137.00	1.2752	4	7	0
30.00	205.00	139.00	1.2574	4	8	0
30.00	205.00	141.00	1.2690	4	9	0
30.00	205.00	143.00	1.2535	4	9	0
30.00	205.00	145.00	1.2811	3	11	0
35.00	205.00	135.00	1.2873	3	8	0
35.00	205.00	137.00	1.2987	2	8	0
35.00	205.00	139.00	1.2794	3	8	0
35.00	205.00	141.00	1.2928	3	9	0
35.00	205.00	143.00	1.2274	4	9	0
35.00	205.00	145.00	1.2580	4	11	0
40.00	205.00	135.00	1.3108	3	8	0
40.00	205.00	137.00	1.3244	3	8	0
40.00	205.00	139.00	1.2965	2	8	0
40.00	205.00	141.00	1.1929	4	9	0
40.00	205.00	143.00	1.1783	4	11	0
40.00	205.00	145.00	1.3043	2	11	0
45.00	205.00	135.00	1.3419	4	8	0
45.00	205.00	137.00	1.2302	4	8	0
45.00	205.00	139.00	1.1792	4	8	0
45.00	205.00	141.00	1.1784	4	9	0
45.00	205.00	143.00	1.2628	4	12	0
45.00	205.00	145.00	1.3838	4	11	0
50.00	205.00	135.00	1.2156	4	8	0
50.00	205.00	137.00	1.2229	4	8	0
50.00	205.00	139.00	1.1971	4	9	0

50.00	205.00	141.00	1.2070	4	10	0
50.00	205.00	143.00	1.3512	4	12	0
50.00	205.00	145.00	1.4564	4	12	0
55.00	205.00	135.00	1.2335	4	9	0
55.00	205.00	137.00	1.2428	4	9	0
55.00	205.00	139.00	1.2327	4	9	0
55.00	205.00	141.00	1.2430	4	10	0
55.00	205.00	143.00	1.4423	4	11	0
55.00	205.00	145.00	1.5445	4	12	0
15.00	210.00	140.00	1.3010	1	7	0
15.00	210.00	142.00	1.2785	4	7	0
15.00	210.00	144.00	1.2641	4	7	0
15.00	210.00	146.00	1.2229	5	8	0
15.00	210.00	148.00	1.2246	4	8	0
15.00	210.00	150.00	1.1969	5	8	0
20.00	210.00	140.00	1.2982	2	7	0
20.00	210.00	142.00	1.2494	4	7	0
20.00	210.00	144.00	1.2470	4	7	0
20.00	210.00	146.00	1.2368	4	8	0
20.00	210.00	148.00	1.2228	4	8	0
20.00	210.00	150.00	1.2101	5	9	0
25.00	210.00	140.00	1.2749	4	7	0
25.00	210.00	142.00	1.2710	4	7	0
25.00	210.00	144.00	1.2453	4	7	0
25.00	210.00	146.00	1.2611	4	9	0
25.00	210.00	148.00	1.2413	4	9	0
25.00	210.00	150.00	1.2280	4	9	0
30.00	210.00	140.00	1.2735	4	7	0
30.00	210.00	142.00	1.2901	3	8	0
30.00	210.00	144.00	1.2659	4	8	0
30.00	210.00	146.00	1.2776	3	9	0
30.00	210.00	148.00	1.2626	4	9	0
30.00	210.00	150.00	1.2527	4	11	0
35.00	210.00	140.00	1.2966	2	8	0
35.00	210.00	142.00	1.3077	3	8	0
35.00	210.00	144.00	1.2892	3	8	0
35.00	210.00	146.00	1.2931	3	9	0
35.00	210.00	148.00	1.1653	5	9	0
35.00	210.00	150.00	1.2440	4	11	0
40.00	210.00	140.00	1.3214	3	8	0
40.00	210.00	142.00	1.3346	4	8	0
40.00	210.00	144.00	1.1978	4	8	0
40.00	210.00	146.00	1.1714	5	9	0
40.00	210.00	148.00	1.1792	4	11	0
40.00	210.00	150.00	1.3167	3	12	0
45.00	210.00	140.00	1.2471	4	8	0
45.00	210.00	142.00	1.2063	4	8	0
45.00	210.00	144.00	1.1845	4	8	0
45.00	210.00	146.00	1.1862	4	10	0
45.00	210.00	148.00	1.2774	3	12	0
45.00	210.00	150.00	1.3960	4	11	0
50.00	210.00	140.00	1.2261	4	8	0
50.00	210.00	142.00	1.2208	4	9	0
50.00	210.00	144.00	1.2090	4	9	0
50.00	210.00	146.00	1.2184	4	10	0
50.00	210.00	148.00	1.3635	4	12	0
50.00	210.00	150.00	1.4671	4	12	0
55.00	210.00	140.00	1.2458	4	9	0
55.00	210.00	142.00	1.2545	4	9	0
55.00	210.00	144.00	1.2441	4	9	0
55.00	210.00	146.00	1.2538	4	10	0
55.00	210.00	148.00	1.4455	4	11	0
55.00	210.00	150.00	1.6663	4	13	0
15.00	215.00	145.00	1.2922	3	7	0
15.00	215.00	147.00	1.2706	4	7	0
15.00	215.00	149.00	1.2647	4	7	0

15.00	215.00	151.00	1.2243	4	8	0
15.00	215.00	153.00	1.2262	4	8	0
15.00	215.00	155.00	1.2010	5	8	0
20.00	215.00	145.00	1.2940	3	7	0
20.00	215.00	147.00	1.2514	4	7	0
20.00	215.00	149.00	1.2493	4	7	0
20.00	215.00	151.00	1.2438	4	8	0
20.00	215.00	153.00	1.2352	4	9	0
20.00	215.00	155.00	1.2178	4	9	0
25.00	215.00	145.00	1.2781	3	7	0
25.00	215.00	147.00	1.2800	3	7	0
25.00	215.00	149.00	1.2594	4	8	0
25.00	215.00	151.00	1.2683	4	9	0
25.00	215.00	153.00	1.2497	4	9	0
25.00	215.00	155.00	1.2370	4	9	0
30.00	215.00	145.00	1.2894	3	8	0
30.00	215.00	147.00	1.2980	2	8	0
30.00	215.00	149.00	1.2752	3	8	0
30.00	215.00	151.00	1.2866	3	9	0
30.00	215.00	153.00	1.2663	4	9	0
30.00	215.00	155.00	1.1952	4	11	0
35.00	215.00	145.00	1.3062	3	8	0
35.00	215.00	147.00	1.3174	3	8	0
35.00	215.00	149.00	1.2996	1	8	0
35.00	215.00	151.00	1.1923	4	9	0
35.00	215.00	153.00	1.1464	5	9	0
35.00	215.00	155.00	1.2435	4	11	0
40.00	215.00	145.00	1.3327	4	8	0
40.00	215.00	147.00	1.2412	4	8	0
40.00	215.00	149.00	1.1766	4	8	0
40.00	215.00	151.00	1.1708	4	9	0
40.00	215.00	153.00	1.1991	4	12	0
40.00	215.00	155.00	1.3308	3	12	0
45.00	215.00	145.00	1.2133	4	8	0
45.00	215.00	147.00	1.2103	4	8	0
45.00	215.00	149.00	1.1897	4	9	0
45.00	215.00	151.00	1.1980	4	10	0
45.00	215.00	153.00	1.2915	3	12	0
45.00	215.00	155.00	1.4083	4	11	0
50.00	215.00	145.00	1.2258	4	9	0
50.00	215.00	147.00	1.2330	4	9	0
50.00	215.00	149.00	1.2210	4	9	0
50.00	215.00	151.00	1.2298	4	10	0
50.00	215.00	153.00	1.3758	4	12	0
50.00	215.00	155.00	1.4779	4	12	0
55.00	215.00	145.00	1.2581	4	9	0
55.00	215.00	147.00	1.2663	3	9	0
55.00	215.00	149.00	1.2555	4	9	0
55.00	215.00	151.00	1.2648	3	10	0
55.00	215.00	153.00	1.4561	4	11	0
55.00	215.00	155.00	1.7765	4	14	0
15.00	220.00	150.00	1.2885	3	7	0
15.00	220.00	152.00	1.2666	4	7	0
15.00	220.00	154.00	1.2631	4	7	0
15.00	220.00	156.00	1.2275	4	8	0
15.00	220.00	158.00	1.2296	4	8	0
15.00	220.00	160.00	1.2131	4	9	0
20.00	220.00	150.00	1.2928	3	7	0
20.00	220.00	152.00	1.2556	4	7	0
20.00	220.00	154.00	1.2533	4	7	0
20.00	220.00	156.00	1.2597	4	9	0
20.00	220.00	158.00	1.2423	4	9	0
20.00	220.00	160.00	1.2259	4	9	0
25.00	220.00	150.00	1.2826	3	7	0
25.00	220.00	152.00	1.2957	2	8	0
25.00	220.00	154.00	1.2672	4	8	0

25.00	220.00	156.00	1.2765	3	9	0
25.00	220.00	158.00	1.2586	4	9	0
25.00	220.00	160.00	1.2427	4	9	0
30.00	220.00	150.00	1.2980	2	8	0
30.00	220.00	152.00	1.3066	3	8	0
30.00	220.00	154.00	1.2848	3	8	0
30.00	220.00	156.00	1.2962	2	9	0
30.00	220.00	158.00	1.1671	5	9	0
30.00	220.00	160.00	1.1850	4	11	0
35.00	220.00	150.00	1.3165	3	8	0
35.00	220.00	152.00	1.3275	3	8	0
35.00	220.00	154.00	1.2124	4	8	0
35.00	220.00	156.00	1.1716	5	9	0
35.00	220.00	158.00	1.1415	5	9	0
35.00	220.00	160.00	1.2636	4	12	0
40.00	220.00	150.00	1.2806	3	8	0
40.00	220.00	152.00	1.2070	4	8	0
40.00	220.00	154.00	1.1763	4	8	0
40.00	220.00	156.00	1.1819	4	10	0
40.00	220.00	158.00	1.2156	4	12	0
40.00	220.00	160.00	1.3450	4	12	0
45.00	220.00	150.00	1.2128	4	8	0
45.00	220.00	152.00	1.2162	4	9	0
45.00	220.00	154.00	1.2021	4	9	0
45.00	220.00	156.00	1.2084	4	10	0
45.00	220.00	158.00	1.3054	2	12	0
45.00	220.00	160.00	1.4206	4	11	0
50.00	220.00	150.00	1.2385	4	9	0
50.00	220.00	152.00	1.2389	4	9	0
50.00	220.00	154.00	1.2315	4	9	0
50.00	220.00	156.00	1.2412	4	10	0
50.00	220.00	158.00	1.3881	4	12	0
50.00	220.00	160.00	1.4888	4	12	0
55.00	220.00	150.00	1.2629	4	9	0
55.00	220.00	152.00	1.2780	3	9	0
55.00	220.00	154.00	1.2671	3	9	0
55.00	220.00	156.00	1.2756	3	10	0
55.00	220.00	158.00	1.4668	4	11	0
55.00	220.00	160.00	1.8495	4	14	0
15.00	225.00	155.00	1.2888	3	7	0
15.00	225.00	157.00	1.2655	4	7	0
15.00	225.00	159.00	1.2639	4	7	0
15.00	225.00	161.00	1.2324	4	8	0
15.00	225.00	163.00	1.2412	4	9	0
15.00	225.00	165.00	1.2200	4	9	0
20.00	225.00	155.00	1.2940	3	7	0
20.00	225.00	157.00	1.2689	4	8	0
20.00	225.00	159.00	1.2664	4	8	0
20.00	225.00	161.00	1.2698	4	9	0
20.00	225.00	163.00	1.2502	4	9	0
20.00	225.00	165.00	1.2346	4	9	0
25.00	225.00	155.00	1.2972	2	8	0
25.00	225.00	157.00	1.3025	2	8	0
25.00	225.00	159.00	1.2760	3	8	0
25.00	225.00	161.00	1.2851	3	9	0
25.00	225.00	163.00	1.2680	4	9	0
25.00	225.00	165.00	1.1458	5	9	0
30.00	225.00	155.00	1.3071	3	8	0
30.00	225.00	157.00	1.3158	3	8	0
30.00	225.00	159.00	1.2950	2	8	0
30.00	225.00	161.00	1.2113	4	9	0
30.00	225.00	163.00	1.1484	5	9	0
30.00	225.00	165.00	1.1872	4	11	0
35.00	225.00	155.00	1.3272	3	8	0
35.00	225.00	157.00	1.2797	3	8	0
35.00	225.00	159.00	1.1792	4	8	0

35.00	225.00	161.00	1.1672	5	9	0
35.00	225.00	163.00	1.1573	5	10	0
35.00	225.00	165.00	1.2693	3	12	0
40.00	225.00	155.00	1.2184	4	8	0
40.00	225.00	157.00	1.2041	4	9	0
40.00	225.00	159.00	1.1874	4	9	0
40.00	225.00	161.00	1.1824	4	10	0
40.00	225.00	163.00	1.2154	4	12	0
40.00	225.00	165.00	1.3424	4	12	0
45.00	225.00	155.00	1.2236	4	9	0
45.00	225.00	157.00	1.2220	4	9	0
45.00	225.00	159.00	1.1968	4	9	0
45.00	225.00	161.00	1.2049	4	10	0
45.00	225.00	163.00	1.3043	2	12	0
45.00	225.00	165.00	1.4329	4	11	0
50.00	225.00	155.00	1.2322	4	9	0
50.00	225.00	157.00	1.2389	4	9	0
50.00	225.00	159.00	1.2275	4	9	0
50.00	225.00	161.00	1.2501	4	10	0
50.00	225.00	163.00	1.4004	4	12	0
50.00	225.00	165.00	1.4998	4	12	0
55.00	225.00	155.00	1.2637	3	9	0
55.00	225.00	157.00	1.2743	3	9	0
55.00	225.00	159.00	1.2784	3	9	0
55.00	225.00	161.00	1.2864	3	10	0
55.00	225.00	163.00	1.4813	4	12	0
55.00	225.00	165.00	1.9167	4	14	0
15.00	230.00	160.00	1.2922	3	7	0
15.00	230.00	162.00	1.2667	4	7	0
15.00	230.00	164.00	1.2736	4	8	0
15.00	230.00	166.00	1.2458	4	9	0
15.00	230.00	168.00	1.2475	4	9	0
15.00	230.00	170.00	1.2276	4	9	0
20.00	230.00	160.00	1.3047	2	8	0
20.00	230.00	162.00	1.2770	3	8	0
20.00	230.00	164.00	1.2734	4	8	0
20.00	230.00	166.00	1.2799	3	9	0
20.00	230.00	168.00	1.2586	4	9	0
20.00	230.00	170.00	1.2438	4	9	0
25.00	230.00	160.00	1.3044	2	8	0
25.00	230.00	162.00	1.3104	3	8	0
25.00	230.00	164.00	1.2851	3	8	0
25.00	230.00	166.00	1.2941	3	9	0
25.00	230.00	168.00	1.1897	4	9	0
25.00	230.00	170.00	1.1285	5	9	0
30.00	230.00	160.00	1.3168	3	8	0
30.00	230.00	162.00	1.3254	3	8	0
30.00	230.00	164.00	1.2528	4	8	0
30.00	230.00	166.00	1.1765	5	9	0
30.00	230.00	168.00	1.1433	5	9	0
30.00	230.00	170.00	1.2039	4	12	0
35.00	230.00	160.00	1.3077	3	8	0
35.00	230.00	162.00	1.2145	4	8	0
35.00	230.00	164.00	1.1770	4	9	0
35.00	230.00	166.00	1.1820	4	10	0
35.00	230.00	168.00	1.1531	5	10	0
35.00	230.00	170.00	1.2789	3	12	0
40.00	230.00	160.00	1.2135	4	9	0
40.00	230.00	162.00	1.2167	4	9	0
40.00	230.00	164.00	1.1826	4	9	0
40.00	230.00	166.00	1.1890	4	10	0
40.00	230.00	168.00	1.2313	4	12	0
40.00	230.00	170.00	1.3563	4	12	0
45.00	230.00	160.00	1.2183	4	9	0
45.00	230.00	162.00	1.2224	4	9	0
45.00	230.00	164.00	1.2092	4	9	0

45.00	230.00	166.00	1.2168	4	10	0
45.00	230.00	168.00	1.3167	3	12	0
45.00	230.00	170.00	1.4286	4	11	0
50.00	230.00	160.00	1.2446	4	9	0
50.00	230.00	162.00	1.2511	4	9	0
50.00	230.00	164.00	1.2395	4	9	0
50.00	230.00	166.00	1.2475	4	10	0
50.00	230.00	168.00	1.4125	4	12	0
50.00	230.00	170.00	1.5819	4	14	0
55.00	230.00	160.00	1.2760	3	9	0
55.00	230.00	162.00	1.2831	3	9	0
55.00	230.00	164.00	1.2929	3	10	0
55.00	230.00	166.00	1.3005	1	11	0
55.00	230.00	168.00	1.6431	4	12	0
55.00	230.00	170.00	1.9792	4	16	0
15.00	235.00	165.00	1.2982	2	7	0
15.00	235.00	167.00	1.2769	4	8	0
15.00	235.00	169.00	1.2785	3	8	0
15.00	235.00	171.00	1.2537	4	9	0
15.00	235.00	173.00	1.2547	4	9	0
15.00	235.00	175.00	1.2358	4	9	0
20.00	235.00	165.00	1.3100	3	8	0
20.00	235.00	167.00	1.2858	3	8	0
20.00	235.00	169.00	1.2813	3	8	0
20.00	235.00	171.00	1.2878	3	9	0
20.00	235.00	173.00	1.2676	4	9	0
20.00	235.00	175.00	1.1718	5	9	0
25.00	235.00	165.00	1.3128	3	8	0
25.00	235.00	167.00	1.3189	3	8	0
25.00	235.00	169.00	1.2947	2	8	0
25.00	235.00	171.00	1.2550	4	9	0
25.00	235.00	173.00	1.1544	5	9	0
25.00	235.00	175.00	1.1274	5	11	0
30.00	235.00	165.00	1.3268	3	8	0
30.00	235.00	167.00	1.3080	3	8	0
30.00	235.00	169.00	1.1881	4	8	0
30.00	235.00	171.00	1.1742	4	10	0
30.00	235.00	173.00	1.1529	5	10	0
30.00	235.00	175.00	1.2106	4	12	0
35.00	235.00	165.00	1.2385	4	8	0
35.00	235.00	167.00	1.2094	4	9	0
35.00	235.00	169.00	1.1844	4	9	0
35.00	235.00	171.00	1.1768	4	10	0
35.00	235.00	173.00	1.1654	4	10	0
35.00	235.00	175.00	1.2945	2	12	0
40.00	235.00	165.00	1.2173	4	9	0
40.00	235.00	167.00	1.2101	4	9	0
40.00	235.00	169.00	1.1945	4	9	0
40.00	235.00	171.00	1.2011	4	10	0
40.00	235.00	173.00	1.2469	4	12	0
40.00	235.00	175.00	1.3700	4	12	0
45.00	235.00	165.00	1.2297	4	9	0
45.00	235.00	167.00	1.2349	4	9	0
45.00	235.00	169.00	1.2214	4	9	0
45.00	235.00	171.00	1.2286	4	10	0
45.00	235.00	173.00	1.3304	3	12	0
45.00	235.00	175.00	1.4397	4	12	0
50.00	235.00	165.00	1.2572	4	9	0
50.00	235.00	167.00	1.2635	3	9	0
50.00	235.00	169.00	1.2514	4	9	0
50.00	235.00	171.00	1.2621	3	11	0
50.00	235.00	173.00	1.4203	4	13	0
50.00	235.00	175.00	1.7351	4	14	0
55.00	235.00	165.00	1.2881	3	9	0
55.00	235.00	167.00	1.2981	2	10	0
55.00	235.00	169.00	1.2904	3	10	0

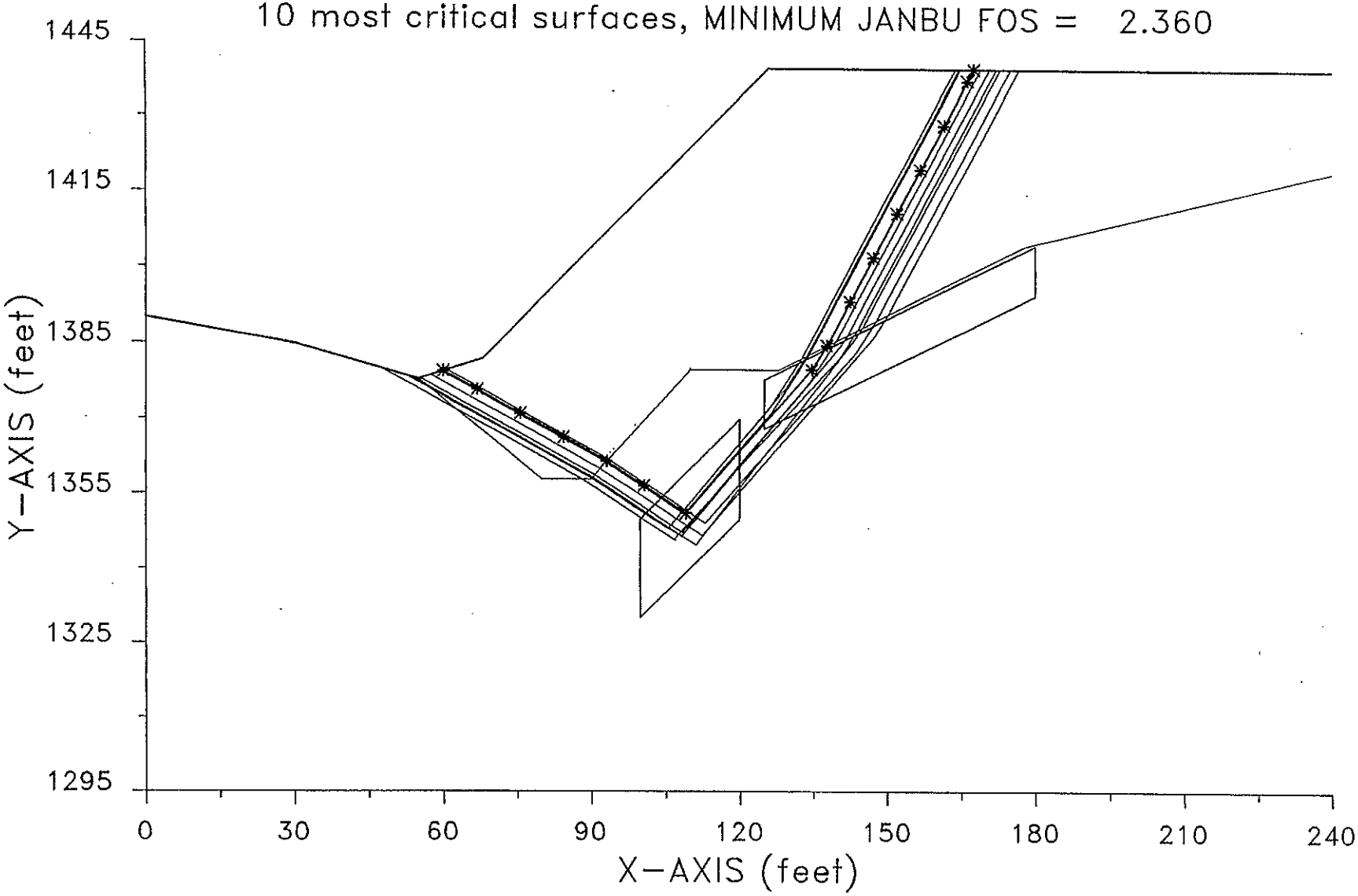
55.00	235.00	171.00	1.3114	3	11	0
55.00	235.00	173.00	1.7594	4	14	0
55.00	235.00	175.00	2.0312	4	15	0
15.00	240.00	170.00	1.3138	3	8	0
15.00	240.00	172.00	1.2820	3	8	0
15.00	240.00	174.00	1.2841	3	8	0
15.00	240.00	176.00	1.2624	4	9	0
15.00	240.00	178.00	1.2624	4	9	0
15.00	240.00	180.00	1.2445	4	9	0
20.00	240.00	170.00	1.3161	3	8	0
20.00	240.00	172.00	1.2956	2	8	0
20.00	240.00	174.00	1.2895	3	8	0
20.00	240.00	176.00	1.2963	2	9	0
20.00	240.00	178.00	1.2335	4	9	0
20.00	240.00	180.00	1.1353	5	9	0
25.00	240.00	170.00	1.3216	3	8	0
25.00	240.00	172.00	1.3281	4	8	0
25.00	240.00	174.00	1.2808	3	8	0
25.00	240.00	176.00	1.1879	4	9	0
25.00	240.00	178.00	1.1523	5	10	0
25.00	240.00	180.00	1.1398	5	12	0
30.00	240.00	170.00	1.3288	3	8	0
30.00	240.00	172.00	1.2379	4	8	0
30.00	240.00	174.00	1.1834	4	9	0
30.00	240.00	176.00	1.1756	4	10	0
30.00	240.00	178.00	1.1544	5	10	0
30.00	240.00	180.00	1.2280	4	12	0
35.00	240.00	170.00	1.2240	4	9	0
35.00	240.00	172.00	1.2075	4	9	0
35.00	240.00	174.00	1.1837	4	9	0
35.00	240.00	176.00	1.1889	4	10	0
35.00	240.00	178.00	1.1774	4	10	0
35.00	240.00	180.00	1.3095	3	12	0
40.00	240.00	170.00	1.2191	4	9	0
40.00	240.00	172.00	1.2227	4	9	0
40.00	240.00	174.00	1.2070	4	9	0
40.00	240.00	176.00	1.2131	4	10	0
40.00	240.00	178.00	1.2623	4	12	0
40.00	240.00	180.00	1.3836	4	12	0
45.00	240.00	170.00	1.2426	4	9	0
45.00	240.00	172.00	1.2473	4	9	0
45.00	240.00	174.00	1.2336	4	9	0
45.00	240.00	176.00	1.2404	4	10	0
45.00	240.00	178.00	1.3471	4	13	0
45.00	240.00	180.00	1.4551	4	13	0
50.00	240.00	170.00	1.2699	3	9	0
50.00	240.00	172.00	1.2754	3	9	0
50.00	240.00	174.00	1.2663	3	10	0
50.00	240.00	176.00	1.2735	3	11	0
50.00	240.00	178.00	1.4236	4	13	0
50.00	240.00	180.00	1.8270	4	15	0
55.00	240.00	170.00	1.3033	2	10	0
55.00	240.00	172.00	1.3097	3	10	0
55.00	240.00	174.00	1.2987	2	10	0
55.00	240.00	176.00	1.3227	3	12	0
55.00	240.00	178.00	1.8431	4	14	0
55.00	240.00	180.00	2.0837	4	15	0

Minimum Bishop Factor of Safety this run:

25.00	235.00	175.00	1.1274	5	11	0

Section M2-M2' 2:1 Backcut

10 most critical surfaces, MINIMUM JANBU FOS = 2.360



XSTABL File: SECM2C 10-09-** 10:46

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ä 1437  *
*****************************************
```

Problem Description : Section M2-M2' 2:1 Backcut

SEGMENT BOUNDARY COORDINATES
---

5 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1390.0	30.0	1385.0	2
2	30.0	1385.0	55.0	1378.0	2
3	55.0	1378.0	68.0	1382.0	1
4	68.0	1382.0	126.0	1440.0	1
5	126.0	1440.0	240.0	1440.0	1

6 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	55.0	1378.0	80.0	1358.0	2
2	80.0	1358.0	90.0	1358.0	2
3	90.0	1358.0	110.0	1380.0	2
4	110.0	1380.0	128.0	1380.0	2
5	128.0	1380.0	178.0	1405.0	2
6	178.0	1405.0	240.0	1420.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	47.00	4000.0	28.00
2	53.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

400 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 10.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	100.0	1340.0	120.0	1360.0	20.0
2	125.0	1373.0	180.0	1400.0	10.0

```
************************************************************
**     Factor of safety calculation for surface #     9    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   4.2513    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	18.56	1386.91
2	25.19	1382.60
3	33.58	1377.16
4	41.97	1371.71
5	50.35	1366.26
6	58.74	1360.82
7	67.13	1355.37
8	75.51	1349.92
9	83.90	1344.48
10	92.29	1339.03
11	100.67	1333.58
12	125.51	1370.19
13	130.95	1378.58
14	133.75	1382.87
15	138.52	1391.66
16	143.29	1400.45
17	148.06	1409.24
18	152.83	1418.03
19	157.60	1426.81
20	162.37	1435.60
21	164.76	1440.00

```
************************************************************
**     Factor of safety calculation for surface #    70    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   3.9815    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	66.43	1381.52
2	70.16	1379.49
3	78.95	1374.72
4	87.74	1369.95
5	96.52	1365.18
6	101.26	1362.10

7	109.64	1356.66
8	118.03	1351.21
9	131.18	1377.68
10	134.94	1383.47
11	139.71	1392.26
12	144.48	1401.05
13	149.25	1409.83
14	154.03	1418.62
15	158.80	1427.41
16	163.57	1436.20
17	165.63	1440.00

```
************************************************************
**     Factor of safety calculation for surface #    72    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   4.7683    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	40.41	1382.09
2	48.08	1377.10
3	56.47	1371.66
4	64.85	1366.21
5	73.24	1360.76
6	81.63	1355.32
7	90.01	1349.87
8	98.40	1344.43
9	106.79	1338.98
10	132.24	1381.30
11	133.03	1382.51
12	137.80	1391.30
13	142.57	1400.09
14	147.34	1408.88
15	152.11	1417.67
16	156.88	1426.45
17	161.66	1435.24
18	164.24	1440.00

```
**********************************************************************
ERROR # 38
**********************************************************************
The program calculated a point for the PASSIVE wedge that is outside
the defined slope geometry.  The analysis will continue, but the user
should adjust the search box or slope geometry to allow a passive
wedge to be formed from all points within first box.
**********************************************************************
```

```
************************************************************
**     Factor of safety calculation for surface #   123    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   4.4167    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	27.93	1385.34
2	35.32	1380.55
3	43.71	1375.10
4	52.09	1369.65
5	60.48	1364.21
6	68.87	1358.76
7	77.25	1353.32
8	85.64	1347.87
9	94.03	1342.42
10	102.41	1336.98
11	126.73	1373.19
12	132.18	1381.58
13	132.68	1382.34
14	137.45	1391.13
15	142.22	1399.91
16	146.99	1408.70
17	151.76	1417.49
18	156.53	1426.28
19	161.30	1435.07
20	163.98	1440.00

```
************************************************************
**     Factor of safety calculation for surface #   172    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   4.7753    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	64.33	1380.87
2	69.07	1378.29
3	77.86	1373.52
4	86.65	1368.75
5	95.44	1363.98
6	100.32	1360.81

7	108.71	1355.36
8	117.10	1349.91
9	128.71	1378.53
10	130.47	1381.23
11	135.24	1390.02
12	140.01	1398.81
13	144.78	1407.60
14	149.55	1416.39
15	154.32	1425.17
16	159.10	1433.96
17	162.37	1440.00

```
************************************************************
**     Factor of safety calculation for surface #   188    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.1468    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	58.86	1379.19
2	66.24	1375.18
3	75.03	1370.41
4	83.82	1365.64
5	92.61	1360.87
6	98.51	1357.03
7	106.90	1351.59
8	115.28	1346.14
9	129.02	1374.22
10	134.47	1382.61
11	135.07	1383.54
12	139.84	1392.32
13	144.62	1401.11
14	149.39	1409.90
15	154.16	1418.69
16	158.93	1427.48
17	163.70	1436.27
18	165.73	1440.00

```
************************************************************
**     Factor of safety calculation for surface #   200    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   9.6889    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	19.92	1386.68
2	26.11	1382.66
3	34.50	1377.21
4	42.88	1371.77
5	51.27	1366.32
6	59.66	1360.88
7	68.04	1355.43
8	76.43	1349.98
9	84.82	1344.54
10	93.20	1339.09
11	101.59	1333.64
12	136.59	1383.42
13	137.43	1384.71
14	142.20	1393.50
15	146.97	1402.29
16	151.74	1411.08
17	156.52	1419.87
18	161.29	1428.66
19	166.06	1437.44
20	167.45	1440.00

```
*************************************************************
**     Factor of safety calculation for surface #   293    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**   The last calculated value of the FOS was   4.0780     **
**   This will be ignored for final summary of results     **
*************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	23.74	1386.04
2	26.66	1384.15
3	35.05	1378.70
4	43.43	1373.26
5	51.82	1367.81
6	60.21	1362.36
7	68.59	1356.92
8	76.98	1351.47
9	85.37	1346.02
10	93.75	1340.58
11	102.14	1335.13
12	131.07	1376.57
13	135.85	1383.92
14	140.62	1392.71
15	145.39	1401.50
16	150.16	1410.29
17	154.93	1419.08

18	159.70	1427.86
19	164.48	1436.65
20	166.29	1440.00

```
************************************************************
**     Factor of safety calculation for surface #   294    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   3.2754    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	69.56	1383.56
2	72.44	1382.00
3	81.22	1377.22
4	90.01	1372.45
5	98.80	1367.68
6	101.19	1366.13
7	109.57	1360.68
8	117.96	1355.24
9	126.41	1376.55
10	128.96	1380.48
11	133.73	1389.27
12	138.50	1398.05
13	143.27	1406.84
14	148.04	1415.63
15	152.81	1424.42
16	157.58	1433.21
17	161.27	1440.00

```
************************************************************
**     Factor of safety calculation for surface #   304    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   4.5831    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	28.08	1385.32
2	29.22	1384.58
3	37.61	1379.14
4	45.99	1373.69
5	54.38	1368.24

6	62.77	1362.80
7	71.15	1357.35
8	79.54	1351.90
9	87.93	1346.46
10	96.31	1341.01
11	104.70	1335.56
12	133.73	1380.46
13	136.04	1384.02
14	140.81	1392.81
15	145.59	1401.60
16	150.36	1410.39
17	155.13	1419.17
18	159.90	1427.96
19	164.67	1436.75
20	166.44	1440.00

```
*************************************************************
**     Factor of safety calculation for surface #   337    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   2.9339    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	56.50	1378.46
2	65.02	1373.84
3	73.81	1369.07
4	82.60	1364.29
5	91.38	1359.52
6	96.49	1356.20
7	104.88	1350.76
8	113.27	1345.31
9	125.82	1374.78
10	129.79	1380.90
11	134.56	1389.68
12	139.34	1398.47
13	144.11	1407.26
14	148.88	1416.05
15	153.65	1424.84
16	158.42	1433.63
17	161.88	1440.00

```
*************************************************************
**     Factor of safety calculation for surface #   344    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was   5.5262    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is defined by the following 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	15.45	1387.42
2	17.41	1386.15
3	25.80	1380.71
4	34.19	1375.26
5	42.57	1369.81
6	50.96	1364.37
7	59.35	1358.92
8	67.73	1353.47
9	76.12	1348.03
10	84.51	1342.58
11	92.89	1337.13
12	101.28	1331.69
13	128.40	1377.25
14	131.24	1381.62
15	136.01	1390.41
16	140.79	1399.20
17	145.56	1407.99
18	150.33	1416.77
19	155.10	1425.56
20	159.87	1434.35
21	162.94	1440.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	60.05	1379.55
2	66.85	1375.86
3	75.64	1371.08
4	84.43	1366.31
5	93.22	1361.54
6	100.72	1356.67
7	109.10	1351.22
8	134.64	1380.05
9	137.78	1384.89
10	142.55	1393.68
11	147.32	1402.47
12	152.09	1411.25

13	156.87	1420.04
14	161.64	1428.83
15	166.41	1437.62
16	167.70	1440.00

** Corrected JANBU FOS = 2.360 ** (Fo factor = 1.088)

Failure surface No. 2 specified by 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	52.57	1378.68
2	57.48	1376.01
3	63.85	1372.55
4	72.64	1367.78
5	81.43	1363.01
6	90.22	1358.24
7	91.45	1357.44
8	99.84	1351.99
9	108.23	1346.54
10	140.58	1384.81
11	142.00	1387.00
12	146.77	1395.79
13	151.55	1404.58
14	156.32	1413.37
15	161.09	1422.15
16	165.86	1430.94
17	170.63	1439.73
18	170.78	1440.00

** Corrected JANBU FOS = 2.379 ** (Fo factor = 1.088)

Failure surface No. 3 specified by 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	59.71	1379.45
2	66.68	1375.66
3	75.47	1370.89
4	84.26	1366.12
5	93.04	1361.35
6	99.99	1356.84
7	108.37	1351.39
8	129.37	1376.21
9	133.67	1382.84
10	138.44	1391.62
11	143.21	1400.41
12	147.99	1409.20
13	152.76	1417.99
14	157.53	1426.78
15	162.30	1435.56
16	164.71	1440.00

** Corrected JANBU FOS = 2.389 ** (Fo factor = 1.088)

Failure surface No. 4 specified by 19 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	55.31	1378.10
2	55.61	1377.93
3	64.40	1373.16
4	73.19	1368.39
5	81.98	1363.62
6	90.77	1358.84
7	91.67	1358.26
8	100.06	1352.81
9	108.44	1347.36
10	134.14	1377.34
11	139.59	1385.73
12	139.66	1385.83
13	144.43	1394.62
14	149.20	1403.40
15	153.97	1412.19
16	158.74	1420.98
17	163.51	1429.77
18	168.29	1438.56
19	169.07	1440.00

** Corrected JANBU FOS = 2.438 ** (Fo factor = 1.088)

Failure surface No. 5 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	53.06	1378.54
2	56.98	1376.41
3	63.93	1372.64
4	72.72	1367.87
5	81.51	1363.10
6	90.30	1358.33
7	94.36	1355.69
8	102.74	1350.24
9	111.13	1344.80
10	143.68	1386.45
11	145.01	1388.51
12	149.78	1397.29
13	154.56	1406.08
14	159.33	1414.87
15	164.10	1423.66
16	168.87	1432.45
17	172.97	1440.00

** Corrected JANBU FOS = 2.482 ** (Fo factor = 1.087)

Failure surface No. 6 specified by 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	57.48	1378.76
2	65.53	1374.39
3	74.31	1369.62
4	83.10	1364.85
5	91.89	1360.08
6	95.63	1357.65
7	104.01	1352.21
8	112.40	1346.76
9	147.06	1386.22
10	150.25	1391.13
11	155.02	1399.91
12	159.79	1408.70
13	164.56	1417.49
14	169.34	1426.28
15	174.11	1435.07
16	176.79	1440.00

** Corrected JANBU FOS = 2.498 ** (Fo factor = 1.088)

Failure surface No. 7 specified by 18 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	52.10	1378.81
2	57.97	1375.62
3	63.78	1372.47
4	72.57	1367.70
5	81.35	1362.93
6	90.14	1358.16
7	97.17	1353.59
8	105.56	1348.15
9	125.59	1371.53
10	131.04	1379.92
11	132.58	1382.29
12	137.35	1391.08
13	142.12	1399.87
14	146.89	1408.65
15	151.67	1417.44
16	156.44	1426.23
17	161.21	1435.02
18	163.91	1440.00

** Corrected JANBU FOS = 2.512 ** (Fo factor = 1.087)

Failure surface No. 8 specified by 16 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	60.69	1379.75
2	67.19	1376.22
3	75.98	1371.45
4	84.76	1366.68
5	93.55	1361.91
6	96.23	1360.17
7	104.62	1354.72
8	113.01	1349.27
9	143.64	1383.45
10	147.84	1389.92
11	152.61	1398.71
12	157.39	1407.50
13	162.16	1416.29
14	166.93	1425.07
15	171.70	1433.86
16	175.03	1440.00

** Corrected JANBU FOS = 2.559 ** (Fo factor = 1.088)

Failure surface No. 9 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	60.75	1379.77
2	67.22	1376.26
3	76.01	1371.49
4	84.80	1366.72
5	93.59	1361.94
6	100.94	1357.17
7	109.32	1351.72
8	126.39	1371.20
9	131.83	1379.58
10	134.08	1383.04
11	138.85	1391.83
12	143.62	1400.61
13	148.39	1409.40
14	153.16	1418.19
15	157.93	1426.98
16	162.71	1435.77
17	165.00	1440.00

** Corrected JANBU FOS = 2.561 ** (Fo factor = 1.088)

Failure surface No.10 specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	47.51	1380.10
2	53.87	1376.65
3	62.66	1371.87
4	70.63	1367.54
5	79.42	1362.77
6	88.21	1358.00

7	89.97	1356.86
8	98.36	1351.41
9	106.74	1345.97
10	140.47	1382.60
11	143.97	1387.98
12	148.74	1396.77
13	153.51	1405.56
14	158.28	1414.35
15	163.05	1423.14
16	167.83	1431.93
17	172.21	1440.00

** Corrected JANBU FOS = 2.590 ** (Fo factor = 1.087)

```
*******************************************************************
**                                                               **
**  Out of the    400 surfaces generated and analyzed by XSTABL,  **
**       12 surfaces were found to have MISLEADING FOS values.   **
**                                                               **
*******************************************************************
```

The following is a summary of the TEN most critical surfaces

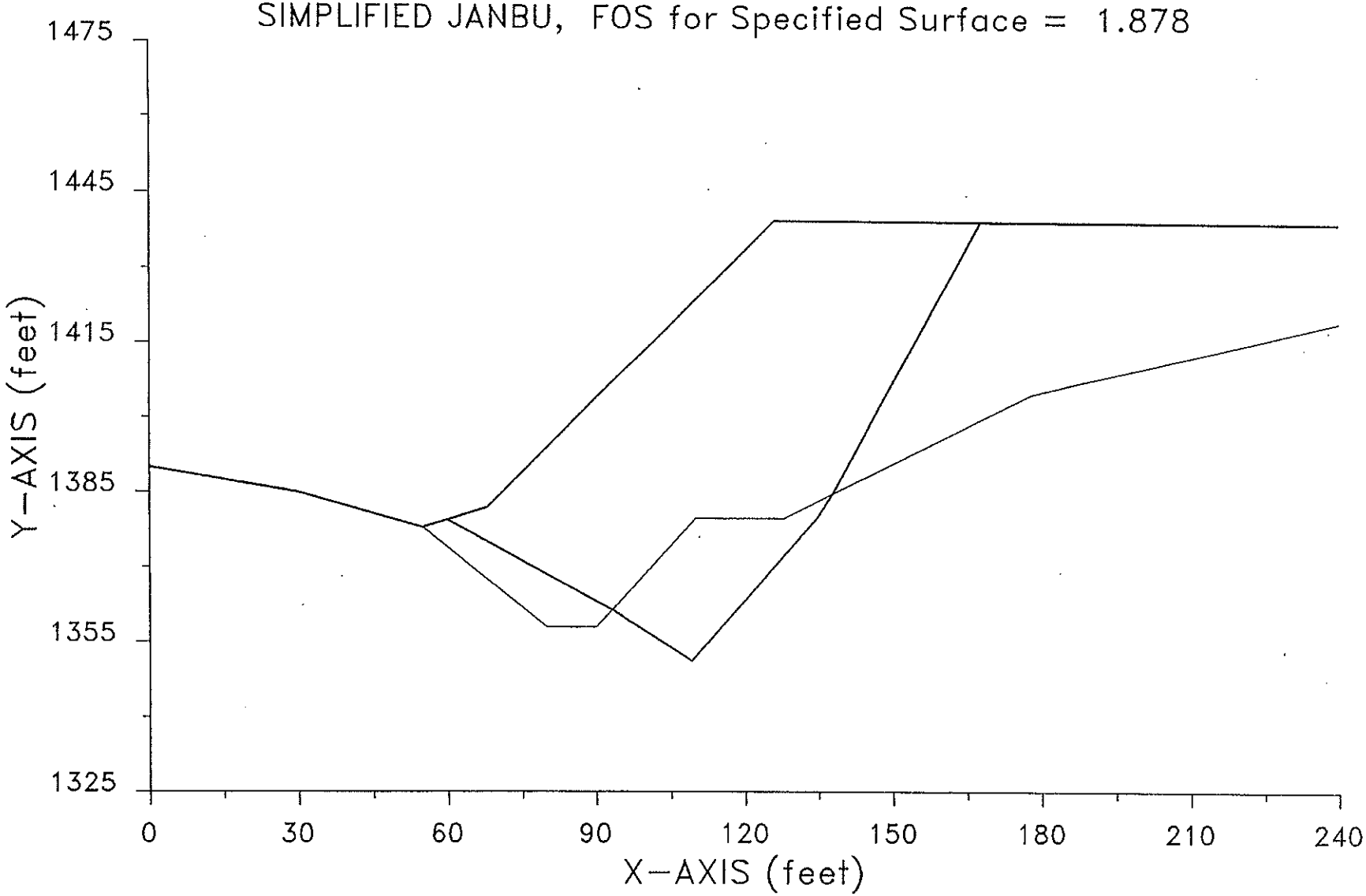
Problem Description : Section M2-M2' 2:1 Backcut

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	2.360	1.088	60.05	167.70	4.962E+05
2.	2.379	1.088	52.57	170.78	5.635E+05
3.	2.389	1.088	59.71	164.71	4.902E+05
4.	2.438	1.088	55.31	169.07	5.512E+05
5.	2.482	1.087	53.06	172.97	5.981E+05
6.	2.498	1.088	57.48	176.79	5.840E+05
7.	2.512	1.087	52.10	163.91	5.545E+05
8.	2.559	1.088	60.69	175.03	5.623E+05
9.	2.561	1.088	60.75	165.00	5.147E+05
10.	2.590	1.087	47.51	172.21	6.360E+05

* * * END OF FILE * * *

SECM2CP 10-09-** 12:35

Section M2-M2' 2:1 Backcut Pseudo
SIMPLIFIED JANBU, FOS for Specified Surface = 1.878



XSTABL File: SECM2CP 10-09-** 12:35

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 95       *
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*                                       *
*  Ver. 5.105                95 Ä 1437  *
*****************************************
```

Problem Description : Section M2-M2' 2:1 Backcut Pseudo

SEGMENT BOUNDARY COORDINATES
---

5 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1390.0	30.0	1385.0	2
2	30.0	1385.0	55.0	1378.0	2
3	55.0	1378.0	68.0	1382.0	1
4	68.0	1382.0	126.0	1440.0	1
5	126.0	1440.0	240.0	1440.0	1

6 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	55.0	1378.0	80.0	1358.0	2
2	80.0	1358.0	90.0	1358.0	2
3	90.0	1358.0	110.0	1380.0	2
4	110.0	1380.0	128.0	1380.0	2
5	128.0	1380.0	178.0	1405.0	2
6	178.0	1405.0	240.0	1420.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	47.00	4000.0	28.00
2	53.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 16 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	60.05	1379.55
2	66.85	1375.86
3	75.64	1371.08
4	84.43	1366.31
5	93.22	1361.54
6	100.72	1356.67
7	109.10	1351.22
8	134.64	1380.05
9	137.78	1384.89

10	142.55	1393.68
11	147.32	1402.47
12	152.09	1411.25
13	156.87	1420.04
14	161.64	1428.83
15	166.41	1437.62
16	167.70	1440.00

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	63.45	1377.71	2.89	6.80	-28.51	17.10	2361.
2	67.43	1375.55	6.28	1.15	-28.54	17.10	866.
3	71.82	1373.16	12.66	7.64	-28.54	45.00	11609.
4	80.04	1368.69	25.34	8.79	-28.49	45.00	26729.
5	88.82	1363.93	38.90	8.79	-28.49	45.00	41032.
6	96.97	1359.10	51.86	7.50	-33.00	45.00	46678.
7	104.91	1353.94	64.97	8.38	-33.04	45.00	65329.
8	109.55	1351.73	71.82	.90	48.46	45.00	7757.
9	118.00	1361.27	70.73	16.00	48.46	45.00	135808.
10	127.00	1371.43	68.57	2.00	48.46	.00	16458.
11	131.32	1376.30	63.70	6.64	48.46	.00	50754.
12	136.21	1382.47	57.53	3.14	57.03	.00	21677.
13	140.17	1389.29	50.71	4.77	61.51	.00	29029.
14	144.93	1398.07	41.93	4.77	61.51	.00	23998.
15	149.71	1406.86	33.14	4.77	61.49	.00	18969.
16	154.48	1415.65	24.35	4.78	61.46	.00	13970.
17	159.26	1424.44	15.56	4.77	61.51	.00	8909.
18	164.02	1433.22	6.78	4.77	61.51	.00	3878.
19	167.05	1438.81	1.19	1.29	61.54	.00	184.

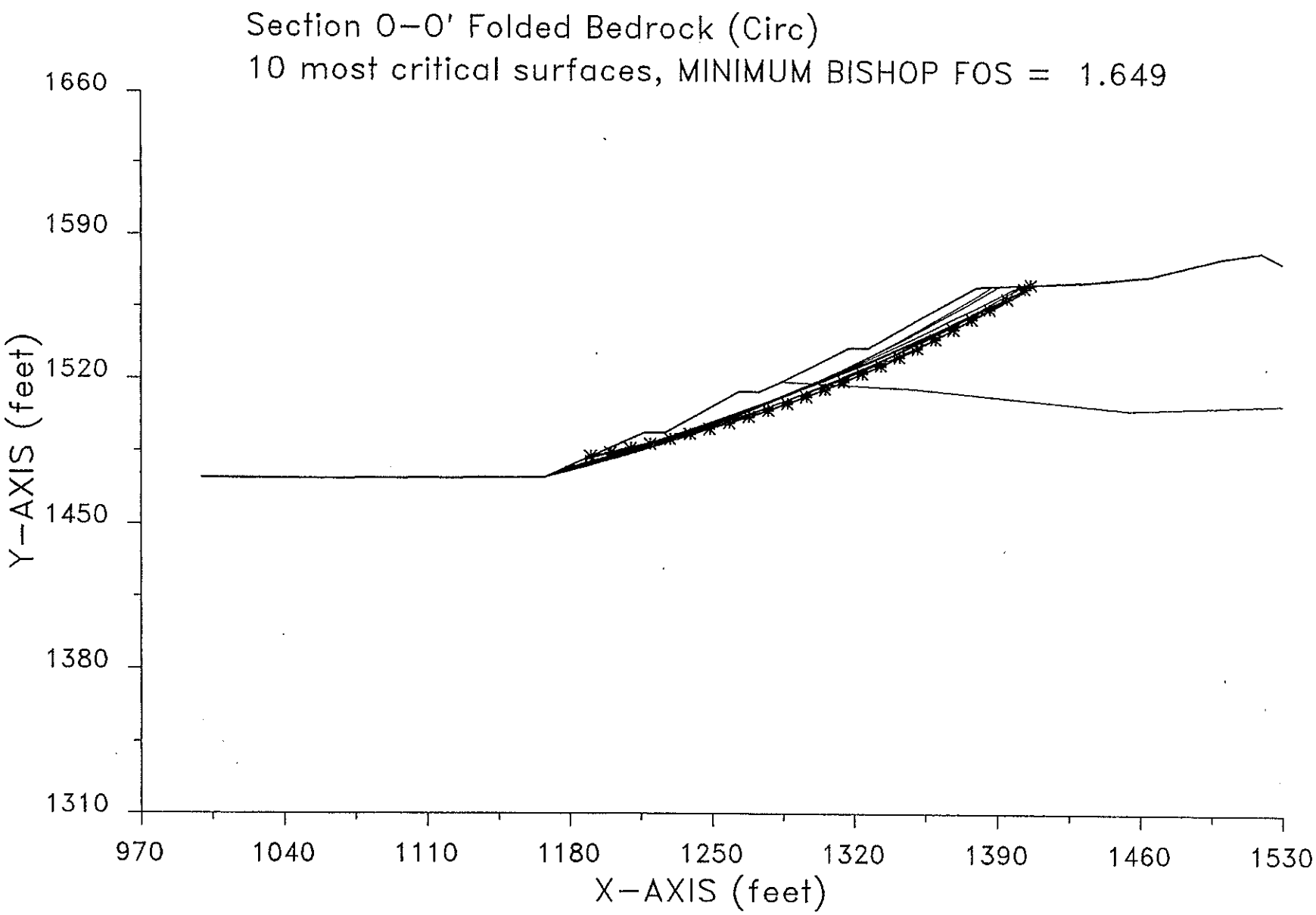
SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	483.9	120.0	33.00	0.	0.	0.	.00
2	994.5	120.0	33.00	0.	0.	0.	.00
3	1958.1	120.0	33.00	0.	0.	0.	.00
4	3868.7	120.0	33.00	0.	0.	0.	.00
5	5913.5	120.0	33.00	0.	0.	0.	.00
6	9662.4	4000.0	28.00	0.	0.	0.	.00
7	11635.3	4000.0	28.00	0.	0.	0.	.00

8	6598.6	150.0	24.00	0.	0.	0.	.00
9	6497.4	150.0	24.00	0.	0.	0.	.00
10	6296.7	150.0	24.00	0.	0.	0.	.00
11	5843.5	150.0	24.00	0.	0.	0.	.00
12	2257.9	4000.0	28.00	0.	0.	0.	.00
13	3517.8	120.0	33.00	0.	0.	0.	.00
14	2895.0	120.0	33.00	0.	0.	0.	.00
15	2273.7	120.0	33.00	0.	0.	0.	.00
16	1651.6	120.0	33.00	0.	0.	0.	.00
17	1027.2	120.0	33.00	0.	0.	0.	.00
18	404.4	120.0	33.00	0.	0.	0.	.00
19	8.6	120.0	33.00	0.	0.	0.	.00

For the single specified surface,
Corrected JANBU factor of safety = 1.878 (Fo factor = 1.088)

Resisting Shear Strength = 493.99E+03 lb


Section O-O' Folded Bedrock (Circ)
10 most critical surfaces, MINIMUM BISHOP FOS = 1.649
1660
1590
1520
1450
1380
1310
Y-AXIS (feet)
970
1040
1110
1180
1250
1320
1390
1460
1530
X-AXIS (feet)

XSTABL File: SECTO-01 10-06-** 16:21

```
*****************************************
*              X S T Ä B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 95       *
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*        Moscow, ID 83843, U.S.A.       *
*                                       *
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*                                       *
*  Ver. 5.105                95 Ä 1437  *
*****************************************
```

Problem Description : Section O-O' Folded Bedrock (Circ)

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1472.0	1060.0	1472.0	2
2	1060.0	1472.0	1061.0	1472.0	2
3	1061.0	1472.0	1168.0	1473.0	2
4	1168.0	1473.0	1217.0	1495.0	2
5	1217.0	1495.0	1227.0	1495.0	2
6	1227.0	1495.0	1263.0	1515.0	2
7	1263.0	1515.0	1273.0	1515.0	2
8	1273.0	1515.0	1284.0	1520.0	2
9	1284.0	1520.0	1317.0	1537.0	1
10	1317.0	1537.0	1327.0	1537.0	1
11	1327.0	1537.0	1380.0	1567.0	1
12	1380.0	1567.0	1435.0	1570.0	1
13	1435.0	1570.0	1465.0	1573.0	1
14	1465.0	1573.0	1500.0	1582.0	1
15	1500.0	1582.0	1520.0	1585.0	1
16	1520.0	1585.0	1530.0	1580.0	1

3 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1285.0	1520.0	1350.0	1517.0	2
2	1350.0	1517.0	1455.0	1507.0	2
3	1455.0	1507.0	1530.0	1510.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-80.00	4000.0	28.00
2	-30.00	150.0	24.00
3	10.00	4000.0	28.00
4	40.00	150.0	24.00
5	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1150.0 ft
and x = 1220.0 ft

Each surface terminates between x = 1330.0 ft
and x = 1410.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1450.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -55.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter.. In such

cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 25 coordinate points

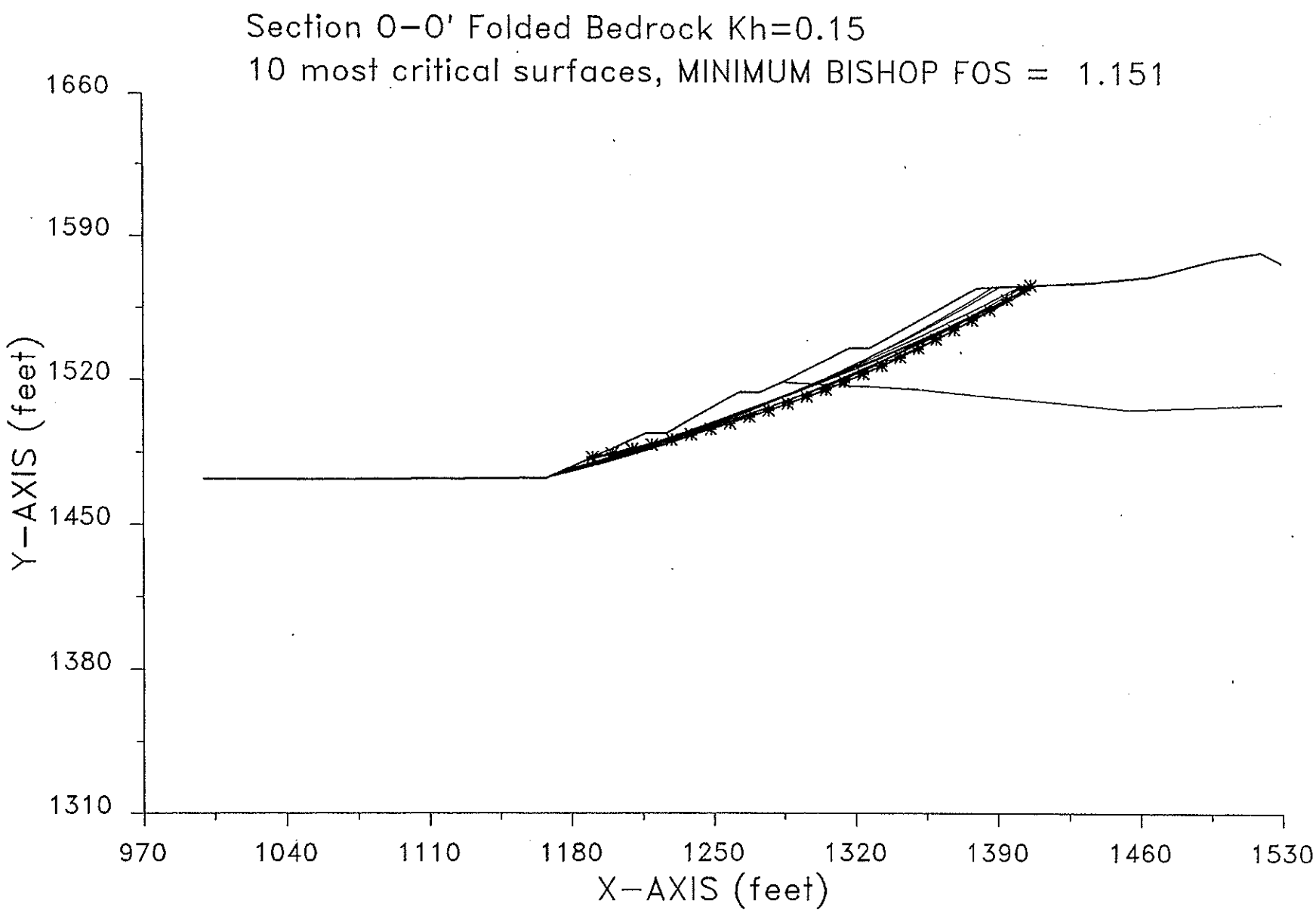
Point No.	x-surf (ft)	y-surf (ft)
1	1190.53	1483.11
2	1200.34	1485.03
3	1210.12	1487.10
4	1219.87	1489.33
5	1229.58	1491.73
6	1239.25	1494.28
7	1248.88	1496.99
8	1258.46	1499.86
9	1267.99	1502.88
10	1277.47	1506.06
11	1286.89	1509.40
12	1296.26	1512.89
13	1305.58	1516.54
14	1314.83	1520.33
15	1324.02	1524.28
16	1333.14	1528.38
17	1342.19	1532.63
18	1351.17	1537.03
19	1360.08	1541.57
20	1368.91	1546.26
21	1377.67	1551.09
22	1386.34	1556.07
23	1394.93	1561.18
24	1403.44	1566.44
25	1406.57	1568.45

**** Simplified BISHOP FOS = 1.649 ****
The following is a summary of the TEN most critical surfaces

Problem Description : Section O-O' Folded Bedrock (Circ)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.649	1078.95	2081.95	609.15	1190.53	1406.57	1.017E+08
2.	1.666	962.82	2319.82	871.24	1168.42	1403.59	1.376E+08
3.	1.676	1046.59	2143.46	676.69	1186.84	1403.02	1.015E+08
4.	1.696	968.33	2335.84	884.03	1175.79	1407.26	1.411E+08
5.	1.716	1029.47	2220.76	755.02	1190.53	1409.97	1.210E+08
6.	1.737	986.86	2198.92	748.10	1168.42	1387.89	8.336E+07
7.	1.762	967.86	2262.40	813.61	1172.11	1391.12	9.094E+07
8.	1.793	827.60	2693.45	1266.37	1172.11	1409.37	1.852E+08
9.	1.804	833.29	2630.65	1205.00	1168.42	1401.82	1.533E+08
10.	1.832	810.14	2741.61	1316.89	1175.79	1408.64	1.804E+08

* * * END OF FILE * * *


Section O-O' Folded Bedrock Kh=0.15
10 most critical surfaces, MINIMUM BISHOP FOS = 1.151
1660
1590
1520
1450
1380
1310
Y-AXIS (feet)
970
1040
1110
1180
1250
1320
1390
1460
1530
X-AXIS (feet)

XSTABL File: SECTO-O2 10-06-** 16:23

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*        Moscow, ID 83843, U.S.A.       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section O-O' Folded Bedrock Kh=0.15

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1472.0	1060.0	1472.0	2
2	1060.0	1472.0	1061.0	1472.0	2
3	1061.0	1472.0	1168.0	1473.0	2
4	1168.0	1473.0	1217.0	1495.0	2
5	1217.0	1495.0	1227.0	1495.0	2
6	1227.0	1495.0	1263.0	1515.0	2
7	1263.0	1515.0	1273.0	1515.0	2
8	1273.0	1515.0	1284.0	1520.0	2
9	1284.0	1520.0	1317.0	1537.0	1
10	1317.0	1537.0	1327.0	1537.0	1
11	1327.0	1537.0	1380.0	1567.0	1
12	1380.0	1567.0	1435.0	1570.0	1
13	1435.0	1570.0	1465.0	1573.0	1
14	1465.0	1573.0	1500.0	1582.0	1
15	1500.0	1582.0	1520.0	1585.0	1
16	1520.0	1585.0	1530.0	1580.0	1

3 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1285.0	1520.0	1350.0	1517.0	2
2	1350.0	1517.0	1455.0	1507.0	2
3	1455.0	1507.0	1530.0	1510.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-80.00	4000.0	28.00
2	-30.00	150.0	24.00
3	10.00	4000.0	28.00
4	40.00	150.0	24.00
5	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1150.0 ft
and x = 1220.0 ft

Each surface terminates between x = 1330.0 ft
and x = 1410.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1450.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -55.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****

-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)

****

Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.

****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 25 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1190.53	1483.11
2	1200.34	1485.03
3	1210.12	1487.10
4	1219.87	1489.33
5	1229.58	1491.73
6	1239.25	1494.28
7	1248.88	1496.99
8	1258.46	1499.86
9	1267.99	1502.88
10	1277.47	1506.06
11	1286.89	1509.40
12	1296.26	1512.89
13	1305.58	1516.54
14	1314.83	1520.33
15	1324.02	1524.28
16	1333.14	1528.38
17	1342.19	1532.63
18	1351.17	1537.03
19	1360.08	1541.57
20	1368.91	1546.26
21	1377.67	1551.09
22	1386.34	1556.07
23	1394.93	1561.18
24	1403.44	1566.44
25	1406.57	1568.45

**** Simplified BISHOP FOS = 1.151 ****

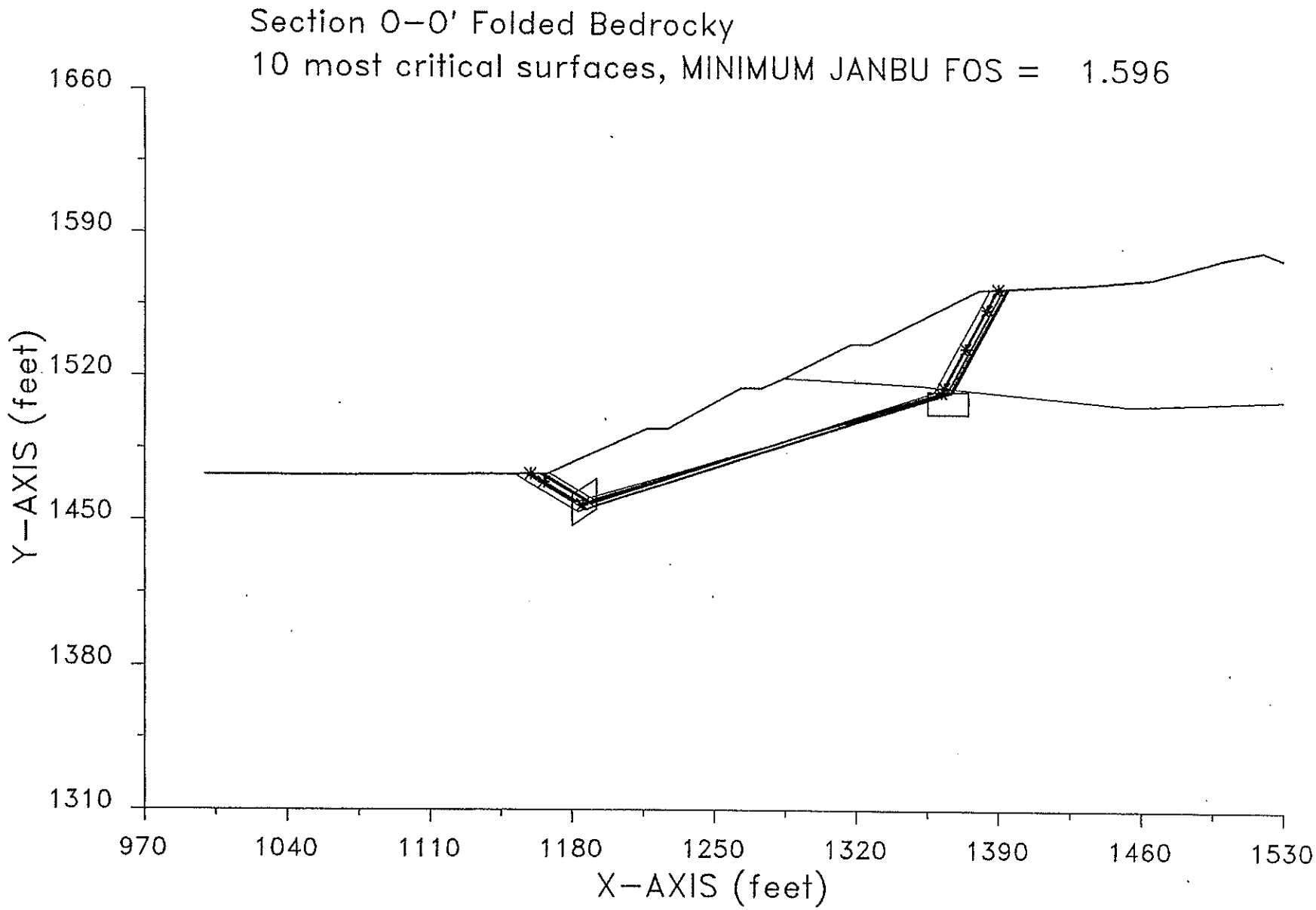
The following is a summary of the TEN most critical surfaces

Problem Description : Section O-O' Folded Bedrock Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.151	1078.95	2081.95	609.15	1190.53	1406.57	9.642E+07
2.	1.165	962.82	2319.82	871.24	1168.42	1403.59	1.306E+08
3.	1.173	1046.59	2143.46	676.69	1186.84	1403.02	9.629E+07
4.	1.184	968.33	2335.84	884.03	1175.79	1407.26	1.339E+08
5.	1.196	1029.47	2220.76	755.02	1190.53	1409.97	1.148E+08
6.	1.225	986.86	2198.92	748.10	1168.42	1387.89	7.941E+07
7.	1.244	967.86	2262.40	813.61	1172.11	1391.12	8.664E+07
8.	1.251	827.60	2693.45	1266.37	1172.11	1409.37	1.764E+08
9.	1.267	833.29	2630.65	1205.00	1168.42	1401.82	1.461E+08
10.	1.280	810.14	2741.61	1316.89	1175.79	1408.64	1.719E+08

* * * END OF FILE * * *

SEC.O-O 10-08-** 23:06



XSTABL File: SECTO-O 10-08-** 23:06

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section O-O' Folded Bedrocky

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1472.0	1060.0	1472.0	2
2	1060.0	1472.0	1061.0	1472.0	2
3	1061.0	1472.0	1168.0	1473.0	2
4	1168.0	1473.0	1217.0	1495.0	2
5	1217.0	1495.0	1227.0	1495.0	2
6	1227.0	1495.0	1263.0	1515.0	2
7	1263.0	1515.0	1273.0	1515.0	2
8	1273.0	1515.0	1284.0	1520.0	2
9	1284.0	1520.0	1317.0	1537.0	1
10	1317.0	1537.0	1327.0	1537.0	1
11	1327.0	1537.0	1380.0	1564.0	1
12	1380.0	1564.0	1435.0	1567.0	1
13	1435.0	1567.0	1465.0	1570.0	1
14	1465.0	1570.0	1500.0	1580.0	1
15	1500.0	1580.0	1520.0	1584.0	1
16	1520.0	1584.0	1530.0	1580.0	1

3 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1285.0	1520.0	1350.0	1517.0	2
2	1350.0	1517.0	1455.0	1507.0	2
3	1455.0	1507.0	1530.0	1510.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ĭ-value (degrees)
1	-80.00	4000.0	28.00
2	-30.00	150.0	24.00
3	10.00	4000.0	28.00
4	40.00	150.0	24.00
5	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

1000 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 22.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1180.0	1455.0	1192.0	1463.0	15.0
2	1355.0	1508.0	1375.0	1508.0	11.0

****
ERROR # 38
****
The program calculated a point for the PASSIVE wedge that is outside the defined slope geometry. The analysis will continue, but the user should adjust the search box or slope geometry to allow a passive wedge to be formed from all points within first box.
****

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1159.72	1472.92
2	1166.27	1468.99
3	1185.13	1457.66
4	1361.66	1513.31
5	1363.13	1515.75
6	1373.62	1535.08
7	1384.12	1554.42
8	1389.61	1564.52

** Corrected JANBU FOS = 1.596 ** (Fo factor = 1.059)

Failure surface No. 2 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1157.24	1472.90
2	1164.36	1468.62
3	1183.22	1457.29
4	1363.92	1513.30
5	1365.27	1515.55
6	1375.77	1534.88
7	1386.27	1554.21
8	1391.93	1564.65

** Corrected JANBU FOS = 1.596 ** (Fo factor = 1.059)

Failure surface No. 3 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1166.08	1472.98
2	1170.89	1470.09
3	1189.75	1458.76
4	1360.94	1513.35
5	1362.42	1515.82
6	1372.92	1535.15
7	1383.42	1554.48
8	1388.85	1564.48

** Corrected JANBU FOS = 1.596 ** (Fo factor = 1.060)

Failure surface No. 4 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1164.01	1472.96
2	1171.53	1468.44
3	1190.39	1457.11
4	1364.34	1513.11
5	1365.77	1515.50
6	1376.27	1534.83
7	1386.77	1554.17
8	1392.48	1564.68

** Corrected JANBU FOS = 1.597 ** (Fo factor = 1.060)

Failure surface No. 5 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1159.46	1472.92
2	1165.43	1469.33
3	1184.28	1458.00
4	1361.06	1513.20
5	1362.62	1515.80
6	1373.12	1535.13
7	1383.61	1554.47
8	1389.06	1564.49

** Corrected JANBU FOS = 1.600 ** (Fo factor = 1.059)

Failure surface No. 6 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1164.97	1472.97
2	1170.94	1469.38
3	1189.80	1458.05
4	1357.74	1513.43
5	1359.35	1516.11
6	1369.84	1535.44
7	1380.34	1554.78
8	1385.51	1564.30

** Corrected JANBU FOS = 1.600 ** (Fo factor = 1.060)

Failure surface No. 7 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1157.09	1472.90
2	1167.56	1466.61
3	1186.42	1455.28
4	1365.32	1512.99
5	1366.77	1515.40
6	1377.27	1534.74
7	1387.77	1554.07
8	1393.56	1564.74

** Corrected JANBU FOS = 1.600 ** (Fo factor = 1.059)

Failure surface No. 8 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1168.74	1473.33
2	1171.44	1471.71
3	1190.29	1460.38
4	1364.49	1513.27
5	1365.82	1515.49
6	1376.32	1534.83
7	1386.81	1554.16
8	1392.53	1564.68

** Corrected JANBU FOS = 1.600 ** (Fo factor = 1.060)

Failure surface No. 9 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1151.83	1472.85
2	1164.00	1465.54
3	1182.85	1454.21
4	1366.97	1513.23
5	1368.19	1515.27
6	1378.69	1534.60
7	1389.19	1553.94
8	1395.10	1564.82

** Corrected JANBU FOS = 1.601 ** (Fo factor = 1.058)

Failure surface No.10 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1158.64	1472.91
2	1162.81	1470.41
3	1181.67	1459.07
4	1366.26	1513.19
5	1367.54	1515.33
6	1378.04	1534.66
7	1388.54	1554.00
8	1394.40	1564.79

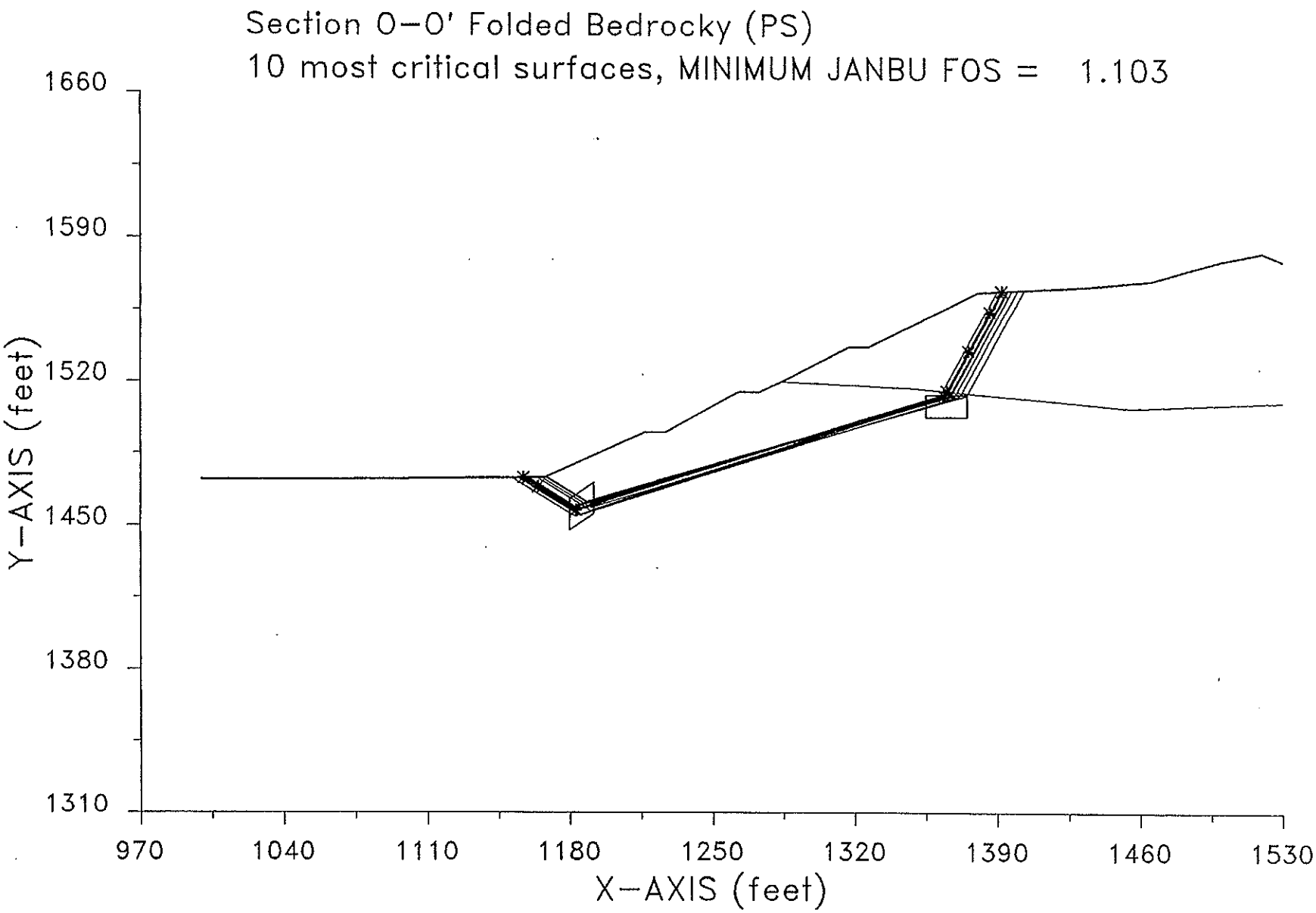
** Corrected JANBU FOS = 1.601 ** (Fo factor = 1.059)

The following is a summary of the TEN most critical surfaces

Problem Description : Section O-O' Folded Bedrocky

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.596	1.059	1159.72	1389.61	4.022E+05
2.	1.596	1.059	1157.24	1391.93	4.133E+05
3.	1.596	1.060	1166.08	1388.85	3.947E+05
4.	1.597	1.060	1164.01	1392.48	4.232E+05
5.	1.600	1.059	1159.46	1389.06	3.978E+05
6.	1.600	1.060	1164.97	1385.51	3.849E+05
7.	1.600	1.059	1157.09	1393.56	4.389E+05
8.	1.600	1.060	1168.74	1392.53	4.006E+05
9.	1.601	1.058	1151.83	1395.10	4.493E+05
10.	1.601	1.059	1158.64	1394.40	4.111E+05

* * * END OF FILE * * *


Section O-O' Folded Bedrocky (PS)
10 most critical surfaces, MINIMUM JANBU FOS = 1.103
1660
1590
1520
1450
1380
1310
Y-AXIS (feet)
970
1040
1110
1180
1250
1320
1390
1460
1530
X-AXIS (feet)

XSTABL File: SECTO-OE 10-08-** 23:00

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section O-O' Folded Bedrocky (PS)

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1472.0	1060.0	1472.0	2
2	1060.0	1472.0	1061.0	1472.0	2
3	1061.0	1472.0	1168.0	1473.0	2
4	1168.0	1473.0	1217.0	1495.0	2
5	1217.0	1495.0	1227.0	1495.0	2
6	1227.0	1495.0	1263.0	1515.0	2
7	1263.0	1515.0	1273.0	1515.0	2
8	1273.0	1515.0	1284.0	1520.0	2
9	1284.0	1520.0	1317.0	1537.0	1
10	1317.0	1537.0	1327.0	1537.0	1
11	1327.0	1537.0	1380.0	1564.0	1
12	1380.0	1564.0	1435.0	1567.0	1
13	1435.0	1567.0	1465.0	1570.0	1
14	1465.0	1570.0	1500.0	1580.0	1
15	1500.0	1580.0	1520.0	1584.0	1
16	1520.0	1584.0	1530.0	1580.0	1

3 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1285.0	1520.0	1350.0	1517.0	2
2	1350.0	1517.0	1455.0	1507.0	2
3	1455.0	1507.0	1530.0	1510.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	f-value (degrees)
1	-80.00	4000.0	28.00
2	-30.00	150.0	24.00
3	10.00	4000.0	28.00
4	40.00	150.0	24.00
5	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

1000 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 22.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1180.0	1455.0	1192.0	1463.0	15.0
2	1355.0	1508.0	1375.0	1508.0	11.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.

```
************************************************************************

    ------------------------------------------------------------
    USER SELECTED option to maintain strength greater than zero
    ------------------------------------------------------------


************************************************************************
ERROR # 38
************************************************************************
The program calculated a point for the PASSIVE wedge that is outside
the defined slope geometry.  The analysis will continue, but the user
should adjust the search box or slope geometry to allow a passive
wedge to be formed from all points within first box.
************************************************************************


    Factors of safety have been calculated by the :

    * * * * *   SIMPLIFIED JANBU METHOD   * * * * *


    The 10 most critical of all the failure surfaces examined
    are displayed below - the most critical first

    Failure surface No. 1 specified by  8 coordinate points

          Point       x-surf       y-surf
           No.         (ft)         (ft)

            1        1157.24      1472.90
            2        1164.36      1468.62
            3        1183.22      1457.29
            4        1363.92      1513.30
            5        1365.27      1515.55
            6        1375.77      1534.88
            7        1386.27      1554.21
            8        1391.93      1564.65

     **  Corrected JANBU FOS =   1.103  **     (Fo factor = 1.059)

    Failure surface No. 2 specified by  8 coordinate points

          Point       x-surf       y-surf
           No.         (ft)         (ft)

            1        1158.64      1472.91
            2        1162.81      1470.41
            3        1181.67      1459.07
            4        1366.26      1513.19
            5        1367.54      1515.33
            6        1378.04      1534.66
            7        1388.54      1554.00
            8        1394.40      1564.79

     **  Corrected JANBU FOS =   1.103  **     (Fo factor = 1.059)

    Failure surface No. 3 specified by  8 coordinate points

          Point       x-surf       y-surf
           No.         (ft)         (ft)

            1        1154.73      1472.88
            2        1166.04      1466.08
            3        1184.90      1454.75
            4        1371.38      1513.18
```

5	1372.39	1514.87
6	1382.89	1534.20
7	1393.39	1553.54
8	1399.65	1565.07

** Corrected JANBU FOS = 1.103 ** (Fo factor = 1.059)

Failure surface No. 4 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1159.72	1472.92
2	1166.27	1468.99
3	1185.13	1457.66
4	1361.66	1513.31
5	1363.13	1515.75
6	1373.62	1535.08
7	1384.12	1554.42
8	1389.61	1564.52

** Corrected JANBU FOS = 1.105 ** (Fo factor = 1.059)

Failure surface No. 5 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1166.36	1472.98
2	1171.81	1469.71
3	1190.66	1458.38
4	1374.55	1513.15
5	1375.40	1514.58
6	1385.90	1533.91
7	1396.40	1553.25
8	1402.91	1565.25

** Corrected JANBU FOS = 1.105 ** (Fo factor = 1.059)

Failure surface No. 6 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1155.59	1472.88
2	1161.55	1469.31
3	1180.41	1457.97
4	1368.78	1513.10
5	1369.98	1515.10
6	1380.48	1534.43
7	1390.98	1553.76
8	1397.04	1564.93

** Corrected JANBU FOS = 1.105 ** (Fo factor = 1.059)

Failure surface No. 7 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1168.74	1473.33
2	1171.44	1471.71
3	1190.29	1460.38
4	1364.49	1513.27
5	1365.82	1515.49
6	1376.32	1534.83
7	1386.81	1554.16
8	1392.53	1564.68

** Corrected JANBU FOS = 1.105 ** (Fo factor = 1.060)

Failure surface No. 8 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1168.35	1473.16
2	1169.28	1472.60
3	1188.14	1461.27
4	1366.49	1513.16
5	1367.77	1515.31
6	1378.27	1534.64
7	1388.77	1553.98
8	1394.65	1564.80

** Corrected JANBU FOS = 1.105 ** (Fo factor = 1.060)

Failure surface No. 9 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1164.01	1472.96
2	1171.53	1468.44
3	1190.39	1457.11
4	1364.34	1513.11
5	1365.77	1515.50
6	1376.27	1534.83
7	1386.77	1554.17
8	1392.48	1564.68

** Corrected JANBU FOS = 1.106 ** (Fo factor = 1.060)

Failure surface No.10 specified by 8 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1151.83	1472.85
2	1164.00	1465.54
3	1182.85	1454.21
4	1366.97	1513.23
5	1368.19	1515.27
6	1378.69	1534.60
7	1389.19	1553.94
8	1395.10	1564.82

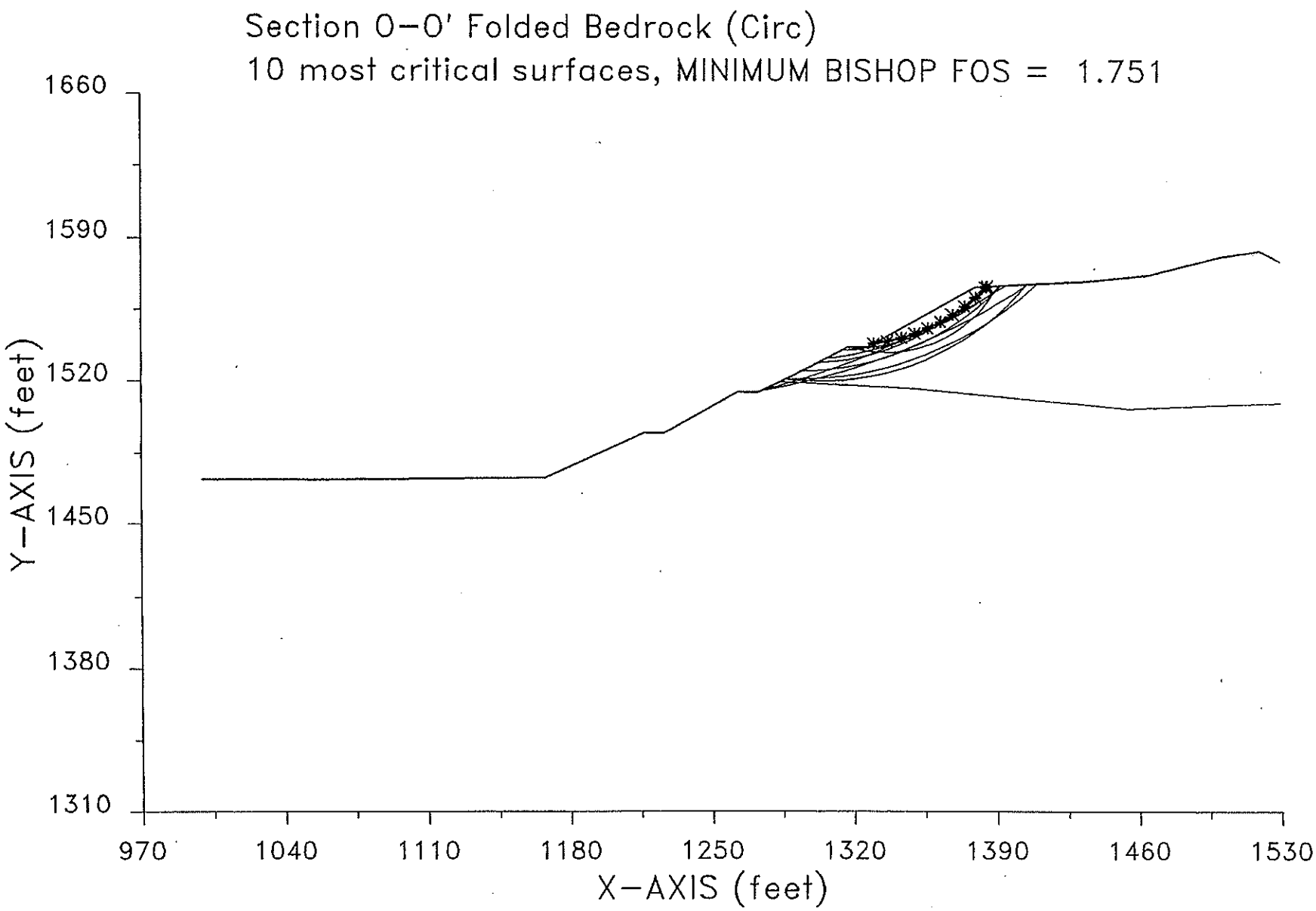
** Corrected JANBU FOS = 1.106 ** (Fo factor = 1.058)

The following is a summary of the TEN most critical surfaces

Problem Description : Section O-O' Folded Bedrocky (PS)

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.103	1.059	1157.24	1391.93	3.934E+05
2.	1.103	1.059	1158.64	1394.40	3.908E+05
3.	1.103	1.059	1154.73	1399.65	4.444E+05
4.	1.105	1.059	1159.72	1389.61	3.828E+05
5.	1.105	1.059	1166.36	1402.91	4.360E+05
6.	1.105	1.059	1155.59	1397.04	4.087E+05
7.	1.105	1.060	1168.74	1392.53	3.810E+05
8.	1.105	1.060	1168.35	1394.65	3.827E+05
9.	1.106	1.060	1164.01	1392.48	4.032E+05
10.	1.106	1.058	1151.83	1395.10	4.285E+05

* * * END OF FILE * * *


Section O-O' Folded Bedrock (Circ)
10 most critical surfaces, MINIMUM BISHOP FOS = 1.751
1660
1590
1520
1450
1380
1310
Y-AXIS (feet)
970
1040
1110
1180
1250
1320
1390
1460
1530
X-AXIS (feet)

XSTABL File: SECTO-O5 10-06-** 16:28

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section O-O' Folded Bedrock (Circ)

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1472.0	1060.0	1472.0	2
2	1060.0	1472.0	1061.0	1472.0	2
3	1061.0	1472.0	1168.0	1473.0	2
4	1168.0	1473.0	1217.0	1495.0	2
5	1217.0	1495.0	1227.0	1495.0	2
6	1227.0	1495.0	1263.0	1515.0	2
7	1263.0	1515.0	1273.0	1515.0	2
8	1273.0	1515.0	1284.0	1520.0	2
9	1284.0	1520.0	1317.0	1537.0	1
10	1317.0	1537.0	1327.0	1537.0	1
11	1327.0	1537.0	1380.0	1567.0	1
12	1380.0	1567.0	1435.0	1570.0	1
13	1435.0	1570.0	1465.0	1573.0	1
14	1465.0	1573.0	1500.0	1582.0	1
15	1500.0	1582.0	1520.0	1585.0	1
16	1520.0	1585.0	1530.0	1580.0	1

3 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1285.0	1520.0	1350.0	1517.0	2
2	1350.0	1517.0	1455.0	1507.0	2
3	1455.0	1507.0	1530.0	1510.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-80.00	4000.0	28.00
2	-30.00	150.0	24.00
3	10.00	4000.0	28.00
4	40.00	150.0	24.00
5	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1255.0 ft
and x = 1330.0 ft

Each surface terminates between x = 1340.0 ft
and x = 1460.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1450.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

7.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -55.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such

cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 11 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1330.00	1538.70
2	1336.90	1539.88
3	1343.69	1541.57
4	1350.34	1543.76
5	1356.80	1546.45
6	1363.05	1549.61
7	1369.04	1553.23
8	1374.74	1557.29
9	1380.13	1561.76
10	1385.16	1566.62
11	1385.78	1567.32

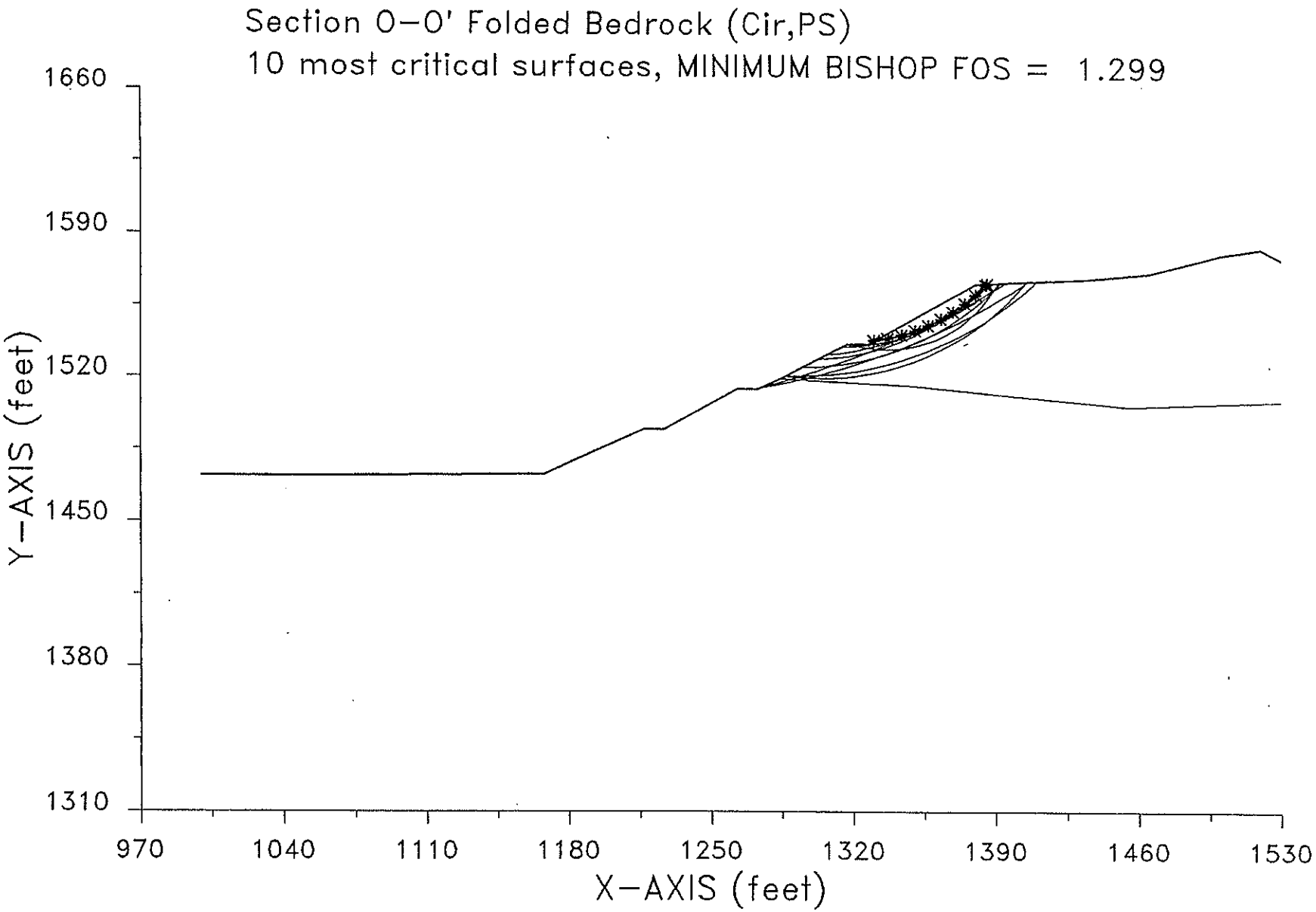
**** Simplified BISHOP FOS = 1.751 ****

The following is a summary of the TEN most critical surfaces

Problem Description : Section O-O' Folded Bedrock (Circ)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.751	1317.73	1631.38	93.49	1330.00	1385.78	2.691E+06
2.	1.833	1313.31	1637.28	101.72	1314.21	1387.16	3.811E+06
3.	1.840	1294.13	1661.72	136.32	1294.47	1392.83	1.078E+07
4.	1.868	1220.98	1839.75	328.39	1274.74	1405.91	3.373E+07
5.	1.871	1335.96	1596.84	62.43	1318.16	1391.03	4.285E+06
6.	1.895	1298.64	1645.66	116.25	1302.37	1384.39	5.456E+06
7.	1.915	1289.38	1693.61	163.00	1306.32	1392.85	7.701E+06
8.	1.934	1303.63	1651.76	131.54	1286.58	1405.35	2.012E+07
9.	1.937	1292.10	1692.49	171.25	1286.58	1410.36	2.425E+07
10.	1.940	1172.28	1917.99	415.05	1274.74	1395.08	2.655E+07

* * * END OF FILE * * *


Section O-O' Folded Bedrock (Cir,PS)
10 most critical surfaces, MINIMUM BISHOP FOS = 1.299
1660
1590
1520
1450
1380
1310
Y-AXIS (feet)
970
1040
1110
1180
1250
1320
1390
1460
1530
X-AXIS (feet)

XSTABL File: SECTO-06 10-06-** 16:30

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Â 95        *
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*        Moscow, ID 83843, U.S.A.       *
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*                                       *
*  Ver. 5.105                95 Â 1437  *
*****************************************
```

Problem Description : Section O-O' Folded Bedrock (Cir,PS)

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1472.0	1060.0	1472.0	2
2	1060.0	1472.0	1061.0	1472.0	2
3	1061.0	1472.0	1168.0	1473.0	2
4	1168.0	1473.0	1217.0	1495.0	2
5	1217.0	1495.0	1227.0	1495.0	2
6	1227.0	1495.0	1263.0	1515.0	2
7	1263.0	1515.0	1273.0	1515.0	2
8	1273.0	1515.0	1284.0	1520.0	2
9	1284.0	1520.0	1317.0	1537.0	1
10	1317.0	1537.0	1327.0	1537.0	1
11	1327.0	1537.0	1380.0	1567.0	1
12	1380.0	1567.0	1435.0	1570.0	1
13	1435.0	1570.0	1465.0	1573.0	1
14	1465.0	1573.0	1500.0	1582.0	1
15	1500.0	1582.0	1520.0	1585.0	1
16	1520.0	1585.0	1530.0	1580.0	1

3 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1285.0	1520.0	1350.0	1517.0	2
2	1350.0	1517.0	1455.0	1507.0	2
3	1455.0	1507.0	1530.0	1510.0	2

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	120.0	33.00	.000	.0	0
2	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-80.00	4000.0	28.00
2	-30.00	150.0	24.00
3	10.00	4000.0	28.00
4	40.00	150.0	24.00
5	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1255.0 ft
and x = 1330.0 ft

Each surface terminates between x = 1340.0 ft
and x = 1460.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1450.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

7.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -55.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

```
**********************************************************************
   --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
**********************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
**********************************************************************

   ------------------------------------------------------------
   USER SELECTED option to maintain strength greater than zero
   ------------------------------------------------------------


   Factors of safety have been calculated by the :

   * * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


     The most critical circular failure surface
     is specified by 11 coordinate points

          Point       x-surf       y-surf
           No.         (ft)         (ft)

            1        1330.00      1538.70
            2        1336.90      1539.88
            3        1343.69      1541.57
            4        1350.34      1543.76
            5        1356.80      1546.45
            6        1363.05      1549.61
            7        1369.04      1553.23
            8        1374.74      1557.29
            9        1380.13      1561.76
           10        1385.16      1566.62
           11        1385.78      1567.32

   ****  Simplified BISHOP FOS =   1.299  ****


   The following is a summary of the TEN most critical surfaces

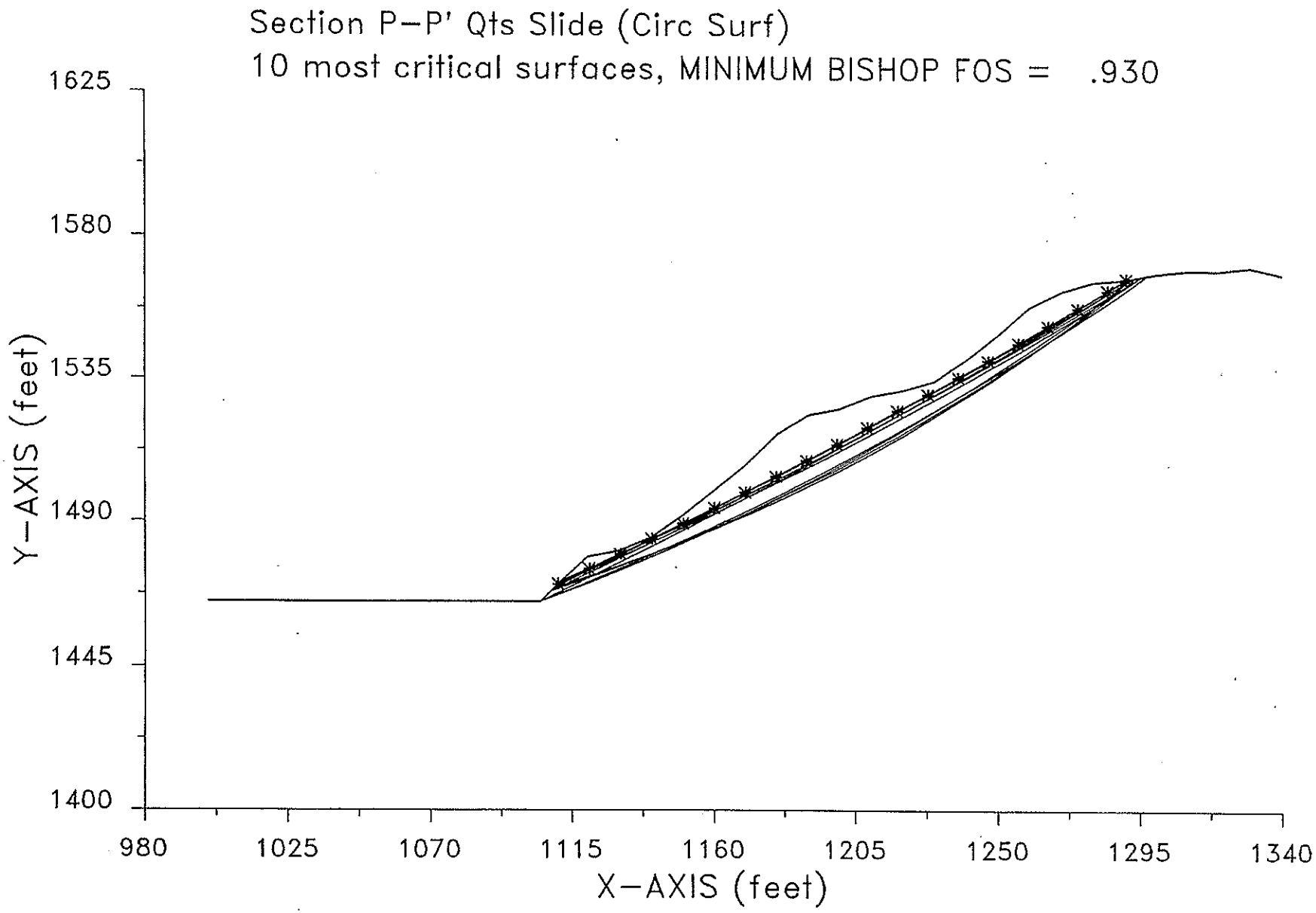
   Problem Description : Section O-O' Folded Bedrock (Cir,PS)

          FOS      Circle Center    Radius  Initial Terminal  Resisting
       (BISHOP)  x-coord  y-coord           x-coord  x-coord    Moment
                   (ft)     (ft)     (ft)     (ft)     (ft)    (ft-lb)

    1.    1.299   1317.73  1631.38    93.49  1330.00  1385.78  2.548E+06
    2.    1.313   1220.98  1839.75   328.39  1274.74  1405.91  3.203E+07
    3.    1.320   1294.13  1661.72   136.32  1294.47  1392.83  1.024E+07
    4.    1.354   1313.31  1637.28   101.72  1314.21  1387.16  3.624E+06
    5.    1.356   1292.10  1692.49   171.25  1286.58  1410.36  2.311E+07
    6.    1.370   1303.63  1651.76   131.54  1286.58  1405.35  1.920E+07
    7.    1.377   1298.64  1645.66   116.25  1302.37  1384.39  5.187E+06
    8.    1.382   1289.38  1693.61   163.00  1306.32  1392.85  7.328E+06
    9.    1.384   1335.96  1596.84    62.43  1318.16  1391.03  4.093E+06
   10.    1.386   1172.28  1917.99   415.05  1274.74  1395.08  2.525E+07

                    * * *  END OF FILE  * * *
```

SEC.. -P1 10-04-** 13:51



XSTABL File: SECTP-P1 10-04-** 13:51

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section P-P' Qts Slide (Circ Surf)

SEGMENT BOUNDARY COORDINATES
---

26 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1465.0	1100.0	1465.0	2
2	1100.0	1465.0	1105.0	1465.0	2
3	1105.0	1465.0	1110.0	1470.0	2
4	1110.0	1470.0	1120.0	1479.0	1
5	1120.0	1479.0	1130.0	1481.0	1
6	1130.0	1481.0	1140.0	1485.0	1
7	1140.0	1485.0	1150.0	1492.0	1
8	1150.0	1492.0	1160.0	1500.0	1
9	1160.0	1500.0	1170.0	1508.0	1
10	1170.0	1508.0	1180.0	1518.0	1
11	1180.0	1518.0	1190.0	1524.0	1
12	1190.0	1524.0	1200.0	1526.0	1
13	1200.0	1526.0	1210.0	1530.0	1
14	1210.0	1530.0	1220.0	1532.0	1
15	1220.0	1532.0	1230.0	1535.0	1
16	1230.0	1535.0	1240.0	1542.0	1
17	1240.0	1542.0	1250.0	1550.0	1
18	1250.0	1550.0	1260.0	1559.0	1
19	1260.0	1559.0	1270.0	1564.0	1
20	1270.0	1564.0	1280.0	1567.0	1
21	1280.0	1567.0	1290.0	1568.0	1
22	1290.0	1568.0	1300.0	1570.0	1
23	1300.0	1570.0	1310.0	1571.0	1
24	1310.0	1571.0	1320.0	1571.0	1
25	1320.0	1571.0	1330.0	1572.0	1
26	1330.0	1572.0	1340.0	1570.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	.0	27.00	.000	.0	0
2	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	-80.00	4000.0	28.00
2	-45.00	150.0	24.00
3	10.00	4000.0	28.00
4	60.00	150.0	24.00
5	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

100 trial surfaces will be generated and analyzed.

10 Surfaces initiate from each of 10 points equally spaced along the ground surface between x = 1105.0 ft
and x = 1115.0 ft

Each surface terminates between x = 1290.0 ft
and x = 1300.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1465.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

11.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such

cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 20 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1110.56	1470.50
2	1120.53	1475.13
3	1130.48	1479.84
4	1140.39	1484.61
5	1150.26	1489.45
6	1160.10	1494.37
7	1169.91	1499.35
8	1179.68	1504.40
9	1189.42	1509.51
10	1199.12	1514.70
11	1208.79	1519.95
12	1218.41	1525.28
13	1228.00	1530.67
14	1237.55	1536.12
15	1247.07	1541.65
16	1256.54	1547.24
17	1265.97	1552.89
18	1275.37	1558.62
19	1284.72	1564.41
20	1290.64	1568.13

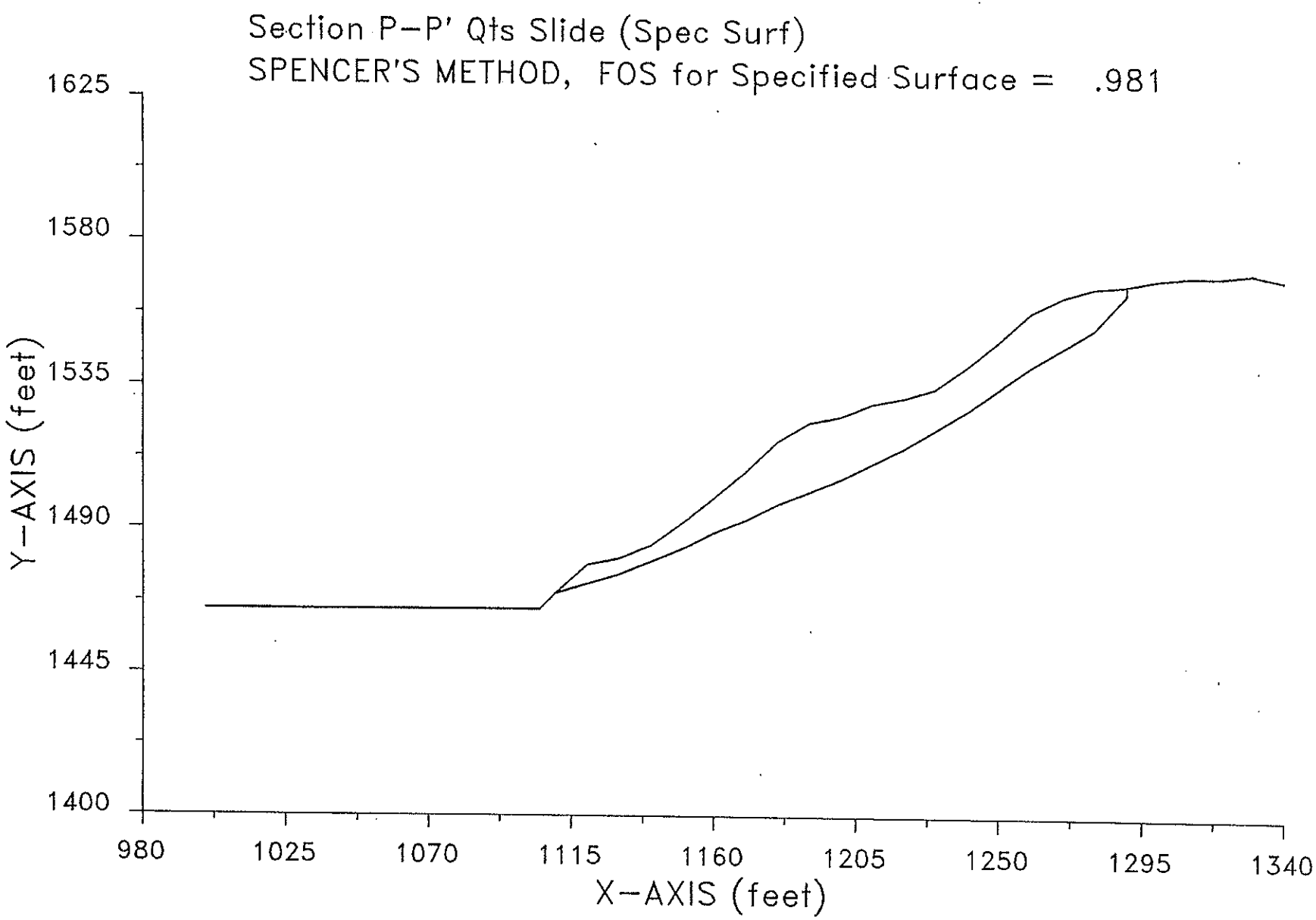
**** Simplified BISHOP FOS = .930 ****

The following is a summary of the TEN most critical surfaces

Problem Description : Section P-P' Qts Slide (Circ Surf)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	.930	454.82	2895.34	1568.49	1110.56	1290.64	9.672E+07
2.	.932	338.77	3078.36	1786.07	1105.00	1293.07	1.409E+08
3.	.936	865.04	2122.48	699.90	1105.00	1292.82	8.225E+07
4.	.936	286.69	3212.39	1927.37	1109.44	1293.02	1.244E+08
5.	.937	635.14	2577.36	1204.16	1111.67	1292.53	8.500E+07
6.	.943	399.60	3010.23	1696.98	1108.33	1295.73	1.294E+08
7.	.945	792.98	2270.19	863.53	1105.00	1297.74	1.016E+08
8.	.945	922.26	2033.96	595.44	1108.33	1293.97	7.123E+07
9.	.946	668.36	2525.74	1144.15	1110.56	1296.16	9.489E+07
10.	.946	962.12	1959.62	511.83	1109.44	1292.18	6.251E+07

* * * END OF FILE * * *


Section P-P' Qts Slide (Spec Surf)
SPENCER'S METHOD, FOS for Specified Surface = .981
1625
1580
1535
1490
1445
1400
Y-AXIS (feet)
980
1025
1070
1115
1160
1205
1250
1295
1340
X-AXIS (feet)

XSTABL File: SECTP-P 10-04-** 13:45

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section P-P' Qts Slide (Spec Surf)

SEGMENT BOUNDARY COORDINATES
---

26 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1465.0	1100.0	1465.0	2
2	1100.0	1465.0	1105.0	1465.0	2
3	1105.0	1465.0	1110.0	1470.0	2
4	1110.0	1470.0	1120.0	1479.0	1
5	1120.0	1479.0	1130.0	1481.0	1
6	1130.0	1481.0	1140.0	1485.0	1
7	1140.0	1485.0	1150.0	1492.0	1
8	1150.0	1492.0	1160.0	1500.0	1
9	1160.0	1500.0	1170.0	1508.0	1
10	1170.0	1508.0	1180.0	1518.0	1
11	1180.0	1518.0	1190.0	1524.0	1
12	1190.0	1524.0	1200.0	1526.0	1
13	1200.0	1526.0	1210.0	1530.0	1
14	1210.0	1530.0	1220.0	1532.0	1
15	1220.0	1532.0	1230.0	1535.0	1
16	1230.0	1535.0	1240.0	1542.0	1
17	1240.0	1542.0	1250.0	1550.0	1
18	1250.0	1550.0	1260.0	1559.0	1
19	1260.0	1559.0	1270.0	1564.0	1
20	1270.0	1564.0	1280.0	1567.0	1
21	1280.0	1567.0	1290.0	1568.0	1
22	1290.0	1568.0	1300.0	1570.0	1
23	1300.0	1570.0	1310.0	1571.0	1
24	1310.0	1571.0	1320.0	1571.0	1
25	1320.0	1571.0	1330.0	1572.0	1
26	1330.0	1572.0	1340.0	1570.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.

1	120.0	130.0	.0	27.00	.000	.0	0
2	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 2 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-80.00	4000.0	28.00
2	-45.00	150.0	24.00
3	10.00	4000.0	28.00
4	60.00	150.0	24.00
5	90.00	4000.0	28.00

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 20 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1110.00	1470.00
2	1120.00	1473.00
3	1130.00	1476.00
4	1140.00	1480.00
5	1150.00	1484.00
6	1160.00	1489.00
7	1170.00	1493.00
8	1180.00	1498.00
9	1190.00	1502.00
10	1200.00	1506.00
11	1210.00	1511.00
12	1220.00	1516.00
13	1230.00	1522.00
14	1240.00	1528.00
15	1250.00	1535.00
16	1260.00	1542.00
17	1270.00	1548.00
18	1280.00	1554.00
19	1290.00	1565.00
20	1290.00	1568.00

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice x-base y-base height width alpha beta weight

	(ft)	(ft)	(ft)	(ft)			(lb)
1	1115.00	1471.50	3.00	10.00	16.70	41.99	3600.
2	1125.00	1474.50	5.50	10.00	16.70	11.31	6600.
3	1135.00	1478.00	5.00	10.00	21.80	21.80	6000.
4	1145.00	1482.00	6.50	10.00	21.80	34.99	7800.
5	1155.00	1486.50	9.50	10.00	26.57	38.66	11400.
6	1165.00	1491.00	13.00	10.00	21.80	38.66	15600.
7	1175.00	1495.50	17.50	10.00	26.57	45.00	21000.
8	1185.00	1500.00	21.00	10.00	21.80	30.96	25200.
9	1195.00	1504.00	21.00	10.00	21.80	11.31	25200.
10	1205.00	1508.50	19.50	10.00	26.57	21.80	23400.
11	1215.00	1513.50	17.50	10.00	26.57	11.31	21000.
12	1225.00	1519.00	14.50	10.00	30.96	16.70	17400.
13	1235.00	1525.00	13.50	10.00	30.96	34.99	16200.
14	1245.00	1531.50	14.50	10.00	34.99	38.66	17400.
15	1255.00	1538.50	16.00	10.00	34.99	41.99	19200.
16	1265.00	1545.00	16.50	10.00	30.96	26.57	19800.
17	1275.00	1551.00	14.50	10.00	30.96	16.70	17400.
18	1285.00	1559.50	8.00	10.00	47.73	5.71	9600.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	28.1546	.9808	.9810

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	346.7	.0	27.00	0.	0.	0.	.00
2	635.6	.0	27.00	0.	0.	0.	.00
3	524.5	.0	27.00	0.	0.	0.	.00
4	681.9	.0	27.00	0.	0.	0.	.00
5	912.5	.0	27.00	0.	0.	0.	.00
6	1363.8	.0	27.00	0.	0.	0.	.00
7	1680.9	.0	27.00	0.	0.	0.	.00
8	2203.1	.0	27.00	0.	0.	0.	.00
9	2203.1	.0	27.00	0.	0.	0.	.00
10	1873.0	.0	27.00	0.	0.	0.	.00
11	1680.9	.0	27.00	0.	0.	0.	.00
12	1284.3	.0	27.00	0.	0.	0.	.00
13	1195.8	.0	27.00	0.	0.	0.	.00
14	1191.6	.0	27.00	0.	0.	0.	.00
15	1314.8	.0	27.00	0.	0.	0.	.00
16	1461.5	.0	27.00	0.	0.	0.	.00
17	1284.3	.0	27.00	0.	0.	0.	.00
18	510.1	.0	27.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	1115.00	346.7	360.0	.0	180.1
2	1125.00	635.6	660.0	.0	330.2
3	1135.00	524.5	600.0	.0	272.5
4	1145.00	681.9	780.0	.0	354.2
5	1155.00	912.5	1140.0	.0	474.0
6	1165.00	1363.8	1560.0	.0	708.5
7	1175.00	1680.9	2100.0	.0	873.2
8	1185.00	2203.1	2520.0	.0	1144.5
9	1195.00	2203.1	2520.0	.0	1144.5

10	1205.00	1873.0	2340.0	.0	973.0
11	1215.00	1680.9	2100.0	.0	873.2
12	1225.00	1284.3	1740.0	.0	667.2
13	1235.00	1195.8	1620.0	.0	621.2
14	1245.00	1191.6	1740.0	.0	619.0
15	1255.00	1314.8	1920.0	.0	683.0
16	1265.00	1461.5	1980.0	.0	759.2
17	1275.00	1284.3	1740.0	.0	667.2
18	1285.00	510.1	960.0	.0	265.0

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	1120.00	28.15	863.	1.18	6.00	.196
2	1130.00	28.15	2445.	2.01	5.00	.401
3	1140.00	28.15	3156.	2.75	5.00	.551
4	1150.00	28.15	4080.	3.33	8.00	.416
5	1160.00	28.15	4282.	3.52	11.00	.320
6	1170.00	28.15	6130.	3.61	15.00	.240
7	1180.00	28.15	6502.	3.74	20.00	.187
8	1190.00	28.15	9488.	3.70	22.00	.168
9	1200.00	28.15	12474.	4.01	20.00	.200
10	1210.00	28.15	12888.	4.23	19.00	.222
11	1220.00	28.15	13259.	4.45	16.00	.278
12	1230.00	28.15	12086.	4.21	13.00	.324
13	1240.00	28.15	10994.	3.95	14.00	.282
14	1250.00	28.15	8555.	3.19	15.00	.212
15	1260.00	28.15	5863.	2.62	17.00	.154
16	1270.00	28.15	4528.	2.66	16.00	.166
17	1280.00	28.15	3356.	2.82	13.00	.217
18	1290.00	.00	-3.	3.08	3.00	1.027

AVERAGE VALUES ALONG FAILURE SURFACE

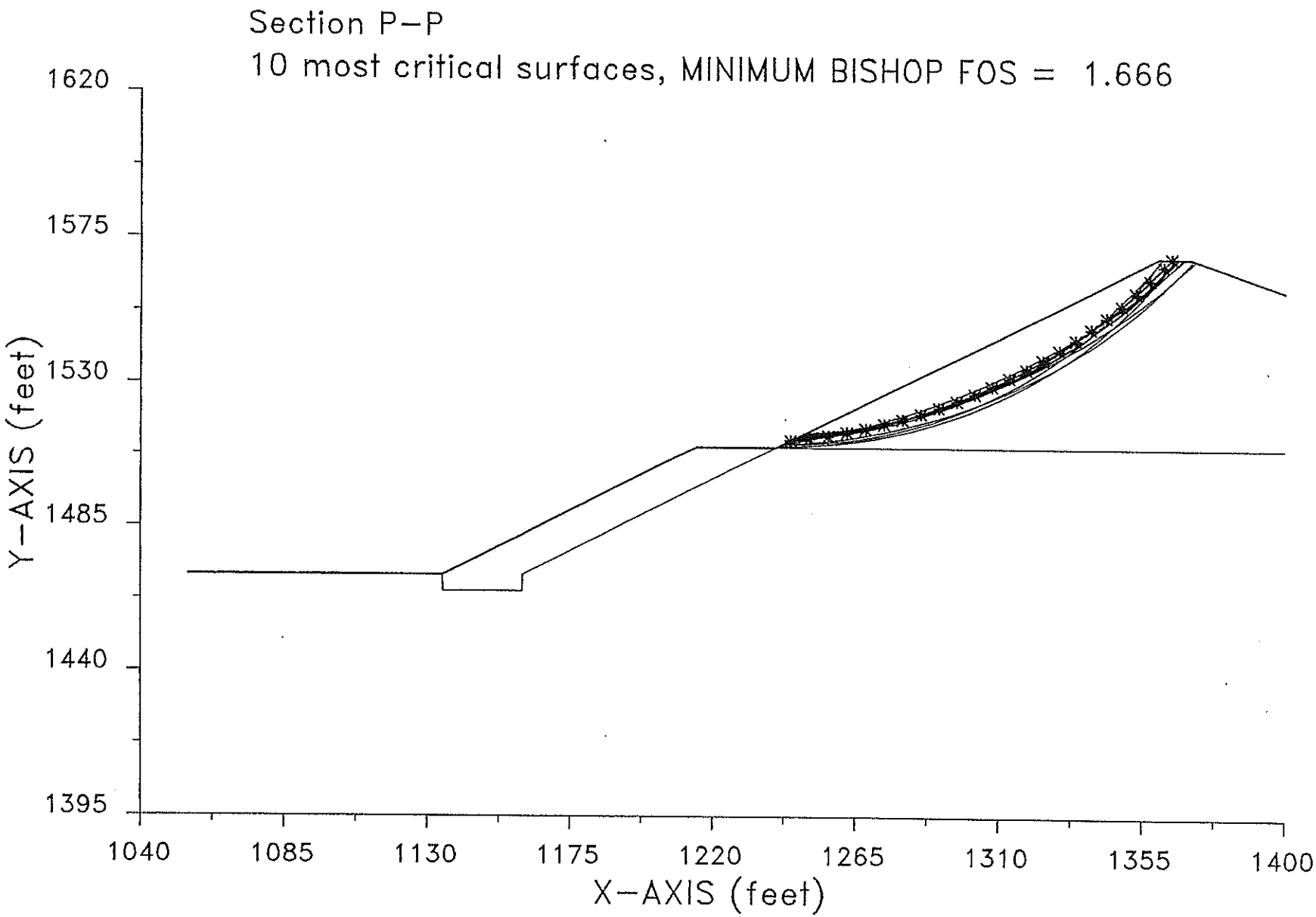
Total Normal Stress = 1233.06 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 640.56 (psf)

Total Length of failure surface = 205.38 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = .981

Total shear strength available along specified failure surface = 129.04E+03 lb


Section P-P
10 most critical surfaces, MINIMUM BISHOP FOS = 1.666
1620
1575
1530
1485
1440
1395
Y-AXIS (feet)
1040
1085
1130
1175
1220
1265
1310
1355
1400
X-AXIS (feet)

XSTABL File: SECP-P 10-09-** 9:50

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*****************************************
*              X S T A B L              *
*                                       *
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*            Method of Slices           *
*                                       *
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*****************************************
```

Problem Description : Section P-P

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1055.0	1470.0	1135.0	1470.0	1
2	1135.0	1470.0	1215.0	1510.0	2
3	1215.0	1510.0	1240.0	1510.0	2
4	1240.0	1510.0	1360.0	1570.0	2
5	1360.0	1570.0	1370.0	1570.0	2
6	1370.0	1570.0	1400.0	1560.0	2

5 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1135.0	1470.0	1135.1	1465.0	1
2	1135.1	1465.0	1160.0	1465.0	1
3	1160.0	1465.0	1160.1	1470.0	1
4	1160.1	1470.0	1240.0	1510.0	1
5	1240.0	1510.0	1400.0	1510.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-80.00	4000.0	28.00
2	-45.00	150.0	24.00
3	10.00	4000.0	28.00
4	60.00	150.0	24.00
5	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

2500 trial surfaces will be generated and analyzed.

50 Surfaces initiate from each of 50 points equally spaced
along the ground surface between x = 1220.0 ft
and x = 1280.0 ft

Each surface terminates between x = 1300.0 ft
and x = 1380.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

6.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 24 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1244.49	1512.24

2	1250.45	1512.93
3	1256.39	1513.80
4	1262.29	1514.85
5	1268.17	1516.08
6	1274.00	1517.50
7	1279.78	1519.09
8	1285.51	1520.87
9	1291.19	1522.82
10	1296.80	1524.95
11	1302.34	1527.25
12	1307.80	1529.72
13	1313.19	1532.36
14	1318.50	1535.17
15	1323.71	1538.14
16	1328.83	1541.27
17	1333.85	1544.56
18	1338.76	1548.00
19	1343.57	1551.59
20	1348.26	1555.33
21	1352.83	1559.22
22	1357.28	1563.24
23	1361.60	1567.40
24	1364.14	1570.00

**** Simplified BISHOP FOS = 1.666 ****

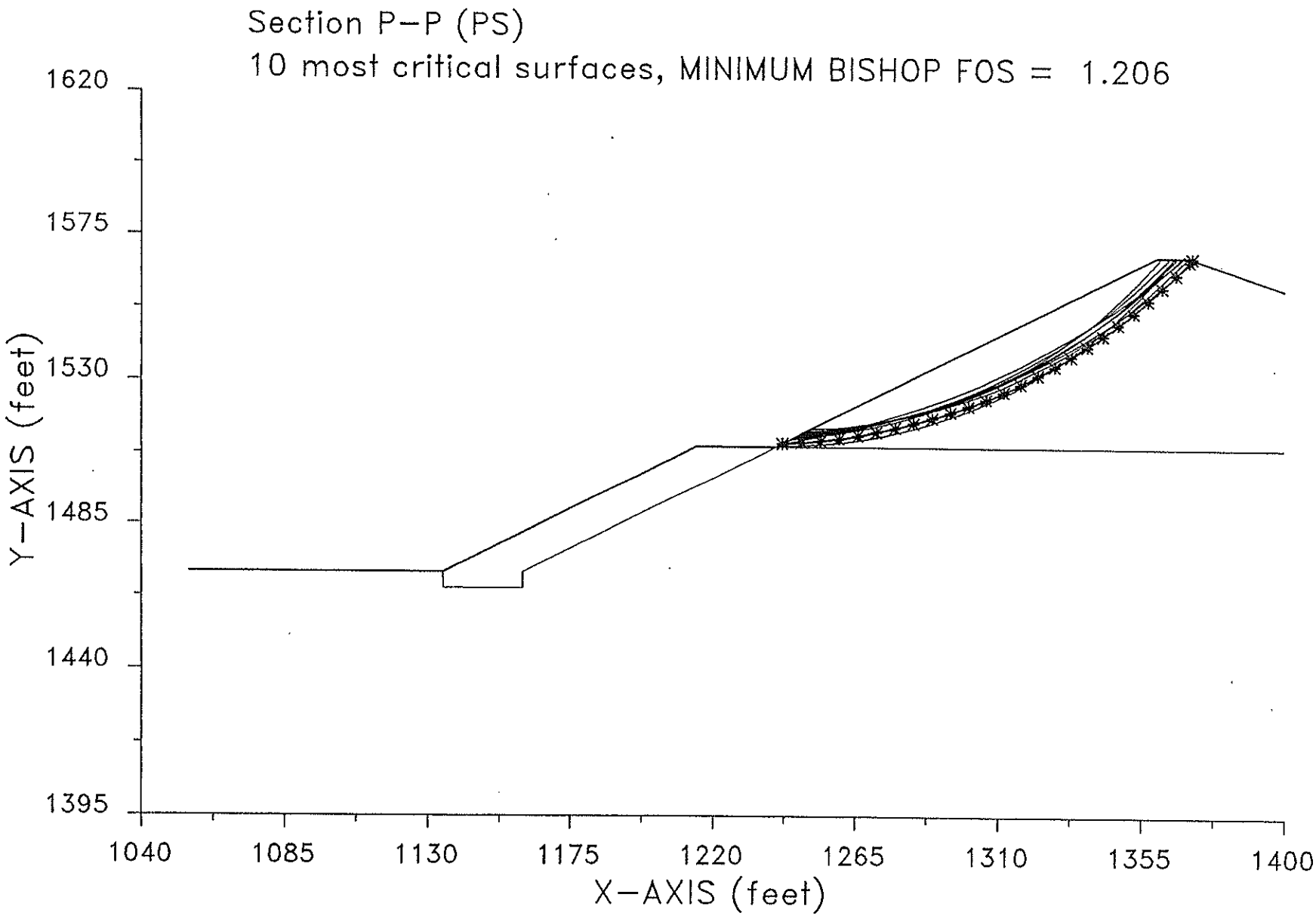
The following is a summary of the TEN most critical surfaces

Problem Description : Section P-P

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.666	1225.50	1704.44	193.13	1244.49	1364.14	1.930E+07
2.	1.670	1242.99	1666.40	156.01	1240.82	1365.61	2.167E+07
3.	1.671	1228.86	1709.47	196.84	1246.94	1367.67	2.097E+07
4.	1.671	1235.59	1693.66	180.02	1248.16	1366.34	1.915E+07
5.	1.672	1234.67	1698.90	188.02	1242.04	1371.10	2.603E+07
6.	1.674	1240.47	1682.77	168.31	1249.39	1365.48	1.783E+07
7.	1.675	1237.00	1675.84	163.22	1245.71	1361.28	1.649E+07
8.	1.677	1243.54	1657.54	146.53	1242.04	1361.06	1.790E+07
9.	1.678	1199.69	1766.67	259.13	1242.04	1368.39	2.540E+07
10.	1.682	1222.87	1732.57	220.90	1245.71	1371.71	2.588E+07

* * * END OF FILE * * *

SEC, -PE 10-09-** 9:51



XSTABL File: SECP-PE 10-09-** 9:51

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*****************************************
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*                                       *
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```

Problem Description : Section P-P (PS)

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1055.0	1470.0	1135.0	1470.0	1
2	1135.0	1470.0	1215.0	1510.0	2
3	1215.0	1510.0	1240.0	1510.0	2
4	1240.0	1510.0	1360.0	1570.0	2
5	1360.0	1570.0	1370.0	1570.0	2
6	1370.0	1570.0	1400.0	1560.0	2

5 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1135.0	1470.0	1135.1	1465.0	1
2	1135.1	1465.0	1160.0	1465.0	1
3	1160.0	1465.0	1160.1	1470.0	1
4	1160.1	1470.0	1240.0	1510.0	1
5	1240.0	1510.0	1400.0	1510.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ĩ-value (degrees)
1	-80.00	4000.0	28.00
2	-45.00	150.0	24.00
3	10.00	4000.0	28.00
4	60.00	150.0	24.00
5	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random
technique for generating CIRCULAR surfaces has been specified.

2500 trial surfaces will be generated and analyzed.

50 Surfaces initiate from each of 50 points equally spaced
along the ground surface between x = 1220.0 ft
and x = 1280.0 ft

Each surface terminates between x = 1300.0 ft
and x = 1380.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

6.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter. In such

cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 26 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1242.04	1511.02
2	1248.03	1511.35
3	1254.01	1511.87
4	1259.97	1512.59
5	1265.90	1513.49
6	1271.80	1514.58
7	1277.66	1515.86
8	1283.48	1517.33
9	1289.25	1518.98
10	1294.96	1520.81
11	1300.61	1522.83
12	1306.19	1525.02
13	1311.70	1527.40
14	1317.14	1529.95
15	1322.48	1532.67
16	1327.74	1535.56
17	1332.91	1538.61
18	1337.97	1541.83
19	1342.93	1545.21
20	1347.77	1548.75
21	1352.51	1552.44
22	1357.12	1556.28
23	1361.60	1560.26
24	1365.96	1564.39
25	1370.18	1568.65
26	1371.10	1569.63

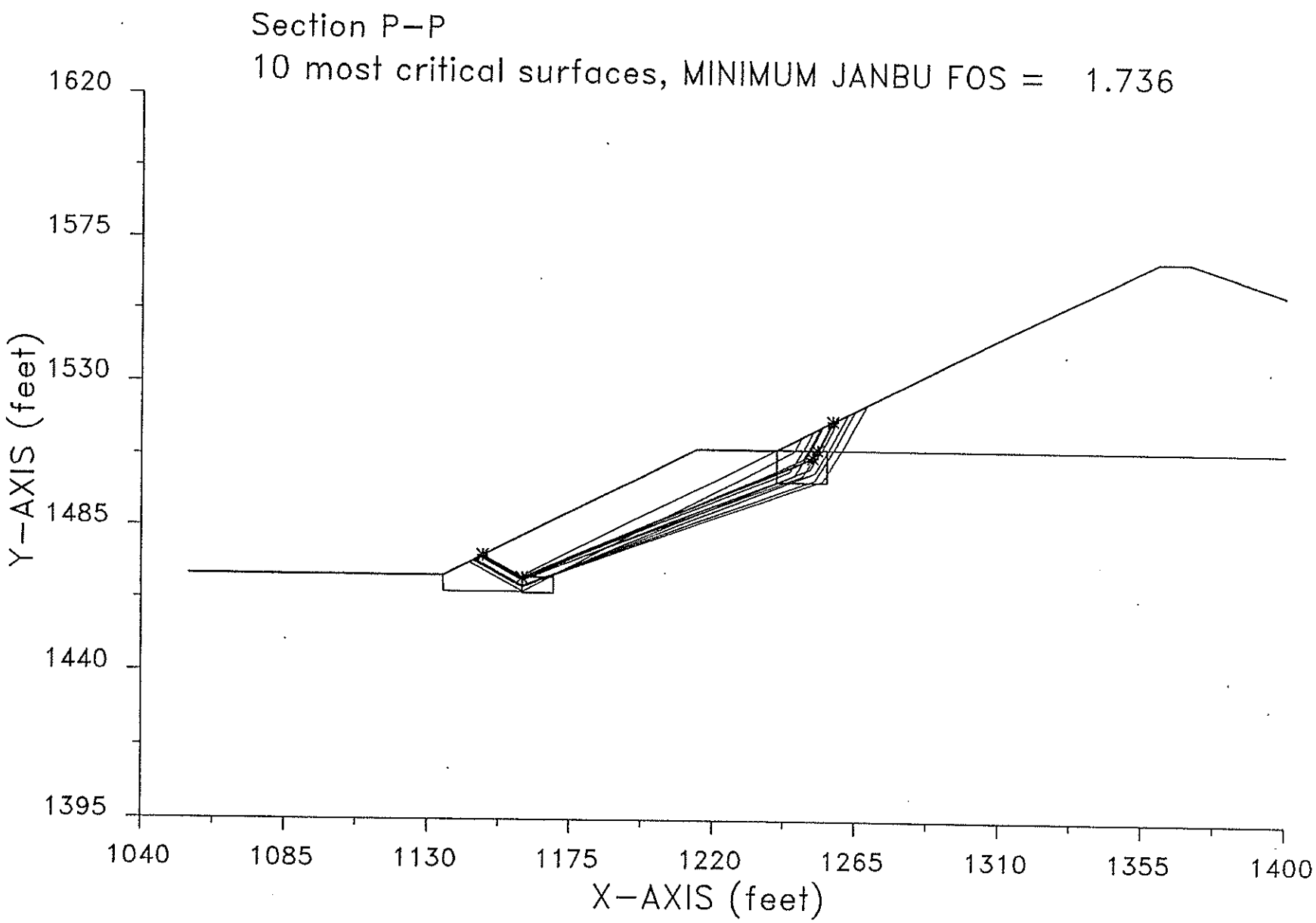
**** Simplified BISHOP FOS = 1.206 ****
The following is a summary of the TEN most critical surfaces

Problem Description : Section P-P (PS)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.206	1234.67	1698.90	188.02	1242.04	1371.10	2.460E+07
2.	1.208	1225.50	1704.44	193.13	1244.49	1364.14	1.821E+07
3.	1.208	1228.86	1709.47	196.84	1246.94	1367.67	1.979E+07
4.	1.210	1222.87	1732.57	220.90	1245.71	1371.71	2.444E+07
5.	1.210	1235.59	1693.66	180.02	1248.16	1366.34	1.808E+07
6.	1.211	1199.69	1766.67	259.13	1242.04	1368.39	2.396E+07
7.	1.212	1242.99	1666.40	156.01	1240.82	1365.61	2.048E+07
8.	1.214	1240.47	1682.77	168.31	1249.39	1365.48	1.684E+07
9.	1.216	1237.00	1675.84	163.22	1245.71	1361.28	1.557E+07
10.	1.217	1243.55	1687.25	172.09	1250.61	1369.46	1.901E+07

* * * END OF FILE * * *

SL.. -P1 10-09-** 9:47



XSTABL File: SECP-P1 10-09-** 9:47

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*****************************************
*              X S T A B L              *
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*        Slope Stability Analysis       *
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*****************************************
```

Problem Description : Section P-P

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1055.0	1470.0	1135.0	1470.0	1
2	1135.0	1470.0	1215.0	1510.0	2
3	1215.0	1510.0	1240.0	1510.0	2
4	1240.0	1510.0	1360.0	1570.0	2
5	1360.0	1570.0	1370.0	1570.0	2
6	1370.0	1570.0	1400.0	1560.0	2

5 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1135.0	1470.0	1135.1	1465.0	1
2	1135.1	1465.0	1160.0	1465.0	1
3	1160.0	1465.0	1160.1	1470.0	1
4	1160.1	1470.0	1240.0	1510.0	1
5	1240.0	1510.0	1400.0	1510.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	-80.00	4000.0	28.00
2	-45.00	150.0	24.00
3	10.00	4000.0	28.00
4	60.00	150.0	24.00
5	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 19.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1160.0	1467.0	1170.0	1467.0	5.0
2	1240.0	1505.0	1256.0	1505.0	10.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1147.46	1476.23
2	1160.02	1469.41
3	1251.38	1507.63
4	1252.92	1510.00
5	1257.74	1518.87

** Corrected JANBU FOS = 1.736 ** (Fo factor = 1.040)

Failure surface No. 2 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.66	1475.83
2	1160.07	1468.54
3	1160.11	1468.52
4	1248.23	1507.13
5	1250.10	1510.00
6	1253.86	1516.93

** Corrected JANBU FOS = 1.744 ** (Fo factor = 1.044)

Failure surface No. 3 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1144.76	1474.88
2	1160.03	1466.59
3	1160.06	1466.56
4	1254.47	1500.50
5	1260.64	1510.00
6	1268.33	1524.16

** Corrected JANBU FOS = 1.745 ** (Fo factor = 1.052)

Failure surface No. 4 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1144.72	1474.86
2	1160.03	1466.55
3	1160.14	1466.47
4	1251.99	1503.14
5	1256.45	1510.00
6	1262.57	1521.29

** Corrected JANBU FOS = 1.745 ** (Fo factor = 1.045)

Failure surface No. 5 specified by 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1143.28	1474.14
2	1143.30	1474.13
3	1160.00	1465.06
4	1160.08	1465.01
5	1245.40	1509.49
6	1245.73	1510.00

7	1247.86	1513.93

** Corrected JANBU FOS = 1.751 ** (Fo factor = 1.053)

Failure surface No. 6 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1145.06	1475.03
2	1160.04	1466.89
3	1160.07	1466.87
4	1251.96	1500.65
5	1258.04	1510.00
6	1264.76	1522.38

** Corrected JANBU FOS = 1.751 ** (Fo factor = 1.050)

Failure surface No. 7 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.80	1475.90
2	1160.07	1468.69
3	1160.20	1468.61
4	1250.45	1504.17
5	1254.24	1510.00
6	1259.55	1519.77

** Corrected JANBU FOS = 1.754 ** (Fo factor = 1.042)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.83	1475.91
2	1160.01	1468.75
3	1248.13	1502.08
4	1253.27	1510.00
5	1258.21	1519.11

** Corrected JANBU FOS = 1.755 ** (Fo factor = 1.044)

Failure surface No. 9 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1144.47	1474.74
2	1160.03	1466.29
3	1160.04	1466.28
4	1245.59	1502.20
5	1250.66	1510.00
6	1254.64	1517.32

** Corrected JANBU FOS = 1.755 ** (Fo factor = 1.048)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1147.06	1476.03
2	1160.06	1468.97

3	1244.12	1503.30
4	1248.47	1510.00
5	1251.62	1515.81

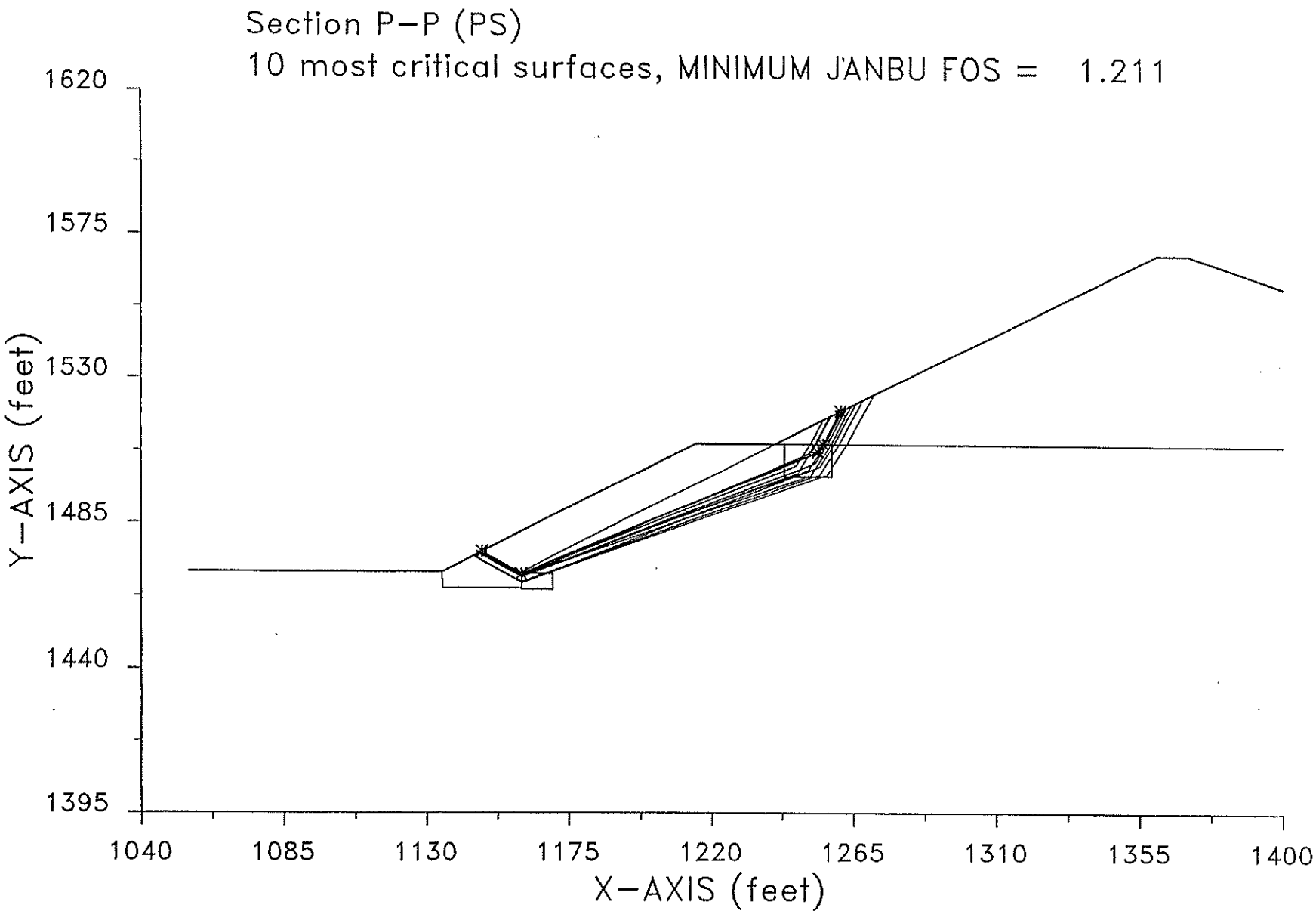
** Corrected JANBU FOS = 1.756 ** (Fo factor = 1.043)

The following is a summary of the TEN most critical surfaces

Problem Description : Section P-P

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.736	1.040	1147.46	1257.74	9.265E+04
2.	1.744	1.044	1146.66	1253.86	9.230E+04
3.	1.745	1.052	1144.76	1268.33	1.352E+05
4.	1.745	1.045	1144.72	1262.57	1.211E+05
5.	1.751	1.053	1143.28	1247.86	9.645E+04
6.	1.751	1.050	1145.06	1264.76	1.273E+05
7.	1.754	1.042	1146.80	1259.55	1.056E+05
8.	1.755	1.044	1146.83	1258.21	1.060E+05
9.	1.755	1.048	1144.47	1254.64	1.108E+05
10.	1.756	1.043	1147.06	1251.62	9.374E+04

* * * END OF FILE * * *


Section P-P (PS)
10 most critical surfaces, MINIMUM JANBU FOS = 1.211
1620
1575
1530
1485
1440
1395
Y-AXIS (feet)
1040
1085
1130
1175
1220
1265
1310
1355
1400
X-AXIS (feet)

XSTABL File: SECP-P1E 10-09-** 9:48

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section P-P (PS)

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1055.0	1470.0	1135.0	1470.0	1
2	1135.0	1470.0	1215.0	1510.0	2
3	1215.0	1510.0	1240.0	1510.0	2
4	1240.0	1510.0	1360.0	1570.0	2
5	1360.0	1570.0	1370.0	1570.0	2
6	1370.0	1570.0	1400.0	1560.0	2

5 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1135.0	1470.0	1135.1	1465.0	1
2	1135.1	1465.0	1160.0	1465.0	1
3	1160.0	1465.0	1160.1	1470.0	1
4	1160.1	1470.0	1240.0	1510.0	1
5	1240.0	1510.0	1400.0	1510.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 5

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	-80.00	4000.0	28.00
2	-45.00	150.0	24.00
3	10.00	4000.0	28.00
4	60.00	150.0	24.00
5	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 19.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1160.0	1467.0	1170.0	1467.0	5.0
2	1243.0	1505.0	1258.0	1505.0	10.0

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1147.46	1476.23
2	1160.02	1469.41
3	1253.67	1507.63
4	1255.21	1510.00
5	1260.88	1520.44

** Corrected JANBU FOS = 1.211 ** (Fo factor = 1.039)

Failure surface No. 2 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1144.76	1474.88
2	1160.03	1466.59
3	1160.06	1466.56
4	1256.56	1500.50
5	1262.73	1510.00
6	1271.21	1525.60

** Corrected JANBU FOS = 1.211 ** (Fo factor = 1.053)

Failure surface No. 3 specified by 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1145.06	1475.03
2	1160.04	1466.89
3	1160.07	1466.87
4	1254.22	1500.65
5	1260.29	1510.00
6	1267.85	1523.93

** Corrected JANBU FOS = 1.216 ** (Fo factor = 1.052)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.83	1475.91
2	1160.01	1468.75
3	1250.62	1502.08
4	1255.76	1510.00
5	1261.63	1520.82

** Corrected JANBU FOS = 1.216 ** (Fo factor = 1.046)

Failure surface No. 5 specified by 6 coordinate points

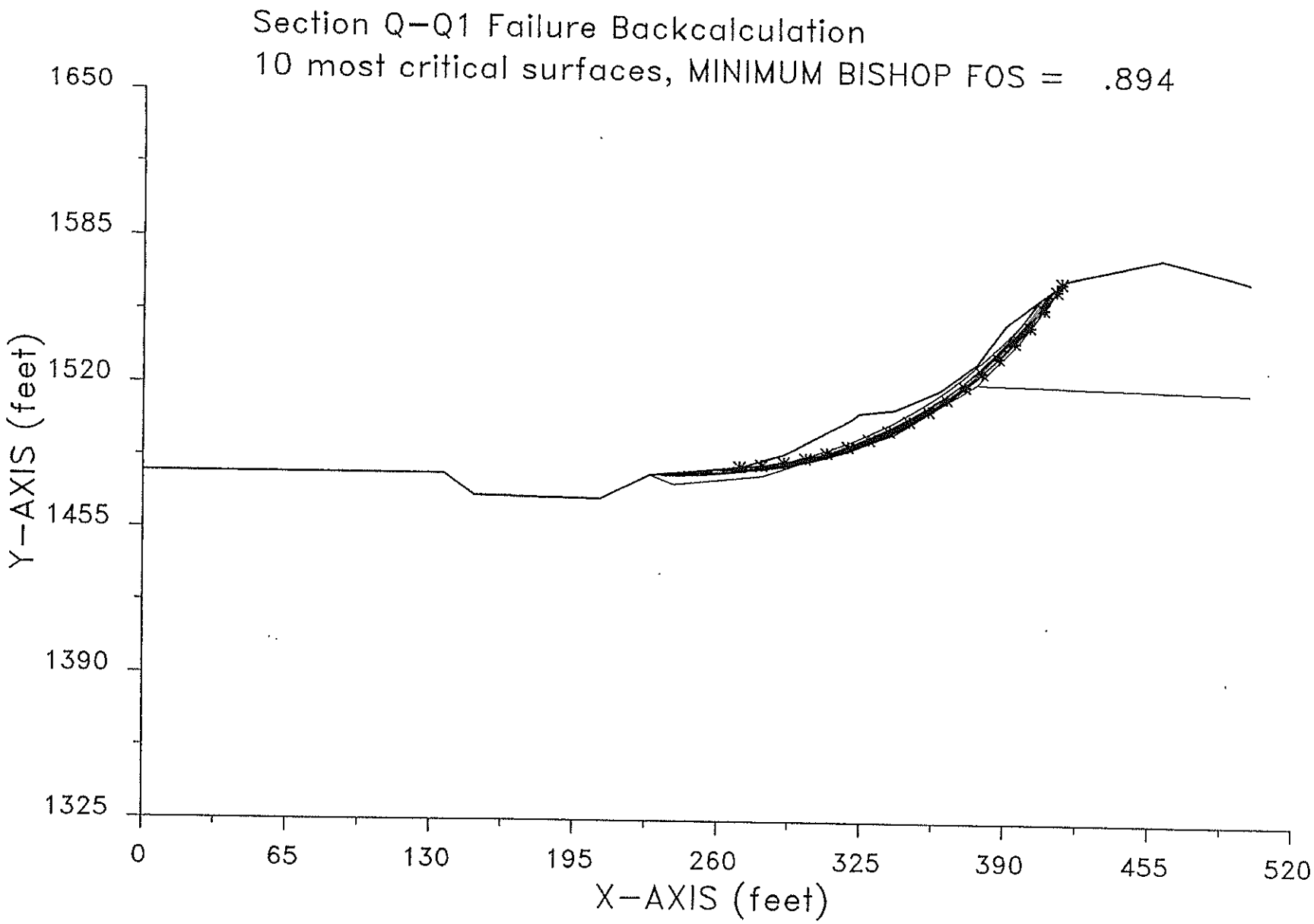
Point No.	x-surf (ft)	y-surf (ft)
1	1144.72	1474.86
2	1160.03	1466.55
3	1160.14	1466.47
4	1254.24	1503.14
5	1258.70	1510.00
6	1265.66	1522.83

** Corrected JANBU FOS = 1.218 ** (Fo factor = 1.046)

Failure surface No. 6 specified by 5 coordinate points

Point	x-surf	y-surf

SECTQ-Q1 10-09-** 12:57



XSTABL File: SECTQ-Q1 10-09-** 12:57

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section Q-Q1 Failure Backcalculation

SEGMENT BOUNDARY COORDINATES
---

16 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1480.0	136.0	1480.0	1
2	136.0	1480.0	150.0	1470.0	1
3	150.0	1470.0	207.0	1469.0	1
4	207.0	1469.0	229.0	1480.0	2
5	229.0	1480.0	250.0	1482.0	2
6	250.0	1482.0	270.0	1484.0	2
7	270.0	1484.0	290.0	1490.0	2
8	290.0	1490.0	320.0	1506.0	2
9	320.0	1506.0	324.0	1509.0	2
10	324.0	1509.0	340.0	1511.0	2
11	340.0	1511.0	360.0	1520.0	2
12	360.0	1520.0	377.0	1532.0	2
13	377.0	1532.0	390.0	1550.0	2
14	390.0	1550.0	417.0	1570.0	2
15	417.0	1570.0	460.0	1580.0	3
16	460.0	1580.0	500.0	1570.0	3

9 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	229.0	1480.0	240.0	1476.0	1
2	240.0	1476.0	280.0	1480.0	1
3	280.0	1480.0	310.0	1490.0	1
4	310.0	1490.0	324.0	1494.0	1
5	324.0	1494.0	340.0	1500.0	1
6	340.0	1500.0	377.0	1523.0	1
7	377.0	1523.0	395.0	1541.0	1
8	395.0	1541.0	417.0	1570.0	1
9	377.0	1523.0	500.0	1520.0	1

ISOTROPIC Soil Parameters
---

3 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0
2	120.0	130.0	.0	25.00	.000	.0	0
3	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 6

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	ϕ-value (degrees)
1	-90.00	4000.0	28.00
2	-70.00	150.0	24.00
3	-50.00	4000.0	28.00
4	40.00	150.0	24.00
5	60.00	4000.0	28.00
6	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

900 trial surfaces will be generated and analyzed.

30 Surfaces initiate from each of 30 points equally spaced along the ground surface between x = 220.0 ft
and x = 270.0 ft

Each surface terminates between x = 390.0 ft
and x = 425.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1450.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

```
*********************************************************************
    --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
*********************************************************************
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter.  In such
cases, this effect can only be eliminated by reducing the "c" value.
*********************************************************************

    ------------------------------------------------------------
    USER SELECTED option to maintain strength greater than zero
    ------------------------------------------------------------


    Factors of safety have been calculated by the :

    * * * * *   SIMPLIFIED BISHOP METHOD   * * * * *


      The most critical circular failure surface
      is specified by 19 coordinate points

          Point      x-surf      y-surf
           No.        (ft)        (ft)

            1        270.00     1484.00
            2        279.96     1484.89
            3        289.86     1486.32
            4        299.67     1488.27
            5        309.36     1490.74
            6        318.90     1493.72
            7        328.27     1497.21
            8        337.44     1501.20
            9        346.39     1505.67
           10        355.08     1510.61
           11        363.50     1516.00
           12        371.62     1521.84
           13        379.42     1528.11
           14        386.87     1534.78
           15        393.95     1541.84
           16        400.64     1549.26
           17        406.93     1557.04
           18        412.80     1565.14
           19        414.97     1568.50

****  Simplified BISHOP FOS =     .894  ****


The following is a summary of the TEN most critical surfaces

Problem Description : Section Q-Q1 Failure Backcalculation

        FOS       Circle Center     Radius  Initial Terminal  Resisting
     (BISHOP)  x-coord  y-coord            x-coord  x-coord    Moment
                 (ft)     (ft)      (ft)     (ft)     (ft)     (ft-lb)

  1.     .894    258.25  1670.90   187.27   270.00   414.97  1.022E+07
  2.     .923    256.33  1671.11   188.87   252.76   414.73  1.133E+07
  3.     .977    246.41  1683.42   202.60   238.97   411.43  1.001E+07
  4.     .981    253.25  1670.28   189.06   244.14   410.17  1.061E+07
  5.     .981    261.22  1655.13   171.36   270.00   403.97  7.565E+06
  6.     .983    241.21  1694.25   214.39   230.34   414.61  1.123E+07
  7.    1.000    263.14  1655.16   172.23   259.66   409.49  1.071E+07
```

8.	1.000	248.94	1676.35	195.41	240.69	408.57	9.614E+06
9.	1.040	240.17	1690.43	210.07	233.79	406.66	7.820E+06
10.	1.043	259.23	1661.63	179.96	249.31	411.66	1.258E+07

* * * END OF FILE * * *

2	1158.07	1252.73
3	1270.61	1269.16
4	1276.06	1277.55
5	1281.50	1285.93
6	1286.95	1294.32
7	1286.99	1294.38

```
************************************************************
**     Factor of safety calculation for surface #    98    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  11.6744    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1154.97	1254.97
2	1158.23	1252.86
3	1253.67	1272.73
4	1259.12	1281.12
5	1264.57	1289.50
6	1266.72	1292.82

```
************************************************************
**     Factor of safety calculation for surface #   173    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  46.3617    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1153.85	1253.85
2	1157.10	1251.74
3	1246.07	1286.56
4	1249.27	1291.48

```
************************************************************
**     Factor of safety calculation for surface #   185    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  48.2886    **
**    This will be ignored for final summary of results    **
************************************************************
```

```
************************************************************
**     Factor of safety calculation for surface #    86    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  12.1813    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1156.62	1256.62
2	1159.48	1254.76
3	1245.29	1268.41
4	1250.74	1276.80
5	1256.18	1285.18
6	1260.85	1292.37

```
************************************************************
**     Factor of safety calculation for surface #    95    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  37.5826    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1153.47	1253.47
2	1156.54	1251.48
3	1242.58	1285.35
4	1246.42	1291.26

```
************************************************************
**     Factor of safety calculation for surface #    96    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  33.0205    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 7 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1154.83	1254.83

Point No.	x-surf (ft)	y-surf (ft)
1	1156.01	1256.01
2	1158.88	1254.15
3	1242.75	1273.14
4	1248.19	1281.53
5	1253.64	1289.91
6	1254.94	1291.92

```
************************************************************
**     Factor of safety calculation for surface #    78    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  35.0613    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1153.56	1253.56
2	1156.61	1251.58
3	1243.04	1269.01
4	1248.48	1277.40
5	1253.93	1285.79
6	1258.07	1292.16

```
************************************************************
**     Factor of safety calculation for surface #    85    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  11.8233    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1155.69	1255.69
2	1158.69	1253.73
3	1240.59	1272.31
4	1246.04	1280.69
5	1251.49	1289.08
6	1253.24	1291.79

```
-----------------------------------------------------------
USER SELECTED option to maintain strength greater than zero
-----------------------------------------------------------

************************************************************
**     Factor of safety calculation for surface #    18    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.8054    **
**    This will be ignored for final summary of results    **
************************************************************

The trial failure surface in question is
defined by the following  6 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1       1155.58     1255.58
         2       1158.40     1253.74
         3       1241.12     1267.19
         4       1246.57     1275.58
         5       1252.01     1283.97
         6       1257.29     1292.10

************************************************************
**     Factor of safety calculation for surface #    55    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  21.7208    **
**    This will be ignored for final summary of results    **
************************************************************

The trial failure surface in question is
defined by the following  4 coordinate points

       Point      x-surf      y-surf
        No.        (ft)        (ft)

         1       1151.07     1251.07
         2       1154.04     1249.15
         3       1244.63     1287.62
         4       1247.03     1291.31

************************************************************
**     Factor of safety calculation for surface #    69    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  58.3333    **
**    This will be ignored for final summary of results    **
************************************************************

The trial failure surface in question is
defined by the following  6 coordinate points
```

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	15.00	4000.0	28.00
2	21.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

400 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 10.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1140.0	1235.0	1160.0	1255.0	1.0
2	1240.0	1278.0	1330.0	1284.0	22.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

XSTABL File: SECTW-W 10-08-** 21:04

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*****************************************
```

Problem Description : Section W-W Block

SEGMENT BOUNDARY COORDINATES
---

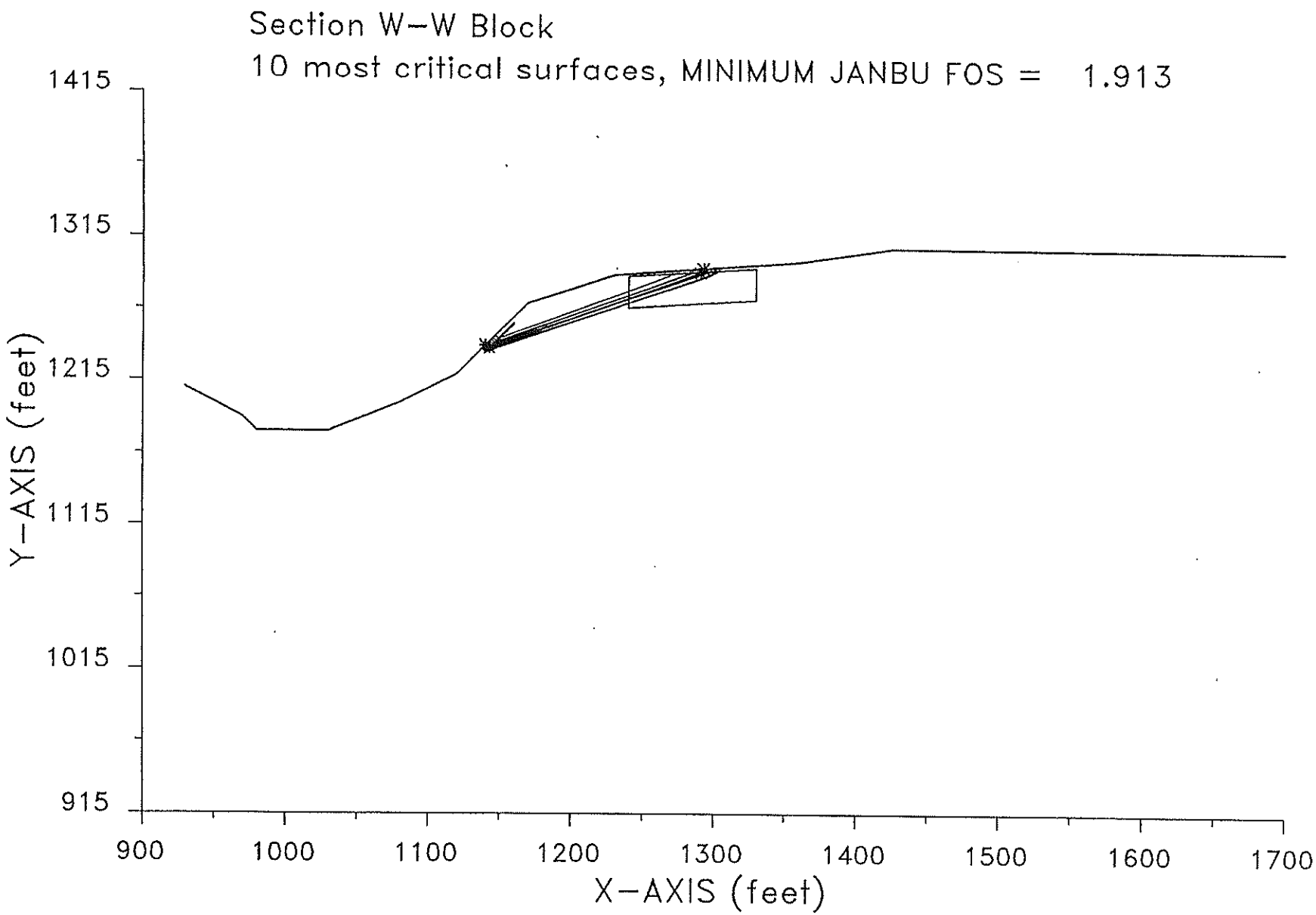
13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	930.0	1210.0	970.0	1190.0	1
2	970.0	1190.0	980.0	1180.0	1
3	980.0	1180.0	1000.0	1180.0	1
4	1000.0	1180.0	1010.0	1180.0	1
5	1010.0	1180.0	1030.0	1180.0	1
6	1030.0	1180.0	1080.0	1200.0	1
7	1080.0	1200.0	1120.0	1220.0	1
8	1120.0	1220.0	1160.0	1260.0	1
9	1160.0	1260.0	1170.0	1270.0	1
10	1170.0	1270.0	1230.0	1290.0	1
11	1230.0	1290.0	1360.0	1300.0	1
12	1360.0	1300.0	1425.0	1310.0	1
13	1425.0	1310.0	1700.0	1310.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0


Section W-W Block
10 most critical surfaces, MINIMUM JANBU FOS = 1.913
1415
1315
1215
1115
1015
915
Y-AXIS (feet)
900
1000
1100
1200
1300
1400
1500
1600
1700
X-AXIS (feet)

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1300.00	1227.02	42.98	40.00	-32.99	56.31	206313.
2	1325.00	1210.79	109.21	10.00	-32.99	75.96	131051.
3	1332.50	1205.92	136.58	5.00	-32.99	45.00	81946.
4	1342.50	1213.29	139.21	15.00	50.16	45.00	250578.
5	1395.00	1276.22	88.78	90.00	50.16	6.34	958842.
6	1461.00	1355.33	19.92	42.00	50.16	14.04	100404.

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	10145.9	4000.0	28.00	0.	0.	0.	.00
2	21219.3	4000.0	28.00	0.	0.	0.	.00
3	25795.4	4000.0	28.00	0.	0.	0.	.00
4	11526.4	150.0	24.00	0.	0.	0.	.00
5	7313.9	150.0	24.00	0.	0.	0.	.00
6	1561.7	150.0	24.00	0.	0.	0.	.00

For the single specified surface,
Corrected JANBU factor of safety = 1.321 (Fo factor = 1.081)

Resisting Shear Strength = 139.35E+04 lb

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	48.00	4000.0	28.00
2	52.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 3 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1280.00	1240.00
2	1335.00	1204.30
3	1482.00	1380.50

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

XSTABL File: SECV-V4P 10-08-** 17:11

```
*****************************************
*              X S T A B L              *
*                                       *
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*****************************************
```

Problem Description : Section V-V' 1.5 line Pseudostatic

SEGMENT BOUNDARY COORDINATES
---

14 SURFACE boundary segments

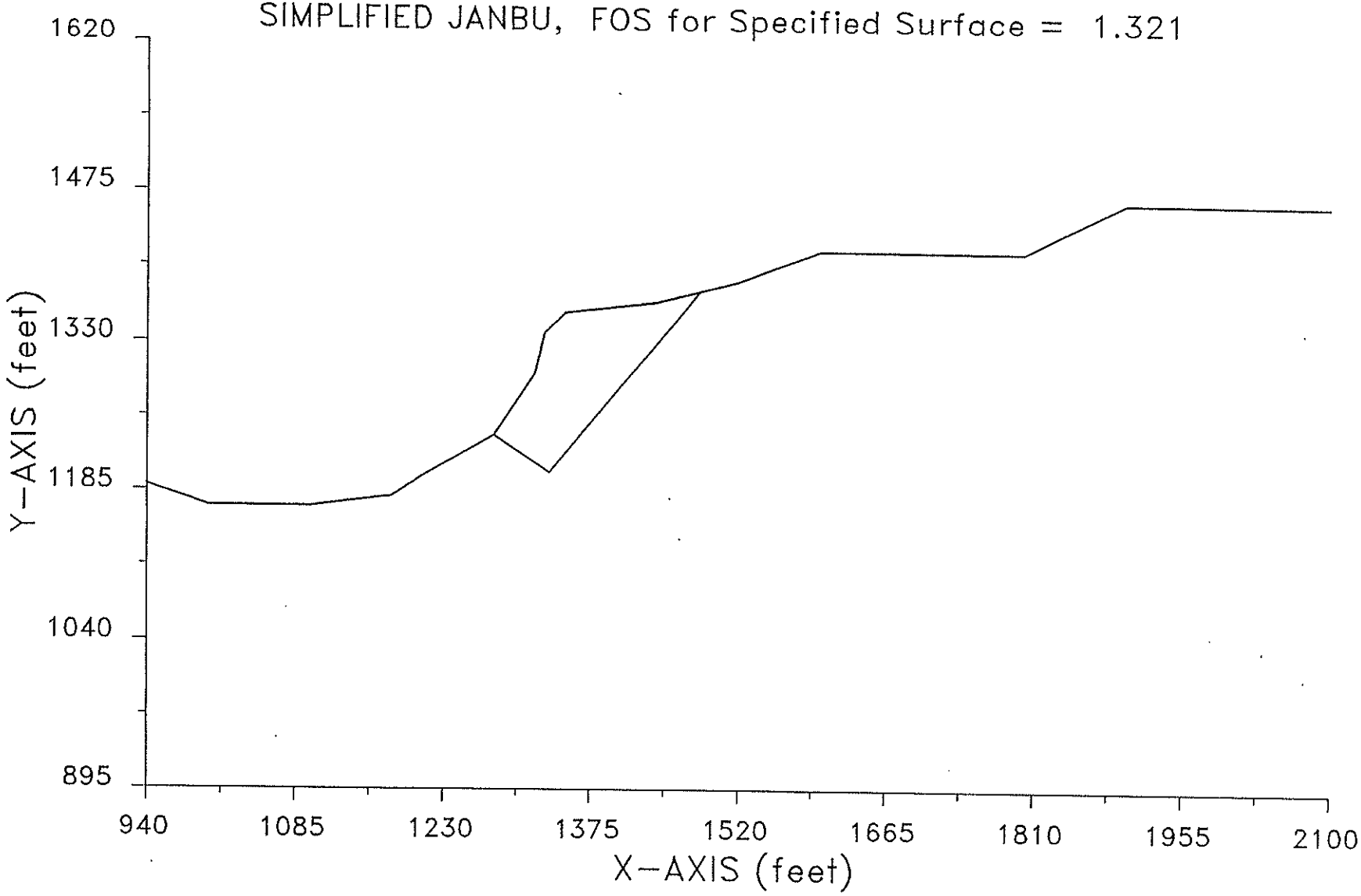
Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	940.0	1190.0	1000.0	1170.0	1
2	1000.0	1170.0	1100.0	1170.0	1
3	1100.0	1170.0	1180.0	1180.0	1
4	1180.0	1180.0	1210.0	1200.0	1
5	1210.0	1200.0	1280.0	1240.0	1
6	1280.0	1240.0	1320.0	1300.0	1
7	1320.0	1300.0	1330.0	1340.0	1
8	1330.0	1340.0	1350.0	1360.0	1
9	1350.0	1360.0	1440.0	1370.0	1
10	1440.0	1370.0	1520.0	1390.0	1
11	1520.0	1390.0	1600.0	1420.0	1
12	1600.0	1420.0	1800.0	1420.0	1
13	1800.0	1420.0	1900.0	1470.0	1
14	1900.0	1470.0	2100.0	1470.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

Section V-V' 1.5 line Pseudostatic
SIMPLIFIED JANBU, FOS for Specified Surface = 1.321



SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	9057.1	4000.0	28.00	0.	0.	0.	.00
2	19448.1	4000.0	28.00	0.	0.	0.	.00
3	23742.2	4000.0	28.00	0.	0.	0.	.00
4	12160.5	150.0	24.00	0.	0.	0.	.00
5	7722.8	150.0	24.00	0.	0.	0.	.00
6	1663.2	150.0	24.00	0.	0.	0.	.00

For the single specified surface,
Corrected JANBU factor of safety = 1.586 (Fo factor = 1.081)

Resisting Shear Strength = 138.33E+04 lb

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	48.00	4000.0	28.00
2	52.00	150.0	24.00
3	90.00	4000.0	28.00

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 3 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1280.00	1240.00
2	1335.00	1204.30
3	1482.00	1380.50

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1300.00	1227.02	42.98	40.00	-32.99	56.31	206313.
2	1325.00	1210.79	109.21	10.00	-32.99	75.96	131051.
3	1332.50	1205.92	136.58	5.00	-32.99	45.00	81946.
4	1342.50	1213.29	139.21	15.00	50.16	45.00	250578.
5	1395.00	1276.22	88.78	90.00	50.16	6.34	958842.
6	1461.00	1355.33	19.92	42.00	50.16	14.04	100404.

XSTABL File: SECV-V4 10-08-** 17:12

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
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*            Method of Slices           *
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*****************************************
```

Problem Description : Section V-V' 1.5 line

SEGMENT BOUNDARY COORDINATES
---

14 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	940.0	1190.0	1000.0	1170.0	1
2	1000.0	1170.0	1100.0	1170.0	1
3	1100.0	1170.0	1180.0	1180.0	1
4	1180.0	1180.0	1210.0	1200.0	1
5	1210.0	1200.0	1280.0	1240.0	1
6	1280.0	1240.0	1320.0	1300.0	1
7	1320.0	1300.0	1330.0	1340.0	1
8	1330.0	1340.0	1350.0	1360.0	1
9	1350.0	1360.0	1440.0	1370.0	1
10	1440.0	1370.0	1520.0	1390.0	1
11	1520.0	1390.0	1600.0	1420.0	1
12	1600.0	1420.0	1800.0	1420.0	1
13	1800.0	1420.0	1900.0	1470.0	1
14	1900.0	1470.0	2100.0	1470.0	1

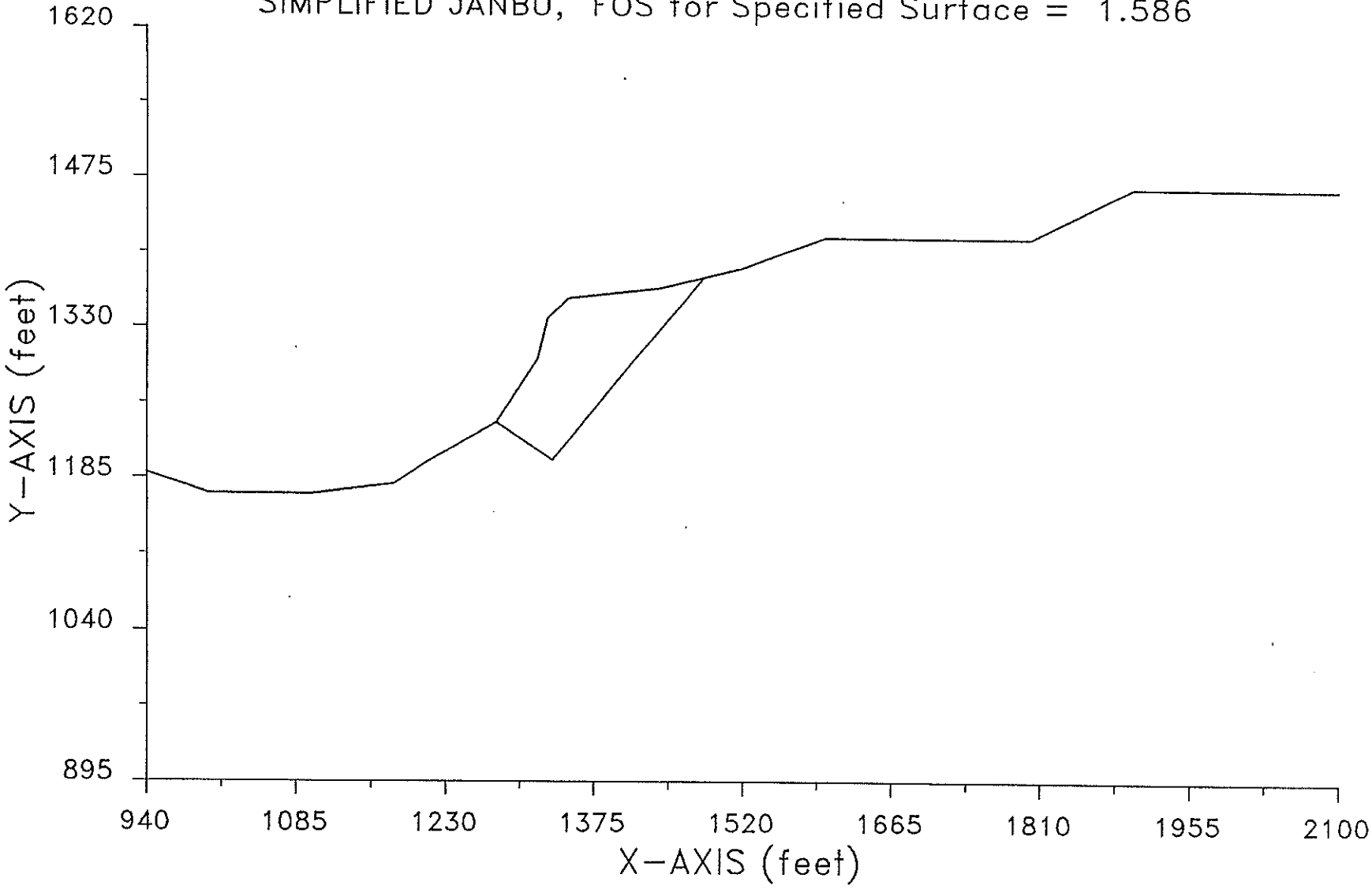
ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

Section V-V' 1.5 line

SIMPLIFIED JANBU, FOS for Specified Surface = 1.586



Point No.	x-surf (ft)	y-surf (ft)
1	1363.77	1221.70
2	1386.75	1207.89
3	1433.89	1179.57
4	1603.32	1382.87
5	1617.94	1407.21

** Corrected JANBU FOS = 1.259 ** (Fo factor = 1.080)

The following is a summary of the TEN most critical surfaces

Problem Description : Section U - U' Parallel Bedd

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.243	1.075	1377.78	1606.07	1.112E+06
2.	1.247	1.074	1381.49	1604.17	1.072E+06
3.	1.249	1.080	1371.50	1617.87	1.419E+06
4.	1.253	1.079	1365.57	1616.19	1.379E+06
5.	1.253	1.079	1383.38	1617.52	1.297E+06
6.	1.254	1.073	1400.45	1604.02	9.050E+05
7.	1.254	1.078	1388.76	1613.62	1.202E+06
8.	1.254	1.076	1389.47	1607.73	1.103E+06
9.	1.256	1.080	1377.19	1619.84	1.412E+06
10.	1.259	1.080	1363.77	1617.94	1.434E+06

* * * END OF FILE * * *

Point No.	x-surf (ft)	y-surf (ft)
1	1383.38	1231.53
2	1399.39	1221.91
3	1446.53	1193.59
4	1602.44	1382.16
5	1617.52	1407.25

** Corrected JANBU FOS = 1.253 ** (Fo factor = 1.079)

Failure surface No. 6 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1400.45	1244.32
2	1401.79	1243.52
3	1448.93	1215.19
4	1586.28	1379.07
5	1604.02	1408.60

** Corrected JANBU FOS = 1.254 ** (Fo factor = 1.073)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1388.76	1235.57
2	1401.44	1227.95
3	1448.59	1199.62
4	1594.02	1375.02
5	1613.62	1407.64

** Corrected JANBU FOS = 1.254 ** (Fo factor = 1.078)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1389.47	1236.11
2	1398.69	1230.57
3	1445.84	1202.24
4	1583.85	1368.49
5	1607.73	1408.23

** Corrected JANBU FOS = 1.254 ** (Fo factor = 1.076)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1377.19	1227.73
2	1397.63	1215.45
3	1444.77	1187.13
4	1602.22	1377.69
5	1619.84	1407.02

** Corrected JANBU FOS = 1.256 ** (Fo factor = 1.080)

Failure surface No.10 specified by 5 coordinate points

1	1425.0	1170.0	1450.0	1215.0	50.0
2	1580.0	1375.0	1620.0	1375.0	20.0

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1377.78	1228.00
2	1387.39	1222.23
3	1434.53	1193.90
4	1585.61	1374.33
5	1606.07	1408.39

** Corrected JANBU FOS = 1.243 ** (Fo factor = 1.075)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1381.49	1230.12
2	1389.51	1225.30
3	1436.66	1196.98
4	1581.01	1370.03
5	1604.17	1408.58

** Corrected JANBU FOS = 1.247 ** (Fo factor = 1.074)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1371.50	1225.17
2	1392.68	1212.44
3	1439.83	1184.12
4	1595.12	1369.35
5	1617.87	1407.21

** Corrected JANBU FOS = 1.249 ** (Fo factor = 1.080)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1365.57	1222.51
2	1386.25	1210.08
3	1433.39	1181.75
4	1600.16	1380.70
5	1616.19	1407.38

** Corrected JANBU FOS = 1.253 ** (Fo factor = 1.079)

Failure surface No. 5 specified by 5 coordinate points

39	2000.0	1472.0	2030.0	1468.0	1
40	2030.0	1468.0	2250.0	1468.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	50.00	4000.0	28.00
2	60.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 55.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)

XSTABL File: SECUUB1E 10-08-** 23:42

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
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*****************************************
```

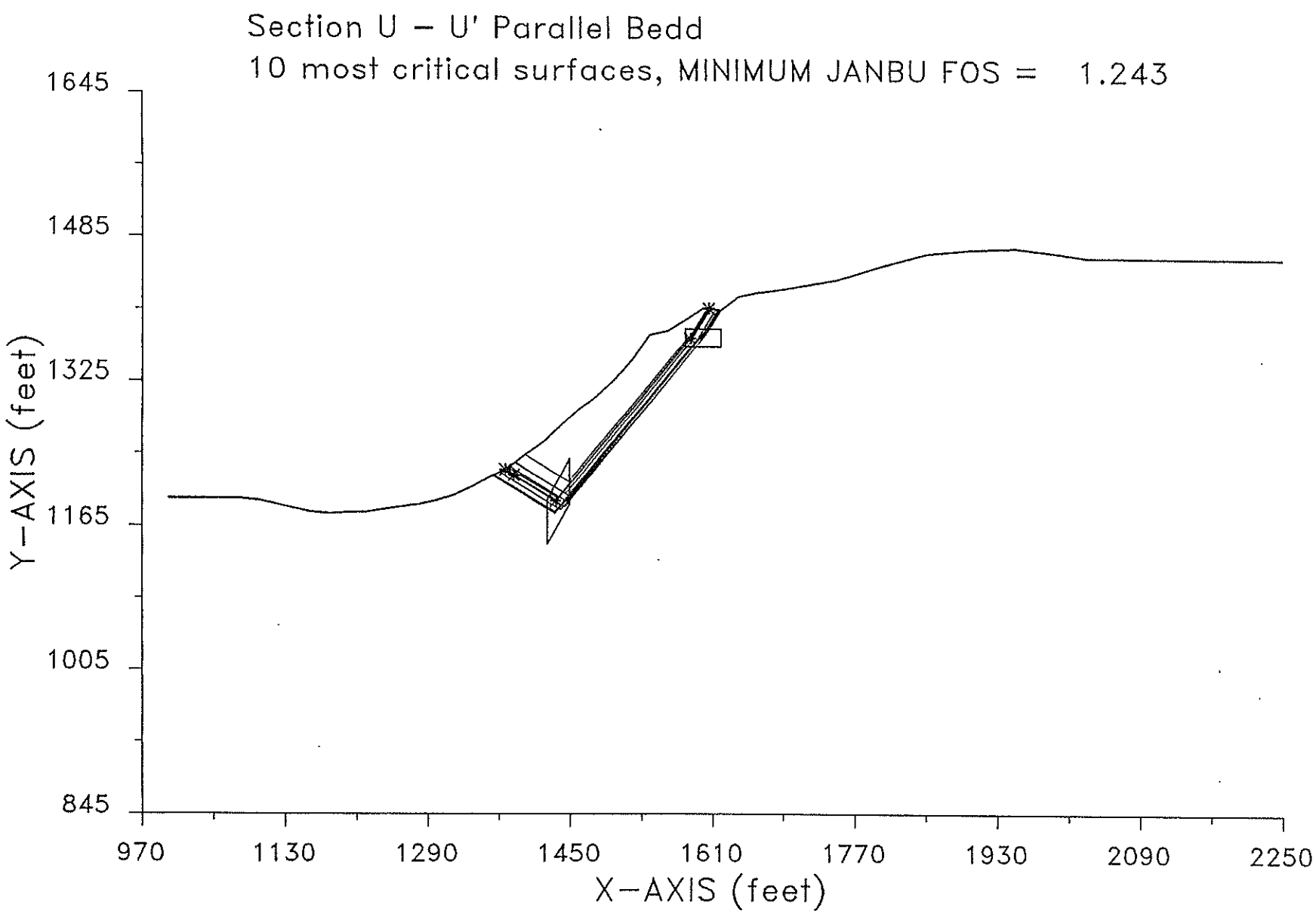
Problem Description : Section U - U' Parallel Bedd

SEGMENT BOUNDARY COORDINATES
---

40 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1196.0	1080.0	1196.0	1
2	1080.0	1196.0	1100.0	1194.0	1
3	1100.0	1194.0	1120.0	1190.0	1
4	1120.0	1190.0	1140.0	1185.0	1
5	1140.0	1185.0	1160.0	1181.0	1
6	1160.0	1181.0	1180.0	1179.0	1
7	1180.0	1179.0	1200.0	1180.0	1
8	1200.0	1180.0	1220.0	1181.0	1
9	1220.0	1181.0	1240.0	1184.0	1
10	1240.0	1184.0	1260.0	1187.0	1
11	1260.0	1187.0	1280.0	1190.0	1
12	1280.0	1190.0	1300.0	1194.0	1
13	1300.0	1194.0	1320.0	1200.0	1
14	1320.0	1200.0	1340.0	1209.0	1
15	1340.0	1209.0	1360.0	1220.0	1
16	1360.0	1220.0	1380.0	1229.0	1
17	1380.0	1229.0	1400.0	1244.0	1
18	1400.0	1244.0	1420.0	1258.0	1
19	1420.0	1258.0	1440.0	1277.0	1
20	1440.0	1277.0	1460.0	1295.0	1
21	1460.0	1295.0	1480.0	1310.0	1
22	1480.0	1310.0	1500.0	1328.0	1
23	1500.0	1328.0	1520.0	1350.0	1
24	1520.0	1350.0	1540.0	1378.0	1
25	1540.0	1378.0	1560.0	1383.0	1
26	1560.0	1383.0	1580.0	1396.0	1
27	1580.0	1396.0	1600.0	1409.0	1
28	1600.0	1409.0	1620.0	1407.0	1
29	1620.0	1407.0	1640.0	1422.0	1
30	1640.0	1422.0	1660.0	1426.0	1
31	1660.0	1426.0	1680.0	1429.0	1
32	1680.0	1429.0	1700.0	1432.0	1
33	1700.0	1432.0	1750.0	1441.0	1
34	1750.0	1441.0	1800.0	1457.0	1
35	1800.0	1457.0	1850.0	1471.0	1
36	1850.0	1471.0	1900.0	1476.0	1
37	1900.0	1476.0	1950.0	1478.0	1
38	1950.0	1478.0	2000.0	1472.0	1

SECUUB1E 10-08-** 23:42



** Corrected JANBU FOS = 1.489 ** (Fo factor = 1.080)

The following is a summary of the TEN most critical surfaces

Problem Description : Section U - U' Parallel Bedd

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.467	1.075	1377.78	1606.07	1.106E+06
2.	1.470	1.074	1381.49	1604.17	1.067E+06
3.	1.475	1.073	1400.45	1604.02	9.006E+05
4.	1.479	1.076	1389.47	1607.73	1.098E+06
5.	1.480	1.080	1371.50	1617.87	1.412E+06
6.	1.482	1.078	1388.76	1613.62	1.196E+06
7.	1.483	1.079	1383.38	1617.52	1.290E+06
8.	1.483	1.079	1365.57	1616.19	1.372E+06
9.	1.485	1.075	1380.49	1604.39	1.074E+06
10.	1.489	1.080	1377.19	1619.84	1.405E+06

* * * END OF FILE * * *

5	1617.87	1407.21

** Corrected JANBU FOS = 1.480 ** (Fo factor = 1.080)

Failure surface No. 6 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1388.76	1235.57
2	1401.44	1227.95
3	1448.59	1199.62
4	1594.02	1375.02
5	1613.62	1407.64

** Corrected JANBU FOS = 1.482 ** (Fo factor = 1.078)

Failure surface No. 7 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1383.38	1231.53
2	1399.39	1221.91
3	1446.53	1193.59
4	1602.44	1382.16
5	1617.52	1407.25

** Corrected JANBU FOS = 1.483 ** (Fo factor = 1.079)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1365.57	1222.51
2	1386.25	1210.08
3	1433.39	1181.75
4	1600.16	1380.70
5	1616.19	1407.38

** Corrected JANBU FOS = 1.483 ** (Fo factor = 1.079)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1380.49	1229.37
2	1389.24	1224.11
3	1436.38	1195.79
4	1587.01	1379.64
5	1604.39	1408.56

** Corrected JANBU FOS = 1.485 ** (Fo factor = 1.075)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1377.19	1227.73
2	1397.63	1215.45
3	1444.77	1187.13
4	1602.22	1377.69
5	1619.84	1407.02

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1377.78	1228.00
2	1387.39	1222.23
3	1434.53	1193.90
4	1585.61	1374.33
5	1606.07	1408.39

** Corrected JANBU FOS = 1.467 ** (Fo factor = 1.075)

Failure surface No. 2 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1381.49	1230.12
2	1389.51	1225.30
3	1436.66	1196.98
4	1581.01	1370.03
5	1604.17	1408.58

** Corrected JANBU FOS = 1.470 ** (Fo factor = 1.074)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1400.45	1244.32
2	1401.79	1243.52
3	1448.93	1215.19
4	1586.28	1379.07
5	1604.02	1408.60

** Corrected JANBU FOS = 1.475 ** (Fo factor = 1.073)

Failure surface No. 4 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1389.47	1236.11
2	1398.69	1230.57
3	1445.84	1202.24
4	1583.85	1368.49
5	1607.73	1408.23

** Corrected JANBU FOS = 1.479 ** (Fo factor = 1.076)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1371.50	1225.17
2	1392.68	1212.44
3	1439.83	1184.12
4	1595.12	1369.35

39	2000.0	1472.0	2030.0	1468.0	1
40	2030.0	1468.0	2250.0	1468.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	50.00	4000.0	28.00
2	60.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

500 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 55.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1425.0	1170.0	1450.0	1215.0	50.0
2	1580.0	1375.0	1620.0	1375.0	20.0

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

XSTABL File: SECUUB1 10-08-** 23:40

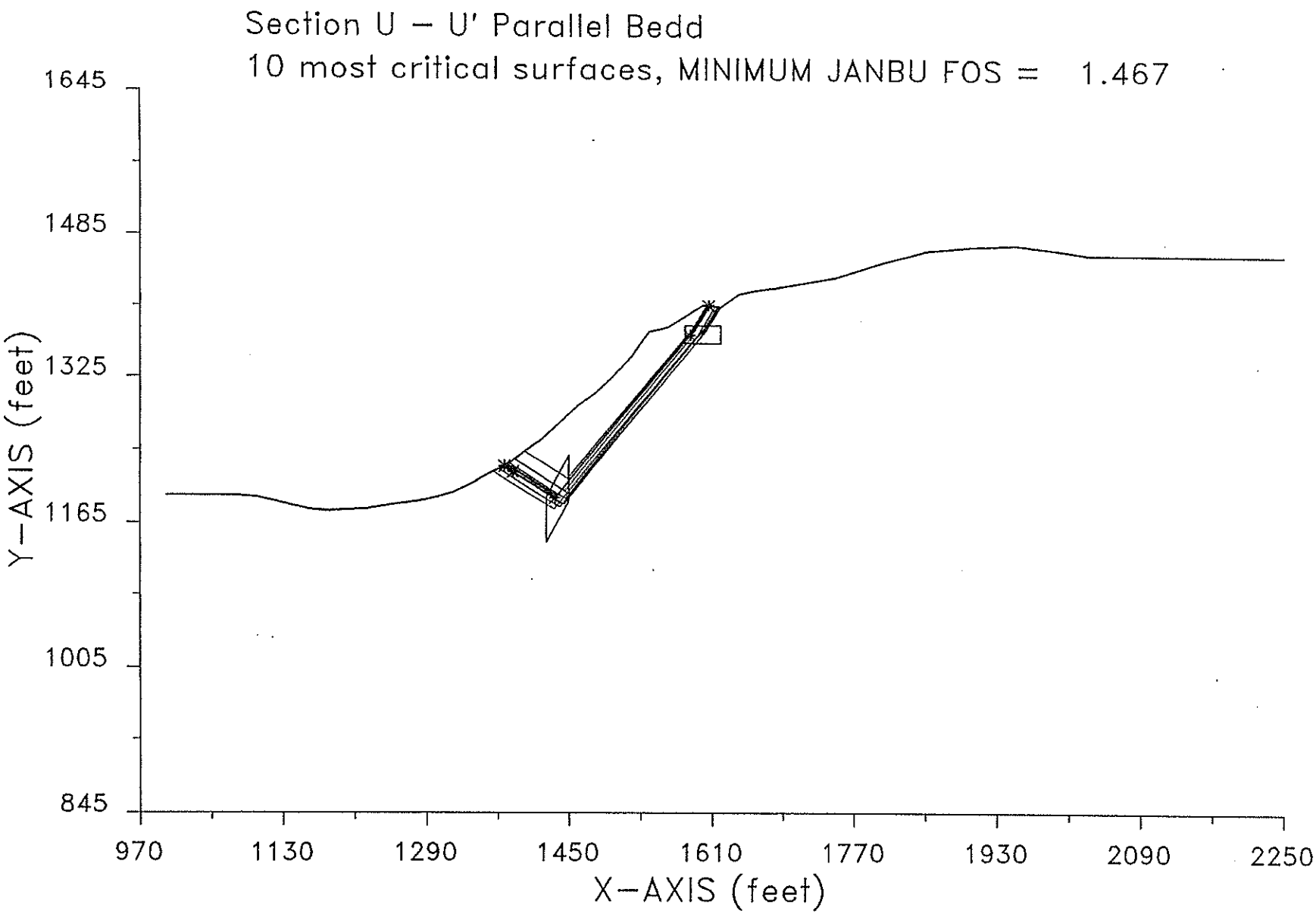
```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section U - U' Parallel Bedd

SEGMENT BOUNDARY COORDINATES
---

40 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1196.0	1080.0	1196.0	1
2	1080.0	1196.0	1100.0	1194.0	1
3	1100.0	1194.0	1120.0	1190.0	1
4	1120.0	1190.0	1140.0	1185.0	1
5	1140.0	1185.0	1160.0	1181.0	1
6	1160.0	1181.0	1180.0	1179.0	1
7	1180.0	1179.0	1200.0	1180.0	1
8	1200.0	1180.0	1220.0	1181.0	1
9	1220.0	1181.0	1240.0	1184.0	1
10	1240.0	1184.0	1260.0	1187.0	1
11	1260.0	1187.0	1280.0	1190.0	1
12	1280.0	1190.0	1300.0	1194.0	1
13	1300.0	1194.0	1320.0	1200.0	1
14	1320.0	1200.0	1340.0	1209.0	1
15	1340.0	1209.0	1360.0	1220.0	1
16	1360.0	1220.0	1380.0	1229.0	1
17	1380.0	1229.0	1400.0	1244.0	1
18	1400.0	1244.0	1420.0	1258.0	1
19	1420.0	1258.0	1440.0	1277.0	1
20	1440.0	1277.0	1460.0	1295.0	1
21	1460.0	1295.0	1480.0	1310.0	1
22	1480.0	1310.0	1500.0	1328.0	1
23	1500.0	1328.0	1520.0	1350.0	1
24	1520.0	1350.0	1540.0	1378.0	1
25	1540.0	1378.0	1560.0	1383.0	1
26	1560.0	1383.0	1580.0	1396.0	1
27	1580.0	1396.0	1600.0	1409.0	1
28	1600.0	1409.0	1620.0	1407.0	1
29	1620.0	1407.0	1640.0	1422.0	1
30	1640.0	1422.0	1660.0	1426.0	1
31	1660.0	1426.0	1680.0	1429.0	1
32	1680.0	1429.0	1700.0	1432.0	1
33	1700.0	1432.0	1750.0	1441.0	1
34	1750.0	1441.0	1800.0	1457.0	1
35	1800.0	1457.0	1850.0	1471.0	1
36	1850.0	1471.0	1900.0	1476.0	1
37	1900.0	1476.0	1950.0	1478.0	1
38	1950.0	1478.0	2000.0	1472.0	1


Section U – U' Parallel Bedd
10 most critical surfaces, MINIMUM JANBU FOS = 1.467
1645
1485
1325
1165
1005
845
Y–AXIS (feet)
970
1130
1290
1450
1610
1770
1930
2090
2250
X–AXIS (feet)

Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 25 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1300.00	1194.00
2	1328.74	1190.09
3	1357.64	1187.72
4	1386.63	1186.90
5	1415.62	1187.63
6	1444.53	1189.91
7	1473.28	1193.73
8	1501.78	1199.08
9	1529.95	1205.95
10	1557.72	1214.31
11	1585.00	1224.15
12	1611.72	1235.43
13	1637.79	1248.12
14	1663.15	1262.18
15	1687.73	1277.59
16	1711.44	1294.28
17	1734.23	1312.22
18	1756.02	1331.34
19	1776.77	1351.61
20	1796.40	1372.96
21	1814.86	1395.32
22	1832.10	1418.64
23	1848.07	1442.85
24	1862.72	1467.87
25	1865.11	1472.51

**** Simplified BISHOP FOS = 1.543 ****

The following is a summary of the TEN most critical surfaces

Problem Description : Section UU-UU' Setback Kh=0.15

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.543	1387.47	1729.36	542.46	1300.00	1865.11	3.072E+09
2.	1.546	1370.12	1627.76	424.31	1331.58	1751.04	1.543E+09
3.	1.550	1369.40	1645.87	457.17	1300.00	1783.04	2.062E+09
4.	1.551	1384.87	1612.24	410.50	1331.58	1759.19	1.587E+09
5.	1.557	1349.51	1710.16	509.16	1323.68	1789.09	2.051E+09
6.	1.558	1388.04	1619.01	413.12	1339.47	1762.63	1.569E+09
7.	1.564	1371.00	1736.65	547.28	1300.00	1849.10	2.921E+09
8.	1.565	1371.55	1750.13	557.41	1307.89	1854.08	2.940E+09
9.	1.565	1322.71	1740.36	546.83	1300.00	1788.03	2.256E+09
10.	1.566	1382.56	1643.68	432.06	1347.37	1766.66	1.574E+09

* * * END OF FILE * * *

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	f-value (degrees)
1	50.00	4000.0	28.00
2	60.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 1300.0 ft
and x = 1450.0 ft

Each surface terminates between x = 1750.0 ft
and x = 1900.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = 1000.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

29.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****

XSTABL File: SECUUU3 10-06-** 10:22

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section U-U' Setback Kh=0.15
(formerly AA-AA')

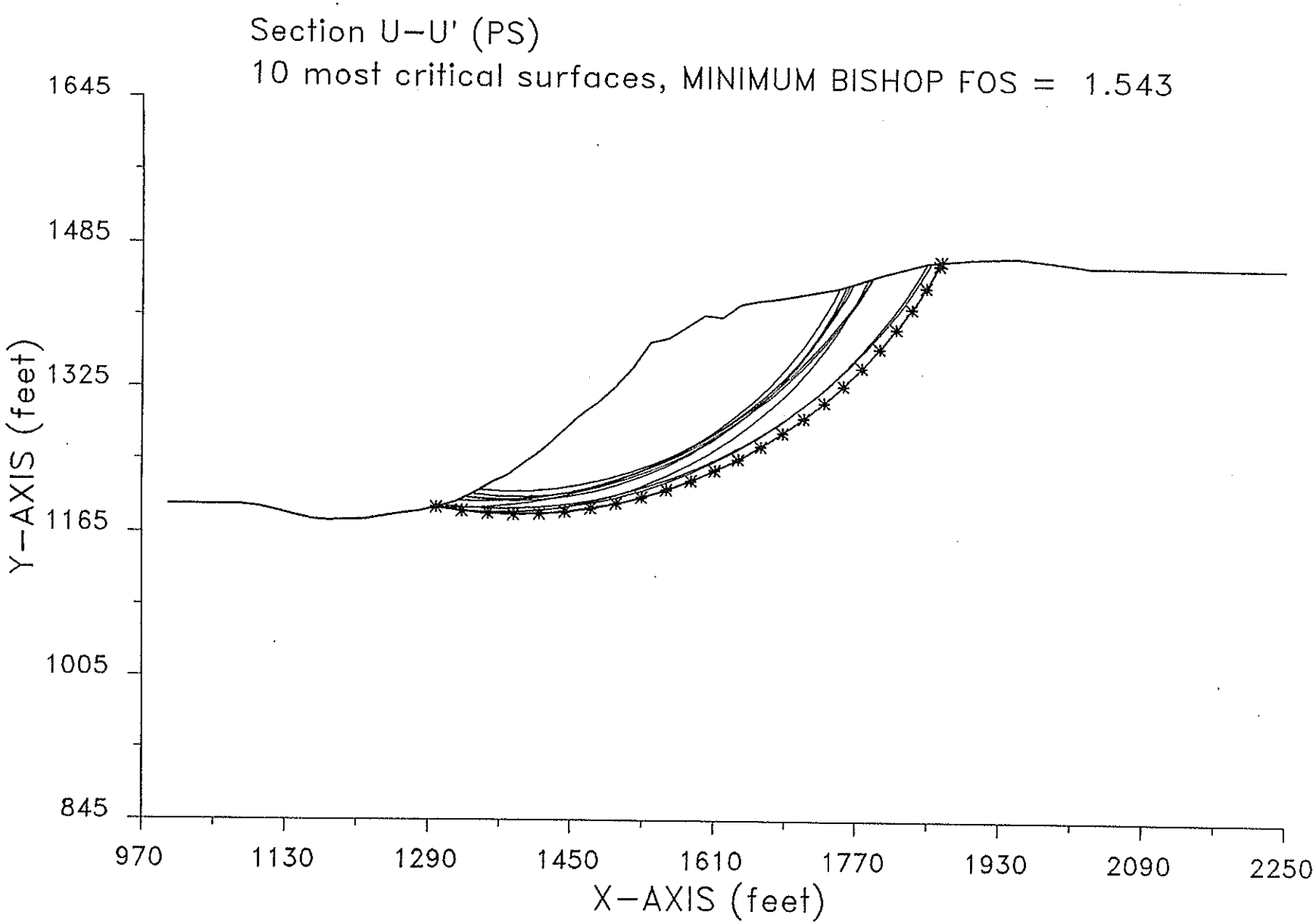
SEGMENT BOUNDARY COORDINATES

---

40 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1196.0	1080.0	1196.0	1
2	1080.0	1196.0	1100.0	1194.0	1
3	1100.0	1194.0	1120.0	1190.0	1
4	1120.0	1190.0	1140.0	1185.0	1
5	1140.0	1185.0	1160.0	1181.0	1
6	1160.0	1181.0	1180.0	1179.0	1
7	1180.0	1179.0	1200.0	1180.0	1
8	1200.0	1180.0	1220.0	1181.0	1
9	1220.0	1181.0	1240.0	1184.0	1
10	1240.0	1184.0	1260.0	1187.0	1
11	1260.0	1187.0	1280.0	1190.0	1
12	1280.0	1190.0	1300.0	1194.0	1
13	1300.0	1194.0	1320.0	1200.0	1
14	1320.0	1200.0	1340.0	1209.0	1
15	1340.0	1209.0	1360.0	1220.0	1
16	1360.0	1220.0	1380.0	1229.0	1
17	1380.0	1229.0	1400.0	1244.0	1
18	1400.0	1244.0	1420.0	1258.0	1
19	1420.0	1258.0	1440.0	1277.0	1
20	1440.0	1277.0	1460.0	1295.0	1
21	1460.0	1295.0	1480.0	1310.0	1
22	1480.0	1310.0	1500.0	1328.0	1
23	1500.0	1328.0	1520.0	1350.0	1
24	1520.0	1350.0	1540.0	1378.0	1
25	1540.0	1378.0	1560.0	1383.0	1
26	1560.0	1383.0	1580.0	1396.0	1
27	1580.0	1396.0	1600.0	1409.0	1
28	1600.0	1409.0	1620.0	1407.0	1
29	1620.0	1407.0	1640.0	1422.0	1
30	1640.0	1422.0	1660.0	1426.0	1
31	1660.0	1426.0	1680.0	1429.0	1
32	1680.0	1429.0	1700.0	1432.0	1
33	1700.0	1432.0	1750.0	1441.0	1
34	1750.0	1441.0	1800.0	1457.0	1
35	1800.0	1457.0	1850.0	1471.0	1
36	1850.0	1471.0	1900.0	1476.0	1
37	1900.0	1476.0	1950.0	1478.0	1
38	1950.0	1478.0	2000.0	1472.0	1
39	2000.0	1472.0	2030.0	1468.0	1
40	2030.0	1468.0	2250.0	1468.0	1

ISOTROPIC Soil Parameters


Section U-U' (PS)
10 most critical surfaces, MINIMUM BISHOP FOS = 1.543
1645
1485
1325
1165
1005
845
Y-AXIS (feet)
970
1130
1290
1450
1610
1770
1930
2090
2250
X-AXIS (feet)

ycenter = 1361.26 Init. Pt. = 1450.00 Seg. Length = 27.00

```
**********************************************************
**     Factor of safety calculation for surface #   389    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was     .0046   **
**    This will be ignored for final summary of results   **
**********************************************************
```

Circular surface (FOS= .0046) is defined by: xcenter = 1447.19
ycenter = 1317.51 Init. Pt. = 1450.00 Seg. Length = 27.00

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *
The most critical circular failure surface
is specified by 21 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1300.00	1194.00
2	1326.66	1189.71
3	1353.56	1187.40
4	1380.56	1187.09
5	1407.50	1188.78
6	1434.25	1192.46
7	1460.65	1198.11
8	1486.56	1205.70
9	1511.84	1215.19
10	1536.35	1226.52
11	1559.95	1239.64
12	1582.51	1254.47
13	1603.91	1270.93
14	1624.04	1288.93
15	1642.77	1308.37
16	1660.02	1329.14
17	1675.68	1351.14
18	1689.67	1374.23
19	1701.91	1398.30
20	1712.34	1423.20
21	1716.25	1434.92

```
****  Simplified BISHOP FOS =   1.958   ****
*****************************************************************
**                                                             **
**  Out of the    400 surfaces generated and analyzed by XSTABL,  **
**        5 surfaces were found to have MISLEADING FOS values.   **
**                                                             **
*****************************************************************
```

The following is a summary of the TEN most critical surfaces

Problem Description : Section UU-UU' Parallel Bedd (Circ)

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.958	1371.25	1551.39	364.42	1300.00	1716.25	1.420E+09
2.	1.958	1350.47	1549.17	348.55	1323.68	1677.25	9.979E+08
3.	1.967	1386.31	1558.53	366.64	1315.79	1732.26	1.469E+09
4.	1.976	1336.75	1634.59	436.35	1315.79	1725.36	1.501E+09
5.	1.978	1367.09	1608.29	400.48	1339.47	1729.01	1.347E+09
6.	1.993	1347.47	1666.08	461.14	1331.58	1749.73	1.648E+09
7.	1.994	1340.42	1709.70	511.56	1315.79	1781.63	2.089E+09
8.	1.996	1323.98	1657.05	455.40	1323.68	1722.07	1.465E+09
9.	2.000	1372.29	1606.20	381.23	1371.05	1712.28	1.033E+09
10.	2.009	1360.97	1584.35	384.50	1323.68	1715.13	1.342E+09

* * * END OF FILE * * *

```
                Upper angular limit :=  (slope angle - 5.0) degrees


 ************************************************************************
     --  WARNING  --  WARNING  --  WARNING  --  WARNING  --  (# 48)
 ************************************************************************
 Negative effective stresses were calculated at the base of a slice.
 This warning is usually reported for cases where slices have low self
 weight and a relatively high "c" shear strength parameter.  In such
 cases, this effect can only be eliminated by reducing the "c" value.
 ************************************************************************

     ------------------------------------------------------------
     USER SELECTED option to maintain strength greater than zero
     ------------------------------------------------------------


     ************************************************************
     **     Factor of safety calculation for surface #   334    **
     **     failed to converge within FIFTY iterations          **
     **                                                         **
     **    The last calculated value of the FOS was  23.9283    **
     **    This will be ignored for final summary of results    **
     ************************************************************


 Circular surface (FOS= 23.9283) is defined by: xcenter =   1245.04
 ycenter =   1536.79   Init. Pt. =   1426.32   Seg. Length =  27.00
 ---------------------------------------------------------------------


     ************************************************************
     **     Factor of safety calculation for surface #   352    **
     **     failed to converge within FIFTY iterations          **
     **                                                         **
     **    The last calculated value of the FOS was     .0049   **
     **    This will be ignored for final summary of results    **
     ************************************************************


 Circular surface (FOS=   .0049) is defined by: xcenter =   1278.37
 ycenter =   1510.33   Init. Pt. =   1434.21   Seg. Length =  27.00
 ---------------------------------------------------------------------


     ************************************************************
     **     Factor of safety calculation for surface #   368    **
     **     failed to converge within FIFTY iterations          **
     **                                                         **
     **    The last calculated value of the FOS was     .0047   **
     **    This will be ignored for final summary of results    **
     ************************************************************


 Circular surface (FOS=   .0047) is defined by: xcenter =   1392.38
 ycenter =   1376.85   Init. Pt. =   1442.11   Seg. Length =  27:00
 ---------------------------------------------------------------------


     ************************************************************
     **     Factor of safety calculation for surface #   384    **
     **     failed to converge within FIFTY iterations          **
     **                                                         **
     **    The last calculated value of the FOS was     .0043   **
     **    This will be ignored for final summary of results    **
     ************************************************************


 Circular surface (FOS=   .0043) is defined by: xcenter =   1411.00
```

39	2000.0	1472.0	2030.0	1468.0	1
40	2030.0	1468.0	2250.0	1468.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	4000.0	28.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	i-value (degrees)
1	50.00	4000.0	28.00
2	60.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1300.0 ft
and x = 1450.0 ft

Each surface terminates between x = 1470.0 ft
and x = 1800.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 1000.0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

27.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees

XSTABL File: SECUUU1 10-06-** 10:23

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

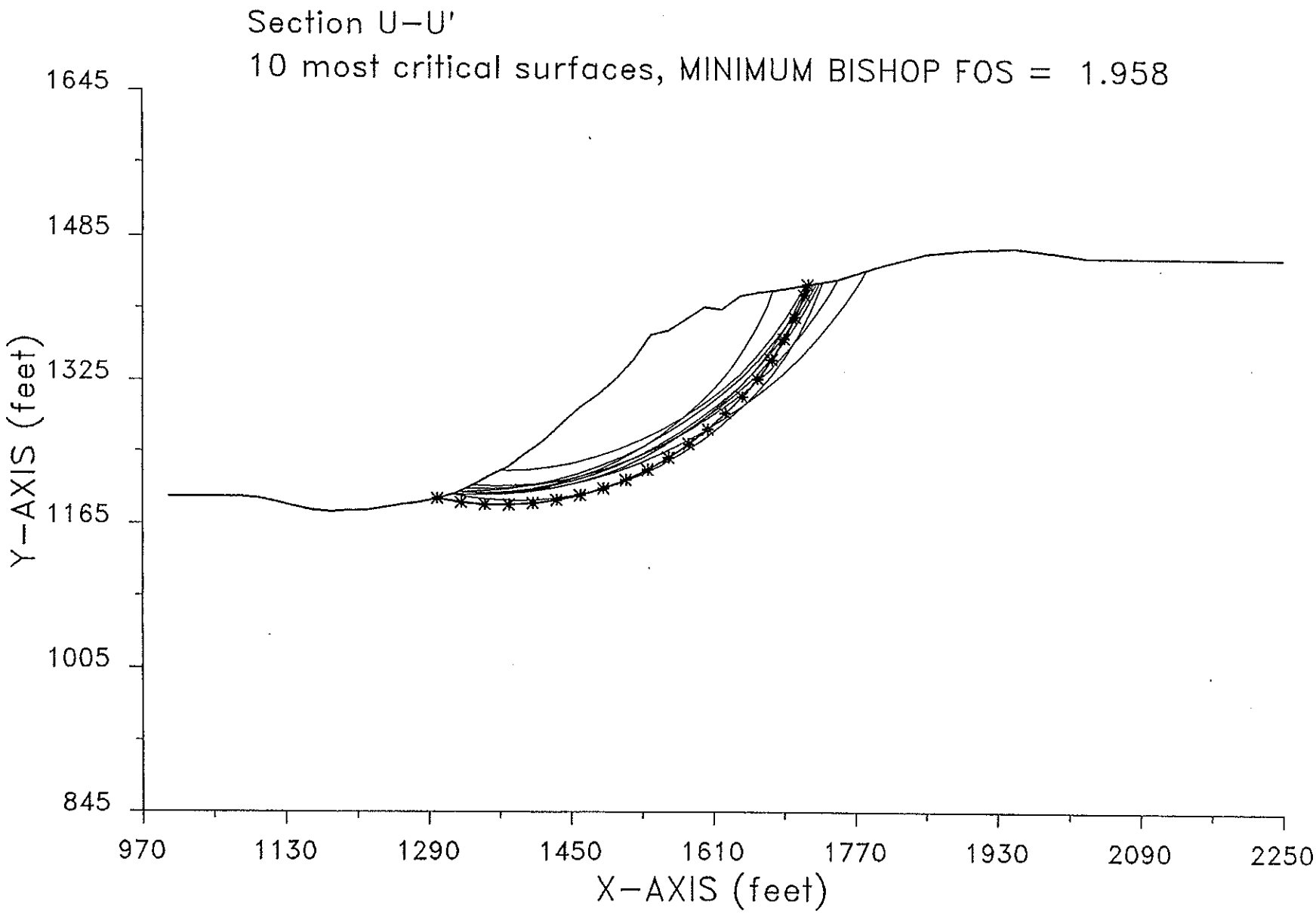
Problem Description : Section U-U' Parallel Bedd (Circ)
(formerly AA-AA')

SEGMENT BOUNDARY COORDINATES
---

40 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1000.0	1196.0	1080.0	1196.0	1
2	1080.0	1196.0	1100.0	1194.0	1
3	1100.0	1194.0	1120.0	1190.0	1
4	1120.0	1190.0	1140.0	1185.0	1
5	1140.0	1185.0	1160.0	1181.0	1
6	1160.0	1181.0	1180.0	1179.0	1
7	1180.0	1179.0	1200.0	1180.0	1
8	1200.0	1180.0	1220.0	1181.0	1
9	1220.0	1181.0	1240.0	1184.0	1
10	1240.0	1184.0	1260.0	1187.0	1
11	1260.0	1187.0	1280.0	1190.0	1
12	1280.0	1190.0	1300.0	1194.0	1
13	1300.0	1194.0	1320.0	1200.0	1
14	1320.0	1200.0	1340.0	1209.0	1
15	1340.0	1209.0	1360.0	1220.0	1
16	1360.0	1220.0	1380.0	1229.0	1
17	1380.0	1229.0	1400.0	1244.0	1
18	1400.0	1244.0	1420.0	1258.0	1
19	1420.0	1258.0	1440.0	1277.0	1
20	1440.0	1277.0	1460.0	1295.0	1
21	1460.0	1295.0	1480.0	1310.0	1
22	1480.0	1310.0	1500.0	1328.0	1
23	1500.0	1328.0	1520.0	1350.0	1
24	1520.0	1350.0	1540.0	1378.0	1
25	1540.0	1378.0	1560.0	1383.0	1
26	1560.0	1383.0	1580.0	1396.0	1
27	1580.0	1396.0	1600.0	1409.0	1
28	1600.0	1409.0	1620.0	1407.0	1
29	1620.0	1407.0	1640.0	1422.0	1
30	1640.0	1422.0	1660.0	1426.0	1
31	1660.0	1426.0	1680.0	1429.0	1
32	1680.0	1429.0	1700.0	1432.0	1
33	1700.0	1432.0	1750.0	1441.0	1
34	1750.0	1441.0	1800.0	1457.0	1
35	1800.0	1457.0	1850.0	1471.0	1
36	1850.0	1471.0	1900.0	1476.0	1
37	1900.0	1476.0	1950.0	1478.0	1
38	1950.0	1478.0	2000.0	1472.0	1

SLOUUU1 10-09-** 12:07



RESULTANT WALL FORCE

With Rock Monument

PSEUDOSTATIC

Slice	Area (sf)	Weight (kips)	Degrees Slip Angle (A)	Radians	WsinA	WsinA + KWcosA	WcosA	WcosA + KWcosA	width (ft)	L (ft)
1	0.51	66	27.98	0.4883	31	40	58	67	0.1	0.11
2	45.88	5965	27.98	0.4883	2799	3589	5268	6058	4.9	5.55
3	49.29	6408	27.98	0.4883	3006	3855	5659	6508	6	6.79
4	42.72	5553	27.98	0.4883	2605	3341	4904	5640	6	6.79
5	89.92	11689	27.98	0.4883	5484	7032	10323	11871	28	31.71
6	14.28	1856	27.98	0.4883	871	1117	1639	1885	3	3.40
7	1.52	197	27.98	0.4883	92	119	174	200	4	4.53
				Sum=	14888	19092	28025	32228	52	59

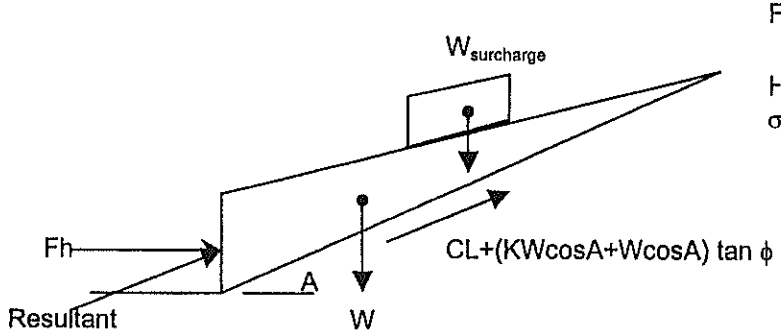
ϕ = 24 degrees
0.4189 radians
C = 150 psf
Unit Wt.= 130 pcf
K = 0.15

$$FS = \frac{CL+(WcosA+KWcosA)\tan\phi}{WsinA+KWcosA} = \frac{23181}{19092}$$

FS = 1.21

Resultant Force= 0 lbs.
for FS = 1.1
Fh= 0 lbs.

Hwall = 11 ft.
σ = 0 psf



RESULTANT WALL FORCE

With Rock Monument

PSEUDOSTATIC

Slice	Area (sf)	Weight (kips)	Degrees Slip Angle (A)	Radians	WsinA	WsinA + KWcosA	WcosA	WcosA + KWcosA	width (ft)	L (ft)
1	0.51	66	27.98	0.4883	31	40	58	67	0.1	0.11
2	45.88	5965	27.98	0.4883	2799	3589	5268	6058	4.9	5.55
3	49.29	6408	27.98	0.4883	3006	3855	5659	6508	6	6.79
4	42.72	5553	27.98	0.4883	2605	3341	4904	5640	6	6.79
5	428.38	55689	27.98	0.4883	26127	33504	49180	56556	28	31.71
6	14.28	1856	27.98	0.4883	871	1117	1639	1885	3	3.40
7	1.52	197	27.98	0.4883	92	119	174	200	4	4.53
				Sum=	35532	45564	66882	76914	52	59

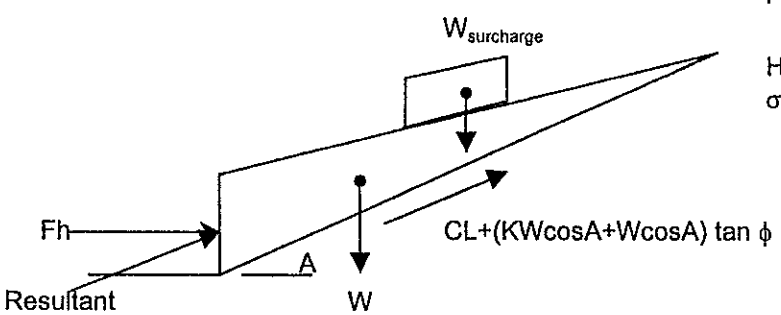
ϕ = 24 degrees
0.4189 radians
C = 150 psf
Unit Wt.= 130 pcf
K = 0.15

$$FS = \frac{CL+(WcosA+KWcosA)\tan\phi}{WsinA+KWcosA} = \frac{43077}{45564}$$

FS = 0.95

Resultant Force= 7044 lbs.
for FS = 1.1
Fh= 6220 lbs.

Hwall = 11 ft.
σ = 565 psf



RESULTANT WALL FORCE

Without Rock Monument

Slice	Area (sf)	Weight (kips)	Degrees Slip Angle (A)	Radians	WsinA	WcosA	width (ft)	L (ft)
1	0.51	66	27.98	0.4883	31	58	0.1	0.11
2	45.88	5965	27.98	0.4883	2799	5268	4.9	5.55
3	49.29	6408	27.98	0.4883	3006	5659	6	6.79
4	42.72	5553	27.98	0.4883	2605	4904	6	6.79
5	89.92	11689	27.98	0.4883	5484	10323	28	31.71
6	14.28	1856	27.98	0.4883	871	1639	3	3.40
7	1.52	197	27.98	0.4883	92	174	4	4.53
				Sum=	14888	28025	52	59

ϕ = 24 degrees
0.4189 radians
C = 150 psf
Unit Wt.= 130 pcf

$$FS = \frac{CL + WcosA \tan\phi}{WsinA} = \frac{21310}{14888}$$

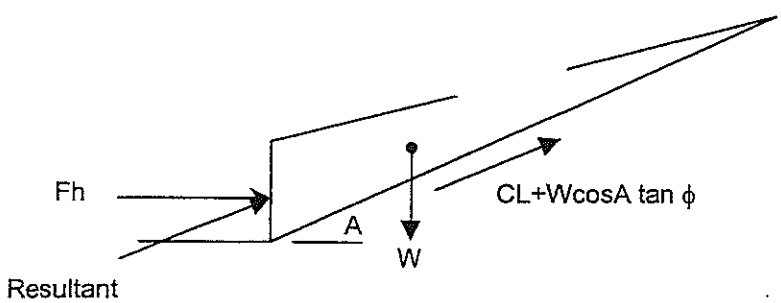
FS = 1.43

Resultant Force = 1023 lbs.

Fh = 903 lbs.

Hwall = 11 ft.

σ = 82 psf



RESULTANT WALL FORCE

With Rock Monument

Slice	Area (sf)	Weight (kips)	Degrees Slip Angle (A)	Radians	WsinA	WcosA	width (ft)	L (ft)
1	0.51	66	27.98	0.4883	31	58	0.1	0.11
2	45.88	5965	27.98	0.4883	2799	5268	4.9	5.55
3	49.29	6408	27.98	0.4883	3006	5659	6	6.79
4	42.72	5553	27.98	0.4883	2605	4904	6	6.79
5	428.38	55689	27.98	0.4883	26127	49180	28	31.71
6	14.28	1856	27.98	0.4883	871	1639	3	3.40
7	1.52	197	27.98	0.4883	92	174	4	4.53
				Sum=	35532	66882	52	59

ϕ = 24 degrees
0.4189 radians
C = 150 psf
Unit Wt.= 130 pcf

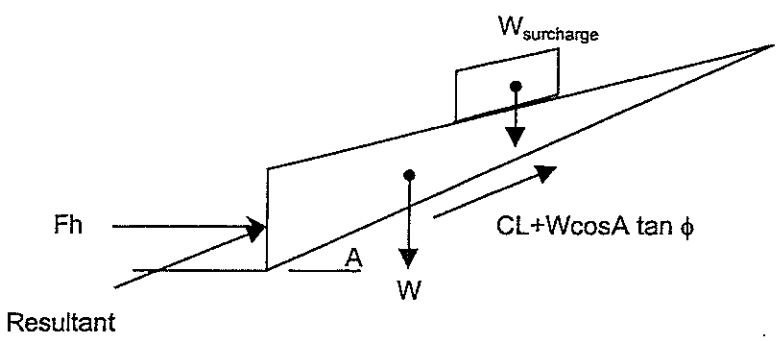
$$FS = \frac{CL + WcosA \tan\phi}{WsinA} = \frac{38610}{35532}$$

FS= 1.09

Resultant Force= 14687 lbs.

Fh= 12971 lbs.

Hwall = 11 ft.
σ = 1179 psf



****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	43.05	1180.03	5.47	.10	27.98	89.48	66.
2	45.55	1181.35	10.15	4.90	27.98	11.53	5965.
3	51.00	1184.25	8.90	6.00	27.98	20.97	6408.
4	57.00	1187.44	7.71	6.00	27.98	15.82	5553.
5	70.00	1194.34	4.87	20.00	27.98	17.82	11689.
6	84.00	1201.78	1.93	8.00	27.98	17.82	1856.
7	89.50	1204.70	.55	3.00	27.98	9.46	197.

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	Q-top (lb)	Delta
1	476.6	150.0	24.00	0.	0.	0.	.00
2	935.5	150.0	24.00	0.	0.	0.	.00
3	813.2	150.0	24.00	0.	0.	0.	.00
4	696.5	150.0	24.00	0.	0.	0.	.00
5	2218.4	150.0	24.00	0.	0.	44000.	.00
6	128.8	150.0	24.00	0.	0.	0.	.00
7	-7.4	150.0	24.00	0.	0.	0.	.00

For the single specified surface,
Corrected JANBU factor of safety = 1.068 (Fo factor = 1.000)

Resisting Shear Strength = 379.31E+02 lb

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	25.00	4000.0	28.00
2	31.00	150.0	24.00
3	90.00	4000.0	28.00

BOUNDARY LOADS
---

1 load(s) specified

Load No.	x-left (ft)	x-right (ft)	Intensity (psf)	Direction (deg)
1	60.0	80.0	2200.0	.0

NOTE - Intensity is specified as a uniformly distributed force acting on a HORIZONTALLY projected surface.

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 2 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	43.00	1180.00
2	91.00	1205.50

****
SELECTED METHOD OF ANALYSIS: Simplified Janbu
****

XSTABL File: SECT-T1B 10-08-** 22:46

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Sec T-T' Wall Force

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

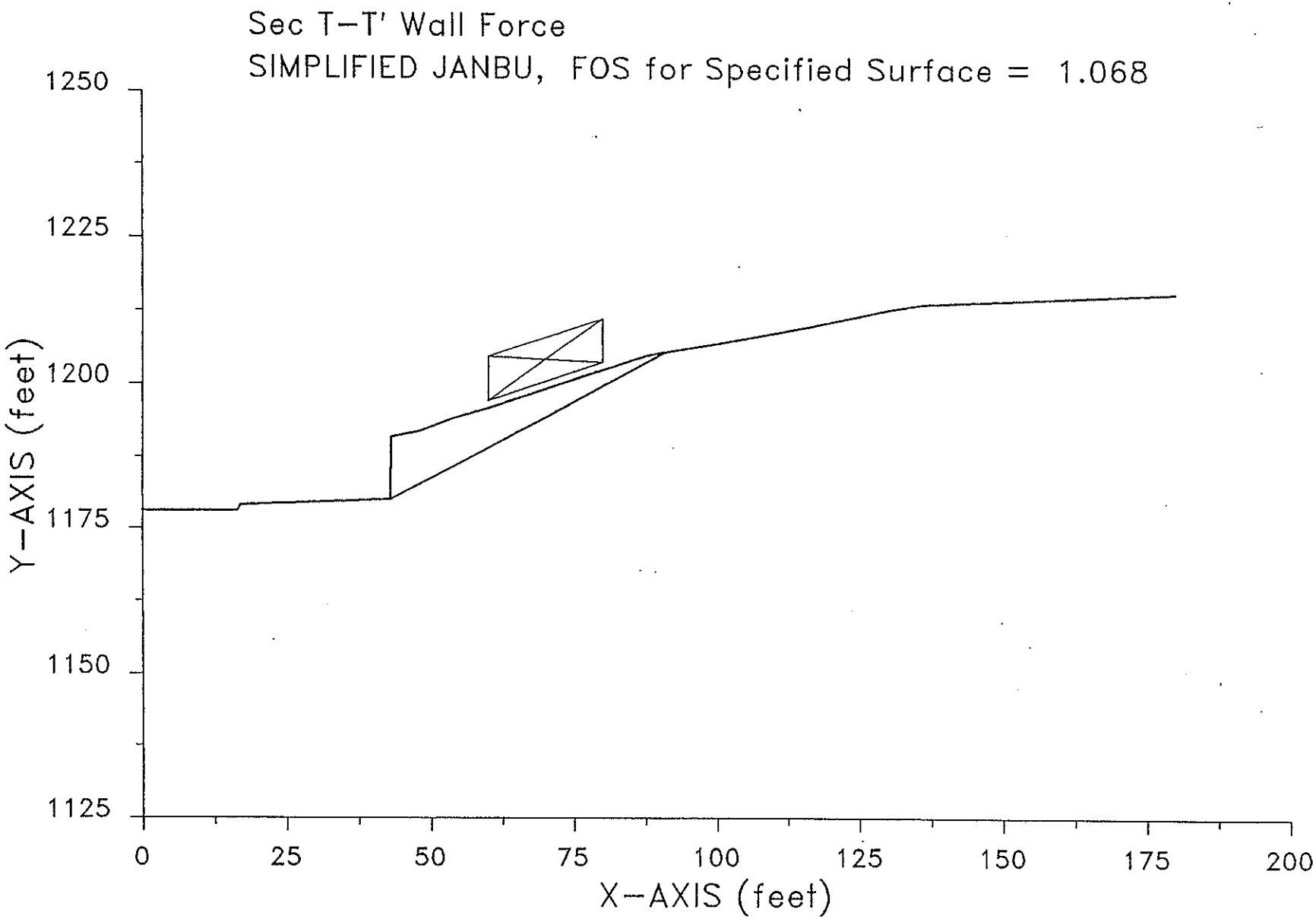
Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	1178.0	16.5	1178.0	1
2	16.5	1178.0	17.0	1179.0	1
3	17.0	1179.0	43.0	1180.0	1
4	43.0	1180.0	43.1	1191.0	1
5	43.1	1191.0	48.0	1192.0	1
6	48.0	1192.0	54.0	1194.3	1
7	54.0	1194.3	60.0	1196.0	1
8	60.0	1196.0	88.0	1205.0	1
9	88.0	1205.0	100.0	1207.0	1
10	100.0	1207.0	116.0	1210.0	1
11	116.0	1210.0	130.0	1213.0	1
12	130.0	1213.0	136.0	1214.0	1
13	136.0	1214.0	180.0	1216.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

SEC T-T1B 10-08-** 22:46



The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1154.18	1254.18
2	1157.18	1252.24
3	1260.45	1270.75
4	1265.90	1279.13
5	1271.35	1287.52
6	1275.22	1293.48

```
************************************************************
**     Factor of safety calculation for surface #   254    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.9579    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1153.58	1253.58
2	1156.67	1251.57
3	1248.66	1271.41
4	1254.10	1279.80
5	1259.55	1288.19
6	1262.34	1292.49

```
************************************************************
**     Factor of safety calculation for surface #   263    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  55.7447    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1154.56	1254.56
2	1157.73	1252.49
3	1263.95	1271.95
4	1269.39	1280.34
5	1274.84	1288.73
6	1278.07	1293.70

```
************************************************************
**     Factor of safety calculation for surface #   282    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.5097    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1153.93	1253.93
2	1157.17	1251.82
3	1243.55	1268.93
4	1249.00	1277.32
5	1254.45	1285.70
6	1258.67	1292.21

```
************************************************************
**     Factor of safety calculation for surface #   312    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  37.4528    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 6 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1156.65	1256.65
2	1159.60	1254.74
3	1259.51	1274.51
4	1264.96	1282.89
5	1270.40	1291.28
6	1271.65	1293.20

```
************************************************************
**     Factor of safety calculation for surface #   333    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  46.8573    **
**    This will be ignored for final summary of results    **
************************************************************
```

The trial failure surface in question is
defined by the following 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1155.73	1255.73
2	1158.97	1253.63
3	1251.18	1276.74
4	1256.63	1285.13
5	1261.36	1292.41

```
*************************************************************
**     Factor of safety calculation for surface #   341    **
**     failed to converge within FIFTY iterations          **
**                                                         **
**    The last calculated value of the FOS was  10.7082    **
**    This will be ignored for final summary of results    **
*************************************************************
```

The trial failure surface in question is
defined by the following 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1150.04	1250.04
2	1152.95	1248.14
3	1243.44	1287.70
4	1245.72	1291.21

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined
are displayed below - the most critical first

Failure surface No. 1 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1139.87	1239.87
2	1142.78	1237.98
3	1290.66	1291.75
4	1292.65	1294.82

** Corrected JANBU FOS = 1.913 ** (Fo factor = 1.008)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1137.76	1237.76
2	1140.68	1235.86
3	1302.03	1292.34
4	1304.22	1295.71

** Corrected JANBU FOS = 1.913 ** (Fo factor = 1.008)

Failure surface No. 3 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1141.62	1241.62
2	1144.76	1239.58
3	1293.88	1292.06
4	1295.83	1295.06

** Corrected JANBU FOS = 1.993 ** (Fo factor = 1.009)

Failure surface No. 4 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1138.14	1238.14
2	1141.39	1236.02
3	1298.92	1290.59
4	1302.13	1295.55

** Corrected JANBU FOS = 2.029 ** (Fo factor = 1.010)

Failure surface No. 5 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1143.75	1243.75
2	1147.01	1241.63
3	1281.85	1291.11
4	1283.82	1294.14

** Corrected JANBU FOS = 2.035 ** (Fo factor = 1.010)

Failure surface No. 6 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1137.10	1237.10
2	1140.32	1235.01
3	1294.74	1289.38
4	1298.57	1295.27

** Corrected JANBU FOS = 2.038 ** (Fo factor = 1.012)

Failure surface No. 7 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1144.77	1244.77
2	1148.02	1242.66
3	1283.38	1291.22
4	1285.35	1294.26

** Corrected JANBU FOS = 2.086 ** (Fo factor = 1.010)

Failure surface No. 8 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1142.63	1242.63
2	1145.69	1240.64
3	1292.75	1291.06
4	1295.33	1295.03

** Corrected JANBU FOS = 2.101 ** (Fo factor = 1.009)

Failure surface No. 9 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1138.79	1238.79
2	1141.85	1236.81
3	1296.95	1289.49
4	1300.82	1295.45

** Corrected JANBU FOS = 2.113 ** (Fo factor = 1.012)

Failure surface No.10 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1146.50	1246.50
2	1149.41	1244.60
3	1269.17	1289.79
4	1271.37	1293.18

** Corrected JANBU FOS = 2.134 ** (Fo factor = 1.010)

```
*****************************************************************
**                                                             **
**  Out of the    400 surfaces generated and analyzed by XSTABL,  **
**       17 surfaces were found to have MISLEADING FOS values.   **
**                                                             **
*****************************************************************
```

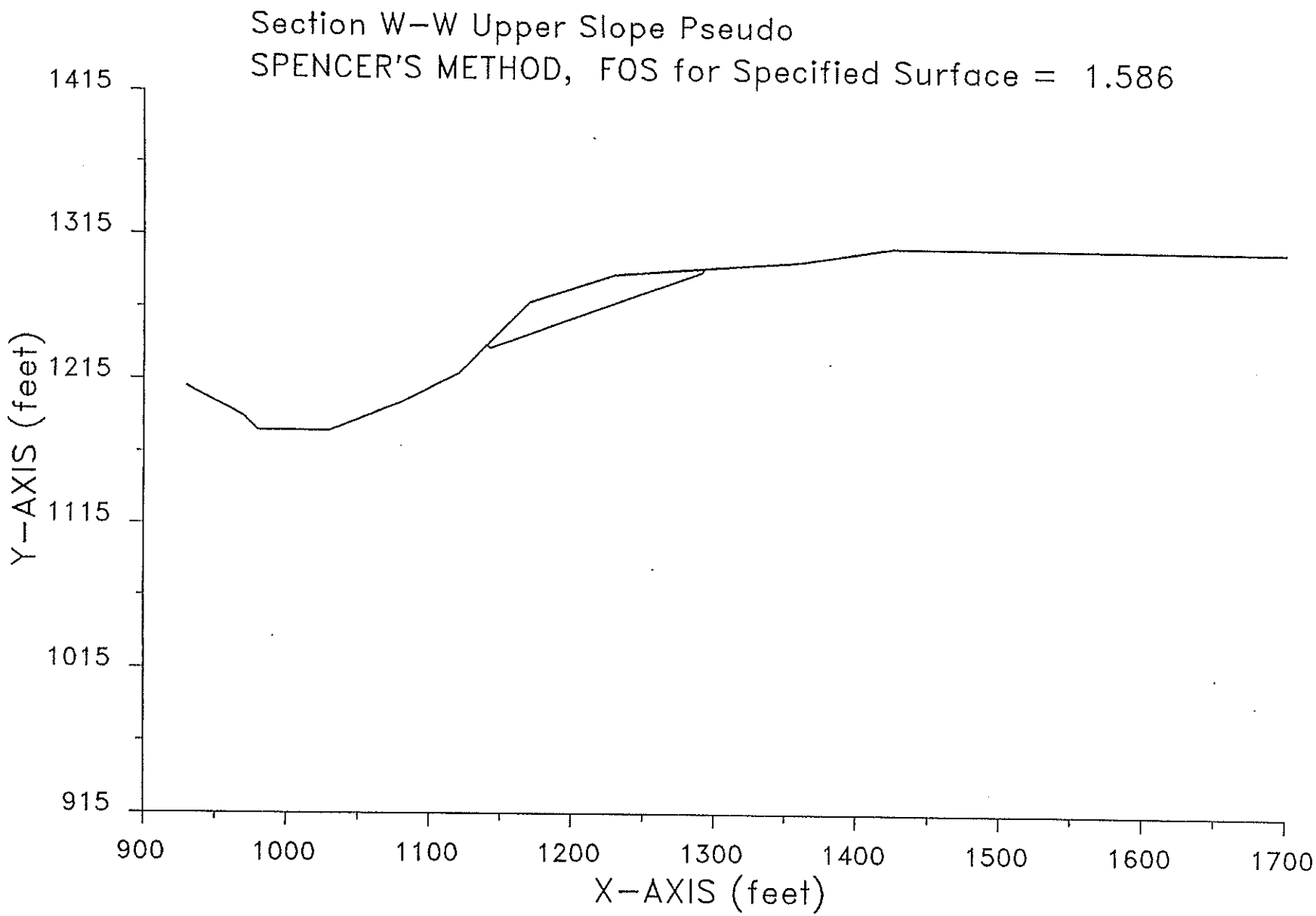
The following is a summary of the TEN most critical surfaces

Problem Description : Section W-W Block

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.913	1.008	1139.87	1292.65	1.726E+05
2.	1.913	1.008	1137.76	1304.22	1.974E+05
3.	1.993	1.009	1141.62	1295.83	1.740E+05
4.	2.029	1.010	1138.14	1302.13	2.076E+05
5.	2.035	1.010	1143.75	1283.82	1.535E+05
6.	2.038	1.012	1137.10	1298.57	2.113E+05
7.	2.086	1.010	1144.77	1285.35	1.527E+05
8.	2.101	1.009	1142.63	1295.33	1.761E+05
9.	2.113	1.012	1138.79	1300.82	2.085E+05
10.	2.134	1.010	1146.50	1271.37	1.298E+05

* * * END OF FILE * * *

SLOPEW-WP 10-08-** 21:30



XSTABL File: SECTW-WP 10-08-** 21:30

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 95       *
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*****************************************
```

Problem Description : Section W-W Upper Slope Pseudo

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	930.0	1210.0	970.0	1190.0	1
2	970.0	1190.0	980.0	1180.0	1
3	980.0	1180.0	1000.0	1180.0	1
4	1000.0	1180.0	1010.0	1180.0	1
5	1010.0	1180.0	1030.0	1180.0	1
6	1030.0	1180.0	1080.0	1200.0	1
7	1080.0	1200.0	1120.0	1220.0	1
8	1120.0	1220.0	1160.0	1260.0	1
9	1160.0	1260.0	1170.0	1270.0	1
10	1170.0	1270.0	1230.0	1290.0	1
11	1230.0	1290.0	1360.0	1300.0	1
12	1360.0	1300.0	1425.0	1310.0	1
13	1425.0	1310.0	1700.0	1310.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	15.00	4000.0	28.00
2	21.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 4 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1139.87	1239.87
2	1142.78	1237.98
3	1290.66	1291.75
4	1292.65	1294.82

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1141.32	1238.93	2.40	2.91	-33.00	45.00	838.
2	1151.39	1241.11	10.28	17.22	19.98	45.00	21241.
3	1165.00	1246.06	18.94	10.00	19.98	45.00	22729.
4	1200.00	1258.79	21.21	60.00	19.98	18.43	152744.
5	1260.33	1280.72	11.61	60.66	19.98	4.40	84521.
6	1291.66	1293.28	1.46	1.99	57.04	4.40	348.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	31.7663	1.7555	1.4463
3	24.7071	-----	1.7555
3	28.2367	1.6249	-----
4	26.1955	1.5681	1.6249
5	27.2438	-----	1.5681
5	26.7196	1.5816	-----
6	26.9599	1.5881	1.5816
7	26.8334	-----	1.5881
7	26.8967	1.5863	-----
8	26.8664	1.5856	1.5863

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	11233.3	4000.0	28.00	0.	0.	0.	.00
2	1008.1	150.0	24.00	0.	0.	0.	.00
3	1847.6	150.0	24.00	0.	0.	0.	.00
4	2067.9	150.0	24.00	0.	0.	0.	.00
5	1137.2	150.0	24.00	0.	0.	0.	.00
6	-1149.9	4000.0	28.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	1141.32	11233.3	288.0	.0	6289.6
2	1151.39	1008.1	1233.5	.0	377.7
3	1165.00	1847.6	2272.9	.0	613.4
4	1200.00	2067.9	2545.7	.0	675.3
5	1260.33	1137.2	1393.4	.0	413.9
6	1291.66	-1149.9	175.0	.0	2137.1

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	1142.78	26.87	44177.	1.68	4.80	.350
2	1160.00	26.87	40819.	3.93	15.76	.249
3	1170.00	26.87	36343.	4.94	22.12	.223
4	1230.00	26.87	5503.	15.76	20.31	.776
5	1290.66	26.87	-8680.	1.03	2.92	.352
6	1292.65	.00	-13.	.03	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 1692.16 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 686.50 (psf)

Total Length of failure surface = 164.48 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 1.586

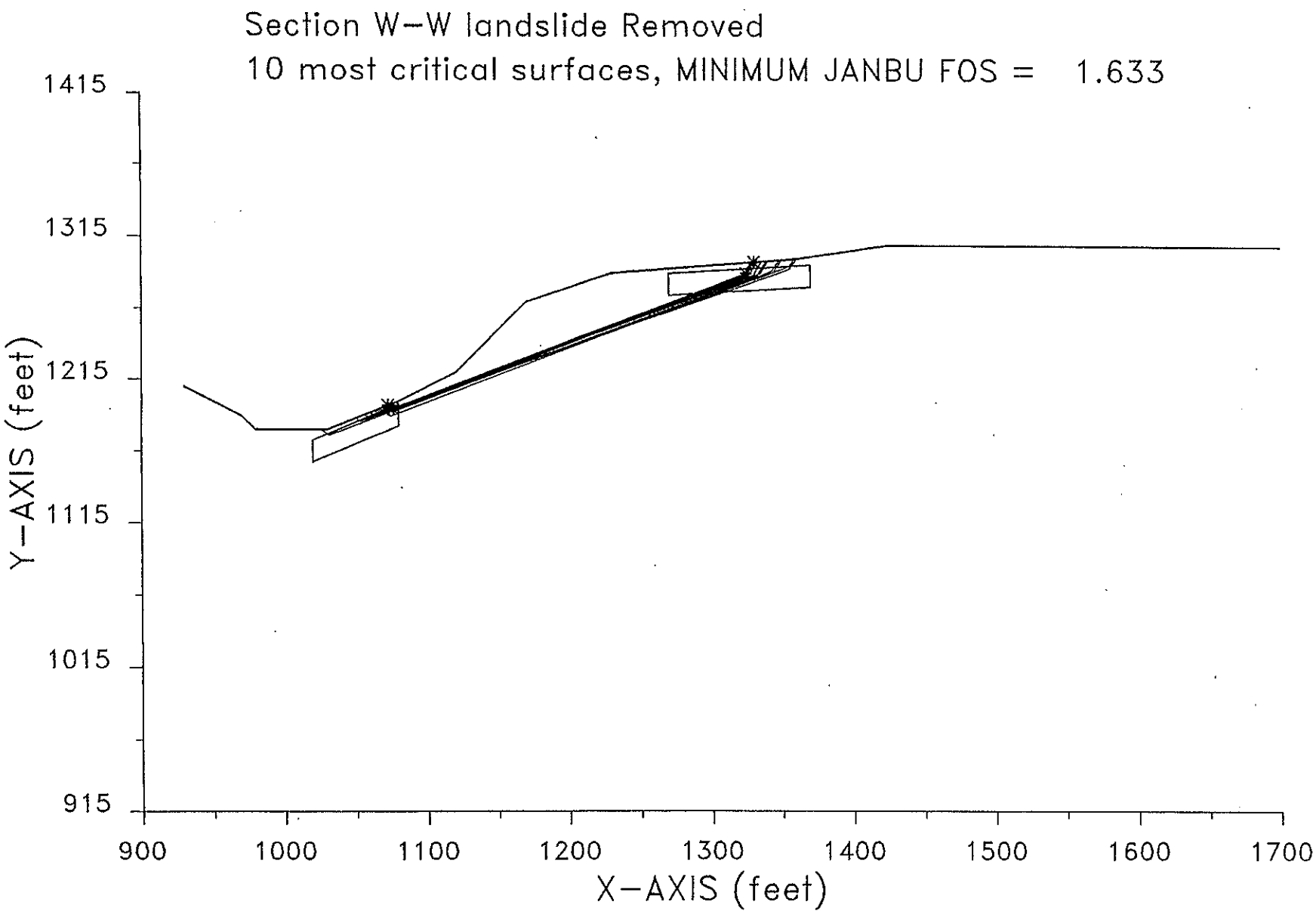
Total shear strength available along specified failure surface = 179.04E+03 lb

****
For the specified surface, the analysis computed the following:

Negative (tensile) Normal Effective Force = 0 slices
Negative (tensile) Interslice Force = 1 slices
Unreasonable Location of Interslice Force = 0 slices

In view of these errors, the computed FOS may be UNREASONABLE!
****

SECTW-WZ 10-08-** 21:24



XSTABL File: SECTW-WZ 10-08-** 21:24

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 95       *
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*  Ver. 5.105                95 Ä 1437  *
*****************************************
```

Problem Description : Section W-W landslide Removed

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	930.0	1210.0	970.0	1190.0	1
2	970.0	1190.0	980.0	1180.0	1
3	980.0	1180.0	1000.0	1180.0	1
4	1000.0	1180.0	1010.0	1180.0	1
5	1010.0	1180.0	1030.0	1180.0	1
6	1030.0	1180.0	1080.0	1200.0	1
7	1080.0	1200.0	1120.0	1220.0	1
8	1120.0	1220.0	1160.0	1260.0	1
9	1160.0	1260.0	1170.0	1270.0	1
10	1170.0	1270.0	1230.0	1290.0	1
11	1230.0	1290.0	1360.0	1300.0	1
12	1360.0	1300.0	1425.0	1310.0	1
13	1425.0	1310.0	1700.0	1310.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	15.00	4000.0	28.00
2	21.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

400 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

Length of line segments for active and passive portions of sliding block is 10.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1020.0	1165.0	1080.0	1190.0	15.0
2	1270.0	1282.0	1370.0	1288.0	15.0

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1072.48	1196.99
2	1076.39	1194.46
3	1325.07	1289.85
4	1330.17	1297.71

** Corrected JANBU FOS = 1.633 ** (Fo factor = 1.010)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1072.33	1196.93
2	1077.50	1193.57
3	1355.25	1294.56
4	1358.72	1299.90

** Corrected JANBU FOS = 1.641 ** (Fo factor = 1.008)

Failure surface No. 3 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1064.68	1193.87
2	1067.86	1191.81
3	1334.73	1289.92
4	1340.18	1298.31
5	1340.29	1298.48

** Corrected JANBU FOS = 1.666 ** (Fo factor = 1.010)

Failure surface No. 4 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1059.71	1191.88
2	1062.51	1190.06
3	1355.64	1292.80
4	1360.35	1300.05

** Corrected JANBU FOS = 1.669 ** (Fo factor = 1.008)

Failure surface No. 5 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1050.00	1188.00
2	1053.27	1185.87
3	1344.31	1290.72
4	1349.76	1299.11
5	1349.83	1299.22

** Corrected JANBU FOS = 1.675 ** (Fo factor = 1.009)

Failure surface No. 6 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1063.21	1193.28
2	1066.87	1190.90
3	1329.76	1288.63
4	1335.21	1297.01
5	1335.95	1298.15

** Corrected JANBU FOS = 1.685 ** (Fo factor = 1.011)

Failure surface No. 7 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1066.77	1194.71
2	1074.76	1189.52
3	1343.28	1291.49
4	1348.21	1299.09

** Corrected JANBU FOS = 1.689 ** (Fo factor = 1.012)

Failure surface No. 8 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1056.00	1190.40
2	1059.63	1188.05
3	1321.76	1287.25
4	1327.21	1295.64
5	1328.47	1297.57

** Corrected JANBU FOS = 1.690 ** (Fo factor = 1.012)

Failure surface No. 9 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1025.90	1180.00
2	1031.74	1176.21
3	1326.57	1288.36
4	1332.01	1296.74
5	1332.77	1297.91

** Corrected JANBU FOS = 1.713 ** (Fo factor = 1.010)

Failure surface No.10 specified by 5 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1069.87	1195.95
2	1075.38	1192.37
3	1332.45	1288.33
4	1337.90	1296.72
5	1338.98	1298.38

** Corrected JANBU FOS = 1.716 ** (Fo factor = 1.012)

The following is a summary of the TEN most critical surfaces

Problem Description : Section W-W landslide Removed

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.633	1.010	1072.48	1330.17	3.907E+05
2.	1.641	1.008	1072.33	1358.72	4.570E+05
3.	1.666	1.010	1064.68	1340.29	4.171E+05
4.	1.669	1.008	1059.71	1360.35	4.547E+05

5.	1.675	1.009	1050.00	1349.83	4.514E+05
6.	1.685	1.011	1063.21	1335.95	4.215E+05
7.	1.689	1.012	1066.77	1348.21	4.927E+05
8.	1.690	1.012	1056.00	1328.47	4.118E+05
9.	1.713	1.010	1025.90	1332.77	4.506E+05
10.	1.716	1.012	1069.87	1338.98	4.546E+05

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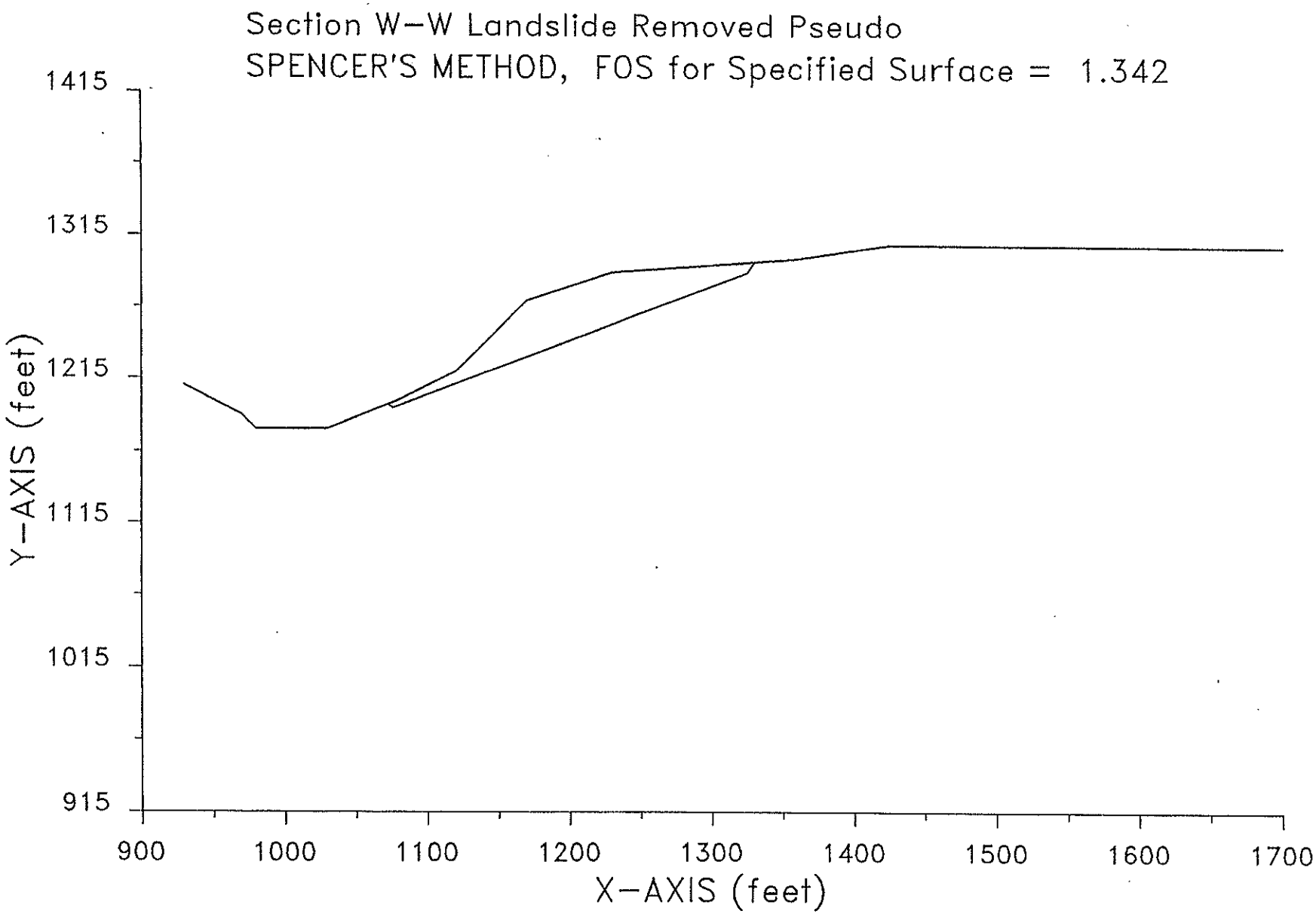
SEcIW-ZP 10-08-** 21:28



XSTABL File: SECTW-ZP 10-08-** 21:28

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*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*        Moscow, ID 83843, U.S.A.       *
*                                       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section W-W Landslide Removed Pseudo

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	930.0	1210.0	970.0	1190.0	1
2	970.0	1190.0	980.0	1180.0	1
3	980.0	1180.0	1000.0	1180.0	1
4	1000.0	1180.0	1010.0	1180.0	1
5	1010.0	1180.0	1030.0	1180.0	1
6	1030.0	1180.0	1080.0	1200.0	1
7	1080.0	1200.0	1120.0	1220.0	1
8	1120.0	1220.0	1160.0	1260.0	1
9	1160.0	1260.0	1170.0	1270.0	1
10	1170.0	1270.0	1230.0	1290.0	1
11	1230.0	1290.0	1360.0	1300.0	1
12	1360.0	1300.0	1425.0	1310.0	1
13	1425.0	1310.0	1700.0	1310.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	15.00	4000.0	28.00
2	21.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 4 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1072.48	1196.99
2	1076.39	1194.46
3	1325.07	1289.85
4	1330.17	1297.71

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1074.44	1195.73	2.05	3.91	-32.93	21.80	961.
2	1078.20	1195.15	4.13	3.61	20.99	21.80	1787.
3	1100.00	1203.52	6.48	40.00	20.99	26.57	31121.
4	1140.00	1218.86	21.14	40.00	20.99	45.00	101473.
5	1165.00	1228.45	36.55	10.00	20.99	45.00	43861.
6	1200.00	1241.88	38.13	60.00	20.99	18.43	274500.
7	1277.53	1271.62	22.04	95.07	20.99	4.40	251444.
8	1327.62	1293.78	3.73	5.10	57.01	4.40	2284.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	31.6781	1.4831	1.2332
3	25.2471	-----	1.4831
3	28.4626	1.3727	-----
4	26.6687	1.3264	1.3727
5	27.6596	-----	1.3264
5	27.1642	1.3383	-----
6	27.3703	1.3434	1.3383
7	27.2537	-----	1.3434
7	27.3120	1.3420	-----
8	27.2863	1.3414	1.3420
9	27.2954	1.3416	1.3414

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	18060.1	4000.0	28.00	0.	0.	0.	.00
2	408.6	150.0	24.00	0.	0.	0.	.00
3	634.9	150.0	24.00	0.	0.	0.	.00
4	2041.0	150.0	24.00	0.	0.	0.	.00
5	3519.4	150.0	24.00	0.	0.	0.	.00
6	3670.5	150.0	24.00	0.	0.	0.	.00
7	2127.3	150.0	24.00	0.	0.	0.	.00
8	-1199.5	4000.0	28.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	1074.44	18060.1	245.8	.0	10139.5
2	1078.20	408.6	495.1	.0	247.4
3	1100.00	634.9	778.0	.0	322.5
4	1140.00	2041.0	2536.8	.0	789.2

5	1165.00	3519.4	4386.1	.0	1279.8
6	1200.00	3670.5	4575.0	.0	1329.9
7	1277.53	2127.3	2644.8	.0	817.8
8	1327.62	-1199.5	447.8	.0	2506.2

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	1076.39	27.30	95909.	2.27	4.10	.555
2	1080.00	27.30	95975.	2.74	4.16	.660
3	1120.00	27.30	94277.	7.97	8.81	.904
4	1160.00	27.30	77431.	13.24	33.47	.396
5	1170.00	27.30	69238.	14.26	39.63	.360
6	1230.00	27.30	17638.	25.50	36.62	.696
7	1325.07	27.30	-24611.	2.59	7.46	.347
8	1330.17	.00	-9.	-.01	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 2422.84 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 1076.20 (psf)

Total Length of failure surface = 280.37 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 1.342

Total shear strength available along specified failure surface = 404.79E+03 lb

****

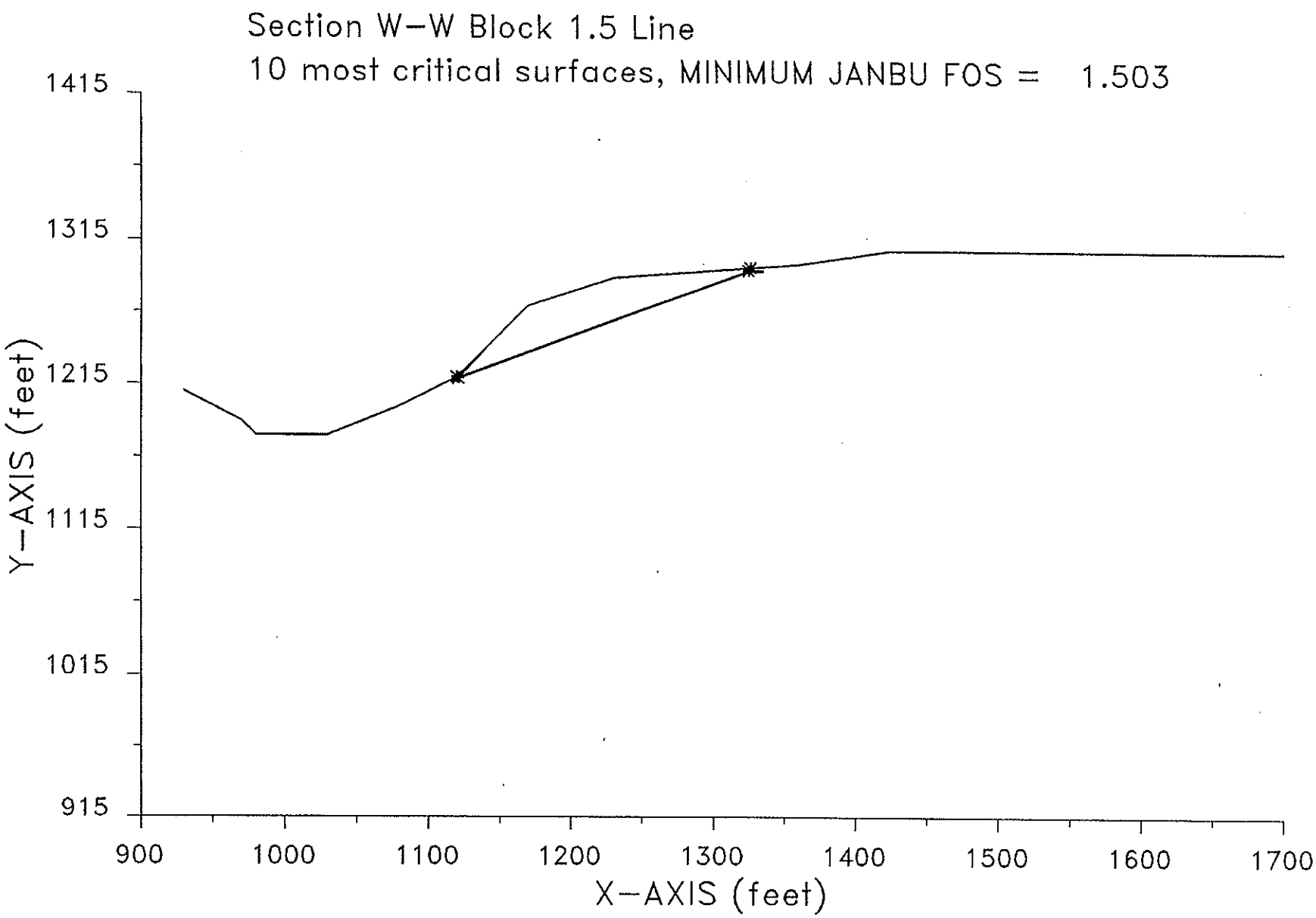
For the specified surface, the analysis computed the following:

Negative (tensile) Normal Effective Force = 0 slices
Negative (tensile) Interslice Force = 1 slices
Unreasonable Location of Interslice Force = 0 slices

In view of these errors, the computed FOS may be UNREASONABLE!

****

SECTW-W2 10-08-** 19:18



XSTABL File: SECTW-W2 10-09-** 9:51

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section W-W Block 1.5 Line

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	930.0	1210.0	970.0	1190.0	1
2	970.0	1190.0	980.0	1180.0	1
3	980.0	1180.0	1000.0	1180.0	1
4	1000.0	1180.0	1010.0	1180.0	1
5	1010.0	1180.0	1030.0	1180.0	1
6	1030.0	1180.0	1080.0	1200.0	1
7	1080.0	1200.0	1120.0	1220.0	1
8	1120.0	1220.0	1160.0	1260.0	1
9	1160.0	1260.0	1170.0	1270.0	1
10	1170.0	1270.0	1230.0	1290.0	1
11	1230.0	1290.0	1360.0	1300.0	1
12	1360.0	1300.0	1425.0	1310.0	1
13	1425.0	1310.0	1700.0	1310.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	15.00	4000.0	28.00
2	21.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating sliding BLOCK surfaces, has been specified.

The active and passive portions of the sliding surfaces are generated according to the Rankine theory.

400 trial surfaces will be generated and analyzed.

2 boxes specified for generation of central block base

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

Length of line segments for active and passive portions of sliding block is 21.0 ft

Box no.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Width (ft)
1	1120.0	1218.0	1140.0	1239.0	.0
2	1324.0	1295.0	1335.0	1295.0	1.0

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1120.11	1220.11
2	1121.28	1219.34
3	1324.68	1295.26
4	1326.06	1297.39

** Corrected JANBU FOS = 1.503 ** (Fo factor = 1.003)

Failure surface No. 2 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1120.40	1220.40
2	1121.56	1219.64
3	1325.61	1295.38
4	1326.96	1297.46

** Corrected JANBU FOS = 1.509 ** (Fo factor = 1.003)

Failure surface No. 3 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1120.43	1220.43
2	1121.59	1219.67
3	1326.32	1295.47
4	1327.64	1297.51

** Corrected JANBU FOS = 1.511 ** (Fo factor = 1.003)

Failure surface No. 4 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1119.06	1219.53
2	1120.54	1218.57
3	1324.62	1295.02
4	1326.17	1297.40

** Corrected JANBU FOS = 1.515 ** (Fo factor = 1.004)

Failure surface No. 5 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1120.00	1220.00
2	1121.18	1219.24
3	1326.81	1295.30
4	1328.27	1297.56

** Corrected JANBU FOS = 1.516 ** (Fo factor = 1.004)

Failure surface No. 6 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1118.50	1219.25
2	1120.16	1218.17
3	1327.71	1295.45
4	1329.12	1297.62

** Corrected JANBU FOS = 1.520 ** (Fo factor = 1.004)

Failure surface No. 7 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1121.05	1221.05
2	1122.20	1220.31
3	1325.63	1295.36
4	1327.00	1297.46

** Corrected JANBU FOS = 1.520 ** (Fo factor = 1.003)

Failure surface No. 8 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1120.49	1220.49
2	1121.65	1219.73
3	1325.47	1295.11
4	1327.00	1297.46

** Corrected JANBU FOS = 1.523 ** (Fo factor = 1.004)

Failure surface No. 9 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1119.25	1219.63
2	1120.67	1218.71
3	1324.10	1294.69
4	1325.84	1297.37

** Corrected JANBU FOS = 1.526 ** (Fo factor = 1.004)

Failure surface No.10 specified by 4 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1120.99	1220.99
2	1122.14	1220.25
3	1325.21	1295.06
4	1326.76	1297.44

** Corrected JANBU FOS = 1.531 ** (Fo factor = 1.004)

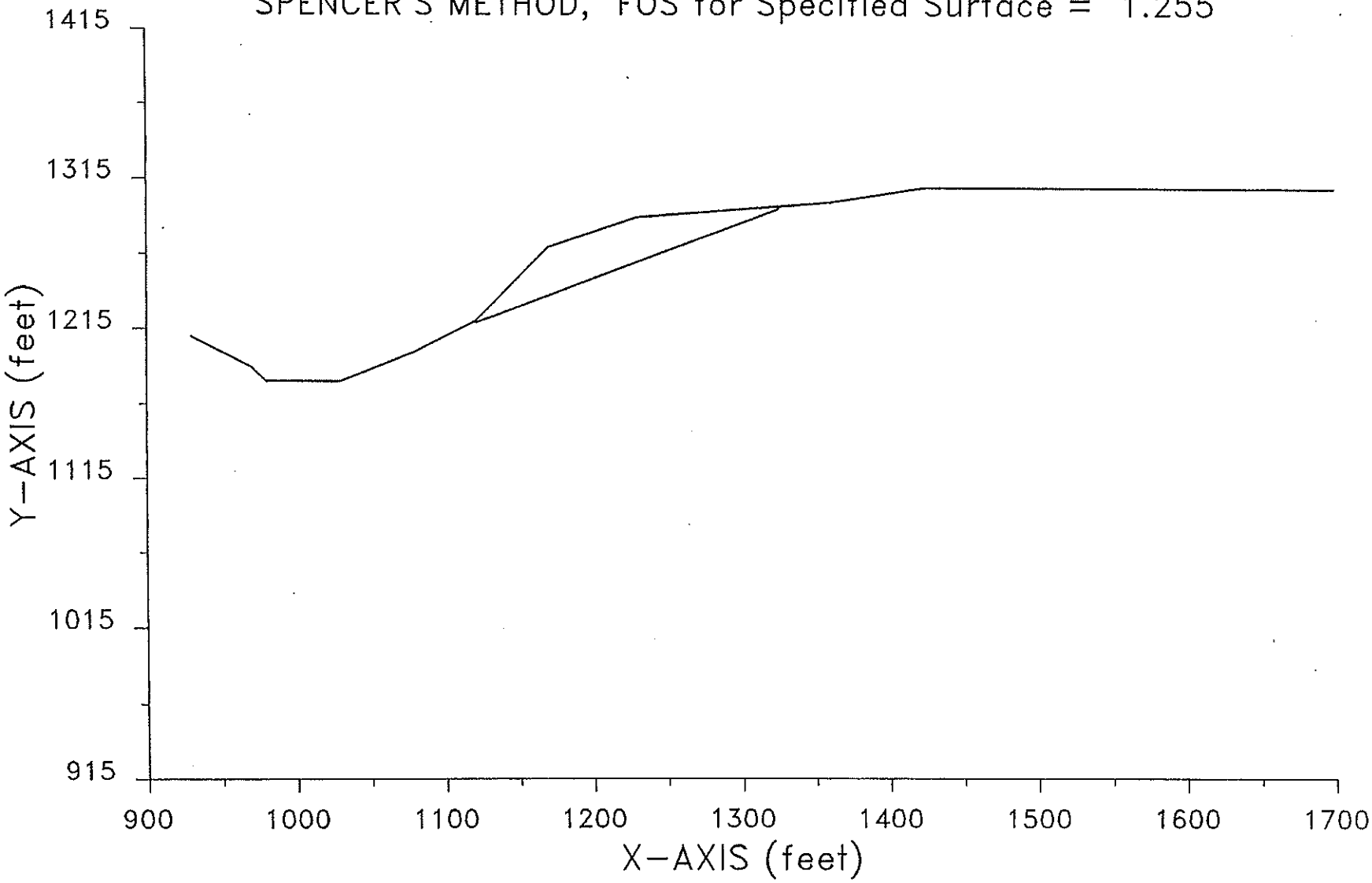
The following is a summary of the TEN most critical surfaces

Problem Description : Section W-W Block 1.5 Line

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	1.503	1.003	1120.11	1326.06	2.608E+05
2.	1.509	1.003	1120.40	1326.96	2.610E+05
3.	1.511	1.003	1120.43	1327.64	2.618E+05
4.	1.515	1.004	1119.06	1326.17	2.676E+05
5.	1.516	1.004	1120.00	1328.27	2.662E+05
6.	1.520	1.004	1118.50	1329.12	2.742E+05
7.	1.520	1.003	1121.05	1327.00	2.587E+05
8.	1.523	1.004	1120.49	1327.00	2.628E+05
9.	1.526	1.004	1119.25	1325.84	2.684E+05
10.	1.531	1.004	1120.99	1326.76	2.607E+05

* * * END OF FILE * * *

Section W-W 1.5 line Pseudostatic
SPENCER'S METHOD, FOS for Specified Surface = 1.255



XSTABL File: SECTW2P 10-09-** 9:52

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*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section W-W 1.5 line Pseudostatic

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	930.0	1210.0	970.0	1190.0	1
2	970.0	1190.0	980.0	1180.0	1
3	980.0	1180.0	1000.0	1180.0	1
4	1000.0	1180.0	1010.0	1180.0	1
5	1010.0	1180.0	1030.0	1180.0	1
6	1030.0	1180.0	1080.0	1200.0	1
7	1080.0	1200.0	1120.0	1220.0	1
8	1120.0	1220.0	1160.0	1260.0	1
9	1160.0	1260.0	1170.0	1270.0	1
10	1170.0	1270.0	1230.0	1290.0	1
11	1230.0	1290.0	1360.0	1300.0	1
12	1360.0	1300.0	1425.0	1310.0	1
13	1425.0	1310.0	1700.0	1310.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	15.00	4000.0	28.00
2	21.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 4 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1120.11	1220.11
2	1121.28	1219.34
3	1324.68	1295.26
4	1326.06	1297.39

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1120.70	1219.72	.97	1.17	-33.35	45.00	136.
2	1140.64	1226.57	14.07	38.72	20.47	45.00	65393.
3	1165.00	1235.66	29.34	10.00	20.47	45.00	35210.
4	1200.00	1248.72	31.28	60.00	20.47	18.43	225198.
5	1277.34	1277.59	16.05	94.68	20.47	4.40	182371.
6	1325.37	1296.32	1.01	1.38	57.05	4.40	168.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	52.2983	.9293	1.0890
3	1.9297	-----	.9293
3	27.1140	1.1833	-----
4	33.4018	-----	1.1833
4	30.2579	1.2724	-----
5	29.1515	-----	1.2724
5	29.7047	1.2538	-----
6	29.7334	1.2547	1.2538

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	39007.8	4000.0	28.00	0.	0.	0.	.00
2	1371.7	150.0	24.00	0.	0.	0.	.00
3	2837.3	150.0	24.00	0.	0.	0.	.00
4	3023.2	150.0	24.00	0.	0.	0.	.00
5	1561.6	150.0	24.00	0.	0.	0.	.00
6	-1302.5	4000.0	28.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	1120.70	39007.8	116.4	.0	19718.0
2	1140.64	1371.7	1688.9	.0	606.3
3	1165.00	2837.3	3521.0	.0	1126.3
4	1200.00	3023.2	3753.3	.0	1192.3
5	1277.34	1561.6	1926.2	.0	673.7
6	1325.37	-1302.5	121.4	.0	2636.0

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	1121.28	29.73	61136.	.72	1.94	.371
2	1160.00	29.73	54044.	7.53	26.21	.287
3	1170.00	29.73	48737.	8.61	32.48	.265
4	1230.00	29.73	14249.	12.97	30.08	.431
5	1324.68	29.73	-7355.	.67	2.02	.330
6	1326.06	.00	0.	-.14	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 2215.56 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 976.39 (psf)

Total Length of failure surface = 221.04 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 1.255

Total shear strength available along specified failure surface = 270.80E+03 lb

****

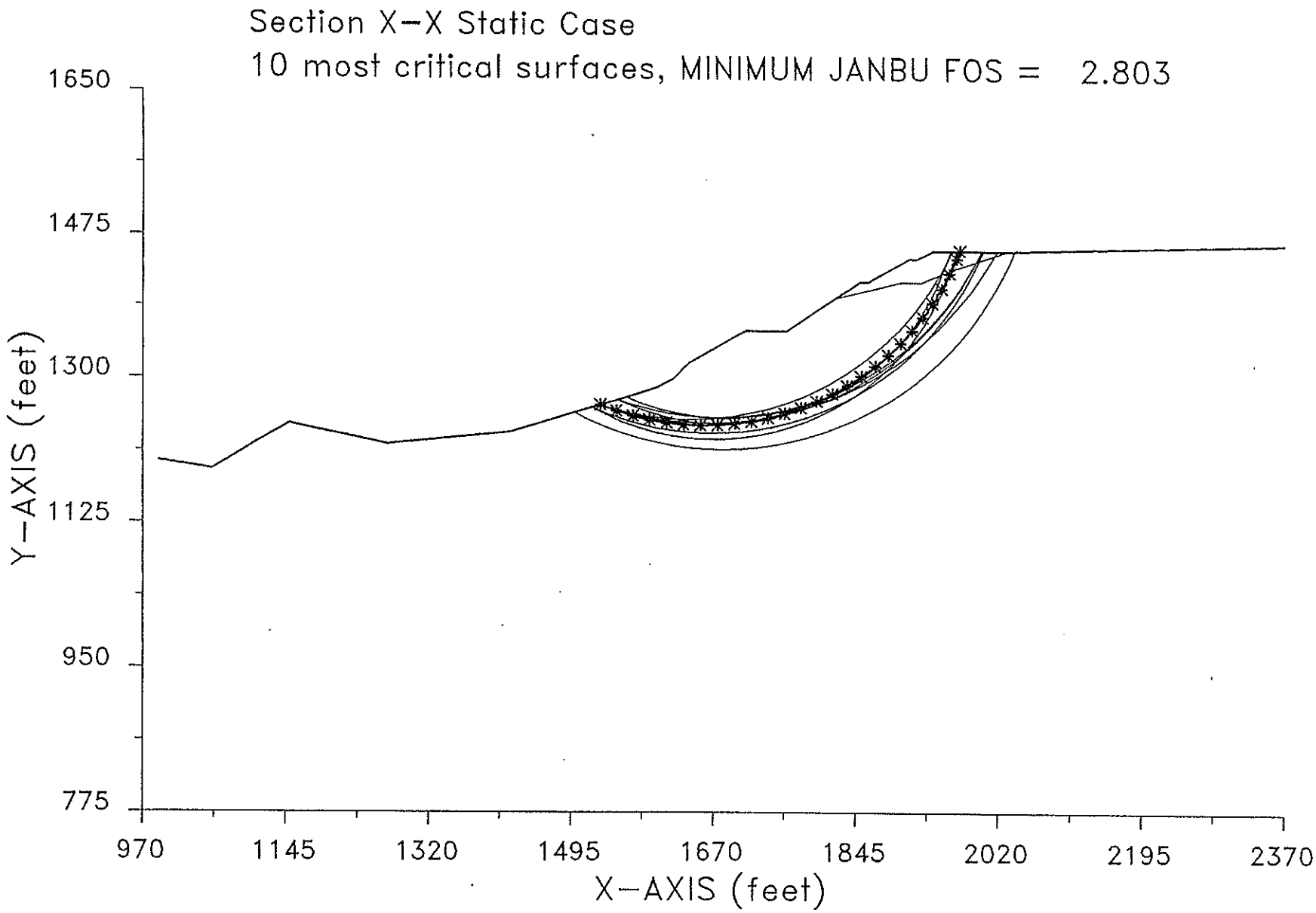
For the specified surface, the analysis computed the following:

Negative (tensile) Normal Effective Force = 0 slices
Negative (tensile) Interslice Force = 1 slices
Unreasonable Location of Interslice Force = 0 slices

In view of these errors, the computed FOS may be UNREASONABLE!

****

SECBX-X1 10-08-** 18:50



XSTABL File: SECBX-X1 10-08-** 18:50

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section X-X Static Case

SEGMENT BOUNDARY COORDINATES
---

18 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	990.0	1200.0	1055.0	1190.0	1
2	1055.0	1190.0	1150.0	1245.0	1
3	1150.0	1245.0	1270.0	1220.0	1
4	1270.0	1220.0	1420.0	1235.0	1
5	1420.0	1235.0	1570.0	1280.0	1
6	1570.0	1280.0	1600.0	1290.0	1
7	1600.0	1290.0	1620.0	1300.0	1
8	1620.0	1300.0	1640.0	1320.0	1
9	1640.0	1320.0	1710.0	1360.0	1
10	1710.0	1360.0	1760.0	1360.0	1
11	1760.0	1360.0	1820.0	1400.0	1
12	1820.0	1400.0	1850.0	1420.0	2
13	1850.0	1420.0	1860.0	1420.0	2
14	1860.0	1420.0	1910.0	1450.0	2
15	1910.0	1450.0	1920.0	1450.0	2
16	1920.0	1450.0	1940.0	1460.0	2
17	1940.0	1460.0	2030.0	1460.0	2
18	2030.0	1460.0	2370.0	1470.0	1

4 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1820.0	1400.0	1900.0	1420.0	1
2	1900.0	1420.0	1925.0	1420.0	1
3	1925.0	1420.0	1960.0	1435.0	1
4	1960.0	1435.0	2030.0	1460.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-56.00	4000.0	28.00
2	-54.00	150.0	24.00
3	90.00	4000.0	28.00

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

600 trial surfaces will be generated and analyzed.

30 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 1500.0 ft
and x = 1700.0 ft

Each surface terminates between x = 1960.0 ft
and x = 2160.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

21.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice. This warning is usually reported for cases where slices have low self weight and a relatively high "c" shear strength parameter. In such cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED JANBU METHOD * * * * *

The 10 most critical of all the failure surfaces examined are displayed below - the most critical first

Failure surface No. 1 specified by 27 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1531.58	1268.47
2	1551.27	1261.17
3	1571.37	1255.11
4	1591.82	1250.31
5	1612.52	1246.80
6	1633.41	1244.59
7	1654.39	1243.69
8	1675.38	1244.10
9	1696.31	1245.82
10	1717.09	1248.84
11	1737.65	1253.15

12	1757.89	1258.74
13	1777.74	1265.58
14	1797.13	1273.65
15	1815.98	1282.91
16	1834.21	1293.33
17	1851.76	1304.87
18	1868.55	1317.48
19	1884.52	1331.11
20	1899.61	1345.72
21	1913.76	1361.23
22	1926.91	1377.61
23	1939.02	1394.77
24	1950.03	1412.65
25	1959.90	1431.18
26	1968.60	1450.30
27	1972.30	1460.00

** Corrected JANBU FOS = 2.803 ** (Fo factor = 1.074)

Failure surface No. 2 specified by 28 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1521.05	1265.32
2	1539.76	1255.77
3	1559.07	1247.53
4	1578.90	1240.62
5	1599.16	1235.09
6	1619.75	1230.95
7	1640.57	1228.23
8	1661.53	1226.94
9	1682.53	1227.09
10	1703.47	1228.66
11	1724.26	1231.67
12	1744.79	1236.09
13	1764.97	1241.90
14	1784.70	1249.08
15	1803.90	1257.59
16	1822.47	1267.39
17	1840.33	1278.44
18	1857.40	1290.68
19	1873.58	1304.06
20	1888.81	1318.52
21	1903.03	1333.98
22	1916.15	1350.37
23	1928.12	1367.63
24	1938.88	1385.66
25	1948.38	1404.39
26	1956.59	1423.72
27	1963.45	1443.57
28	1967.90	1460.00

** Corrected JANBU FOS = 2.804 ** (Fo factor = 1.081)

Failure surface No. 3 specified by 29 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1521.05	1265.32
2	1540.48	1257.35
3	1560.34	1250.53
4	1580.57	1244.88
5	1601.09	1240.42
6	1621.84	1237.16
7	1642.74	1235.12
8	1663.72	1234.30
9	1684.72	1234.71
10	1705.65	1236.34
11	1726.46	1239.19
12	1747.06	1243.25
13	1767.40	1248.50
14	1787.39	1254.93
15	1806.97	1262.52
16	1826.07	1271.23
17	1844.64	1281.05
18	1862.60	1291.93
19	1879.90	1303.84
20	1896.47	1316.74
21	1912.26	1330.58
22	1927.22	1345.32
23	1941.29	1360.91
24	1954.43	1377.29
25	1966.59	1394.41
26	1977.73	1412.22
27	1987.81	1430.64
28	1996.80	1449.61
29	2001.00	1460.00

** Corrected JANBU FOS = 2.805 ** (Fo factor = 1.075)

Failure surface No. 4 specified by 28 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1531.58	1268.47
2	1551.42	1261.58
3	1571.61	1255.82
4	1592.10	1251.22
5	1612.82	1247.79
6	1633.70	1245.54
7	1654.67	1244.47
8	1675.67	1244.60
9	1696.63	1245.92
10	1717.48	1248.42
11	1738.15	1252.10
12	1758.59	1256.95
13	1778.71	1262.95
14	1798.46	1270.08

15	1817.78	1278.33
16	1836.60	1287.65
17	1854.85	1298.02
18	1872.49	1309.42
19	1889.46	1321.79
20	1905.70	1335.11
21	1921.15	1349.33
22	1935.78	1364.40
23	1949.52	1380.28
24	1962.34	1396.91
25	1974.20	1414.24
26	1985.06	1432.21
27	1994.88	1450.77
28	1999.11	1460.00

** Corrected JANBU FOS = 2.821 ** (Fo factor = 1.071)

Failure surface No. 5 specified by 26 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1531.58	1268.47
2	1551.71	1262.50
3	1572.16	1257.73
4	1592.86	1254.20
5	1613.74	1251.91
6	1634.71	1250.88
7	1655.71	1251.10
8	1676.66	1252.57
9	1697.48	1255.29
10	1718.11	1259.25
11	1738.46	1264.44
12	1758.46	1270.84
13	1778.04	1278.41
14	1797.14	1287.15
15	1815.68	1297.01
16	1833.60	1307.96
17	1850.83	1319.96
18	1867.32	1332.97
19	1882.99	1346.95
20	1897.81	1361.83
21	1911.70	1377.57
22	1924.64	1394.12
23	1936.56	1411.41
24	1947.42	1429.38
25	1957.19	1447.97
26	1962.63	1460.00

** Corrected JANBU FOS = 2.830 ** (Fo factor = 1.070)

Failure surface No. 6 specified by 26 coordinate points

Point No.	x-surf (ft)	y-surf (ft)

1	1552.63	1274.79
2	1571.85	1266.34
3	1591.64	1259.29
4	1611.88	1253.68
5	1632.47	1249.55
6	1653.30	1246.91
7	1674.27	1245.79
8	1695.27	1246.17
9	1716.18	1248.06
10	1736.90	1251.46
11	1757.33	1256.34
12	1777.35	1262.68
13	1796.86	1270.45
14	1815.76	1279.60
15	1833.95	1290.09
16	1851.34	1301.86
17	1867.84	1314.85
18	1883.36	1329.00
19	1897.82	1344.23
20	1911.14	1360.46
21	1923.26	1377.61
22	1934.12	1395.59
23	1943.65	1414.30
24	1951.80	1433.65
25	1958.55	1453.54
26	1960.23	1460.00

** Corrected JANBU FOS = 2.838 ** (Fo factor = 1.079)

Failure surface No. 7 specified by 25 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1563.16	1277.95
2	1582.67	1270.19
3	1602.68	1263.81
4	1623.08	1258.84
5	1643.78	1255.31
6	1664.68	1253.24
7	1685.67	1252.63
8	1706.66	1253.48
9	1727.53	1255.81
10	1748.19	1259.58
11	1768.53	1264.78
12	1788.46	1271.40
13	1807.88	1279.39
14	1826.70	1288.72
15	1844.81	1299.34
16	1862.14	1311.19
17	1878.61	1324.23
18	1894.12	1338.39
19	1908.60	1353.60
20	1921.99	1369.78
21	1934.21	1386.85

22	1945.21	1404.74
23	1954.93	1423.36
24	1963.34	1442.60
25	1969.52	1460.00

** Corrected JANBU FOS = 2.850 ** (Fo factor = 1.076)

Failure surface No. 8 specified by 32 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1500.00	1259.00
2	1518.84	1249.73
3	1538.16	1241.49
4	1557.90	1234.32
5	1577.99	1228.23
6	1598.39	1223.24
7	1619.03	1219.37
8	1639.85	1216.63
9	1660.79	1215.02
10	1681.79	1214.55
11	1702.78	1215.23
12	1723.70	1217.04
13	1744.49	1219.99
14	1765.09	1224.07
15	1785.44	1229.26
16	1805.48	1235.54
17	1825.14	1242.91
18	1844.38	1251.34
19	1863.13	1260.80
20	1881.33	1271.26
21	1898.94	1282.70
22	1915.91	1295.08
23	1932.17	1308.36
24	1947.69	1322.51
25	1962.42	1337.48
26	1976.31	1353.23
27	1989.33	1369.71
28	2001.43	1386.87
29	2012.58	1404.67
30	2022.74	1423.04
31	2031.89	1441.94
32	2039.57	1460.28

** Corrected JANBU FOS = 2.853 ** (Fo factor = 1.077)

Failure surface No. 9 specified by 27 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1552.63	1274.79
2	1572.56	1268.17
3	1592.85	1262.74

4	1613.42	1258.51
5	1634.20	1255.50
6	1655.12	1253.72
7	1676.12	1253.17
8	1697.11	1253.85
9	1718.02	1255.77
10	1738.78	1258.91
11	1759.32	1263.28
12	1779.57	1268.84
13	1799.46	1275.58
14	1818.92	1283.48
15	1837.88	1292.51
16	1856.27	1302.64
17	1874.04	1313.84
18	1891.12	1326.06
19	1907.45	1339.26
20	1922.97	1353.41
21	1937.64	1368.44
22	1951.39	1384.30
23	1964.19	1400.95
24	1975.99	1418.32
25	1986.75	1436.36
26	1996.42	1455.00
27	1998.65	1460.00

** Corrected JANBU FOS = 2.855 ** (Fo factor = 1.071)

Failure surface No.10 specified by 29 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	1531.58	1268.47
2	1551.60	1262.12
3	1571.92	1256.82
4	1592.49	1252.60
5	1613.25	1249.45
6	1634.15	1247.39
7	1655.13	1246.43
8	1676.13	1246.57
9	1697.09	1247.80
10	1717.96	1250.13
11	1738.68	1253.54
12	1759.19	1258.04
13	1779.44	1263.60
14	1799.38	1270.21
15	1818.94	1277.85
16	1838.07	1286.51
17	1856.72	1296.15
18	1874.85	1306.75
19	1892.40	1318.29
20	1909.32	1330.73
21	1925.56	1344.04
22	1941.09	1358.18
23	1955.86	1373.11
24	1969.82	1388.79

25	1982.95	1405.18
26	1995.21	1422.23
27	2006.55	1439.91
28	2016.96	1458.15
29	2017.89	1460.00

** Corrected JANBU FOS = 2.860 ** (Fo factor = 1.068)

The following is a summary of the TEN most critical surfaces

Problem Description : Section X-X Static Case

	Modified JANBU FOS	Correction Factor	Initial x-coord (ft)	Terminal x-coord (ft)	Available Strength (lb)
1.	2.803	1.074	1531.58	1972.30	4.281E+06
2.	2.804	1.081	1521.05	1967.90	4.874E+06
3.	2.805	1.075	1521.05	2001.00	5.040E+06
4.	2.821	1.071	1531.58	1999.11	4.627E+06
5.	2.830	1.070	1531.58	1962.63	3.846E+06
6.	2.838	1.079	1552.63	1960.23	4.111E+06
7.	2.850	1.076	1563.16	1969.52	4.005E+06
8.	2.853	1.077	1500.00	2039.57	6.394E+06
9.	2.855	1.071	1552.63	1998.65	4.338E+06
10.	2.860	1.068	1531.58	2017.89	4.811E+06

* * * END OF FILE * * *

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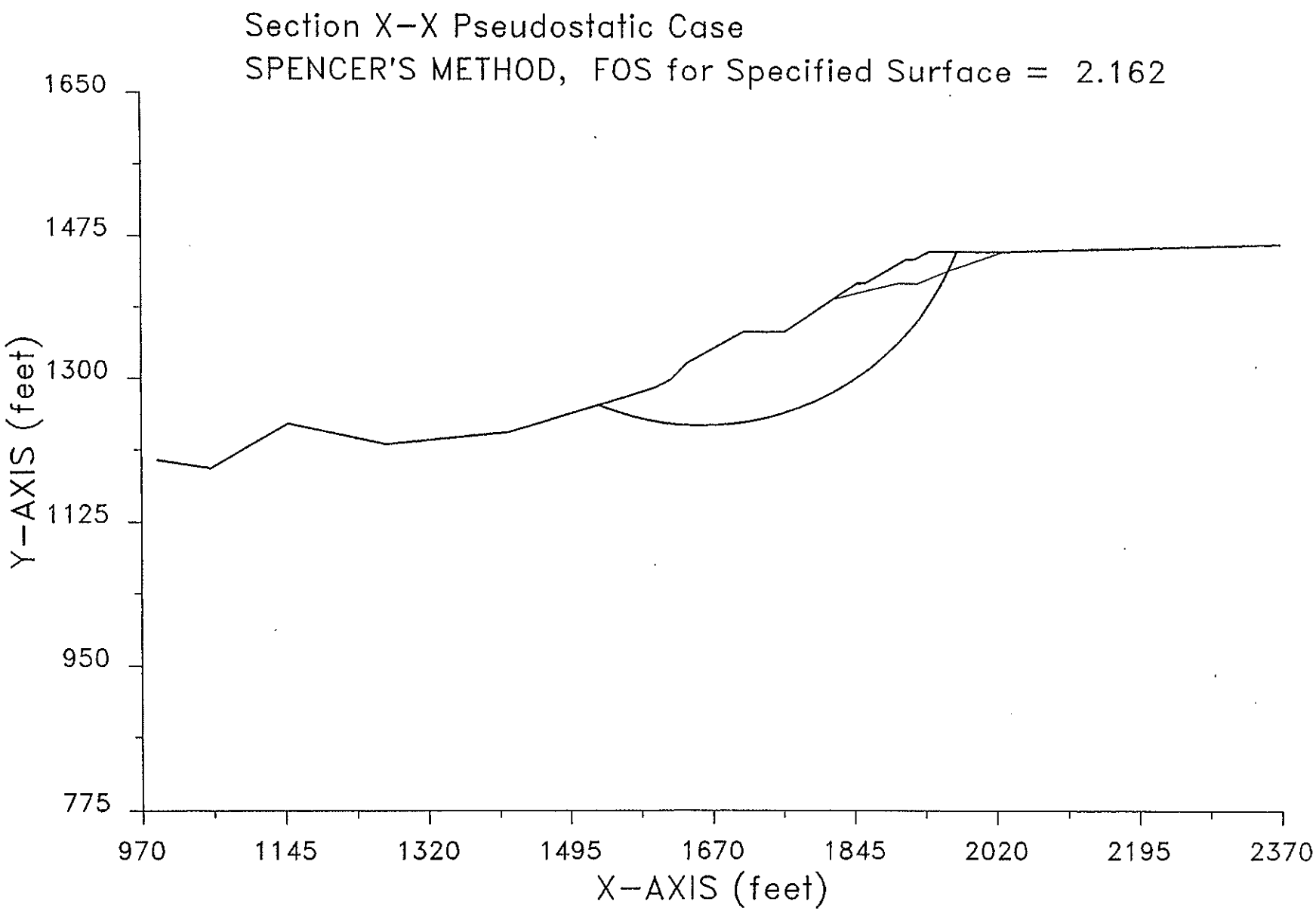

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Problem Description : Section X-X Pseudostatic Case

SEGMENT BOUNDARY COORDINATES
---

18 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	990.0	1200.0	1055.0	1190.0	1
2	1055.0	1190.0	1150.0	1245.0	1
3	1150.0	1245.0	1270.0	1220.0	1
4	1270.0	1220.0	1420.0	1235.0	1
5	1420.0	1235.0	1570.0	1280.0	1
6	1570.0	1280.0	1600.0	1290.0	1
7	1600.0	1290.0	1620.0	1300.0	1
8	1620.0	1300.0	1640.0	1320.0	1
9	1640.0	1320.0	1710.0	1360.0	1
10	1710.0	1360.0	1760.0	1360.0	1
11	1760.0	1360.0	1820.0	1400.0	1
12	1820.0	1400.0	1850.0	1420.0	2
13	1850.0	1420.0	1860.0	1420.0	2
14	1860.0	1420.0	1910.0	1450.0	2
15	1910.0	1450.0	1920.0	1450.0	2
16	1920.0	1450.0	1940.0	1460.0	2
17	1940.0	1460.0	2030.0	1460.0	2
18	2030.0	1460.0	2370.0	1470.0	1

4 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	1820.0	1400.0	1900.0	1420.0	1
2	1900.0	1420.0	1925.0	1420.0	1
3	1925.0	1420.0	1960.0	1435.0	1
4	1960.0	1435.0	2030.0	1460.0	1

ISOTROPIC Soil Parameters
---

2 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	150.0	24.00	.000	.0	0
2	120.0	130.0	120.0	33.00	.000	.0	0

ANISOTROPIC STRENGTH PARAMETERS
specified for 1Soil Unit(s)

Soil Unit 1 is ANISOTROPIC

Number of direction ranges specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	c-value (psf)	í-value (degrees)
1	-56.00	4000.0	28.00
2	-54.00	150.0	24.00
3	90.00	4000.0	28.00

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 27 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	1531.58	1268.47
2	1551.27	1261.17
3	1571.37	1255.11
4	1591.82	1250.31
5	1612.52	1246.80

6	1633.41	1244.59
7	1654.39	1243.69
8	1675.38	1244.10
9	1696.31	1245.82
10	1717.09	1248.84
11	1737.65	1253.15
12	1757.89	1258.74
13	1777.74	1265.58
14	1797.13	1273.65
15	1815.98	1282.91
16	1834.21	1293.33
17	1851.76	1304.87
18	1868.55	1317.48
19	1884.52	1331.11
20	1899.61	1345.72
21	1913.76	1361.23
22	1926.91	1377.61
23	1939.02	1394.77
24	1950.03	1412.65
25	1959.90	1431.18
26	1968.60	1450.30
27	1972.30	1460.00

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	1541.43	1264.82	6.61	19.69	-20.35	16.70	15607.
2	1560.64	1258.35	18.84	18.73	-16.78	16.70	42354.
3	1570.69	1255.32	24.91	1.37	-16.78	18.43	4095.
4	1581.59	1252.71	31.16	20.45	-13.21	18.43	76454.
5	1595.91	1249.62	39.02	8.18	-9.62	18.43	38302.
6	1606.26	1247.86	45.27	12.52	-9.62	26.57	68011.
7	1616.26	1246.40	51.73	7.48	-6.04	26.57	46429.
8	1626.71	1245.30	61.41	13.41	-6.04	45.00	98814.
9	1636.71	1244.45	72.26	6.59	-2.46	45.00	57140.
10	1647.20	1244.00	80.11	14.39	-2.46	29.74	138339.
11	1664.89	1243.90	90.32	20.99	1.12	29.74	227510.
12	1685.84	1244.96	101.24	20.93	4.70	29.74	254268.
13	1703.16	1246.81	109.27	13.69	8.27	29.74	179514.
14	1713.54	1248.32	111.68	7.09	8.27	.00	95013.
15	1727.37	1250.99	109.01	20.56	11.84	.00	268938.
16	1747.77	1255.95	104.05	20.24	15.44	.00	252729.
17	1758.95	1259.10	100.90	2.11	19.01	.00	25547.
18	1768.87	1262.52	103.39	17.74	19.01	33.69	220096.

19	1787.44	1269.61	108.68	19.39	22.60	33.69	252865.
20	1806.55	1278.28	112.76	18.85	26.16	33.69	255055.
21	1817.99	1284.06	114.60	4.02	29.75	33.69	55284.
22	1827.10	1289.27	115.47	14.21	29.75	33.69	196895.
23	1842.10	1298.52	116.22	15.79	33.33	33.69	220205.
24	1850.88	1304.29	115.71	1.76	33.33	.00	24438.
25	1855.88	1307.96	112.04	8.24	36.91	.00	110781.
26	1864.28	1314.27	108.30	8.55	36.91	30.96	111112.
27	1876.54	1324.29	105.63	15.97	40.48	30.96	202421.
28	1892.06	1338.41	100.82	15.09	44.07	30.96	182572.
29	1899.80	1345.93	97.95	.39	47.63	30.96	4584.
30	1905.00	1351.63	95.37	10.00	47.63	30.96	114446.
31	1911.88	1359.17	90.83	3.76	47.63	.00	40983.
32	1916.88	1365.12	84.88	6.24	51.24	.00	63561.
33	1922.50	1372.12	79.13	5.00	51.24	26.57	47480.
34	1925.96	1376.42	76.56	1.91	51.24	26.57	17547.
35	1932.97	1386.19	70.29	12.11	54.79	26.57	102149.
36	1939.51	1395.57	64.19	.98	58.38	26.57	7549.
37	1945.02	1404.51	55.49	10.03	58.38	.00	66793.
38	1954.97	1421.92	38.08	9.87	61.96	.00	45108.
39	1959.95	1431.29	28.71	.10	65.53	.00	344.
40	1960.98	1433.55	26.45	1.96	65.53	.00	6209.
41	1965.28	1443.00	17.00	6.64	65.53	.00	13554.
42	1970.45	1455.15	4.85	3.70	69.12	.00	2153.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	25.3397	2.1654	2.1408
3	25.0582	2.1616	2.1654
4	25.0802	2.1619	2.1616

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	3692.1	4000.0	28.00	0.	0.	0.	.00
2	5266.0	4000.0	28.00	0.	0.	0.	.00
3	6277.1	4000.0	28.00	0.	0.	0.	.00
4	6658.7	4000.0	28.00	0.	0.	0.	.00
5	7244.2	4000.0	28.00	0.	0.	0.	.00
6	8157.0	4000.0	28.00	0.	0.	0.	.00
7	8442.5	4000.0	28.00	0.	0.	0.	.00
8	9777.0	4000.0	28.00	0.	0.	0.	.00
9	10544.0	4000.0	28.00	0.	0.	0.	.00
10	11570.1	4000.0	28.00	0.	0.	0.	.00
11	12135.5	4000.0	28.00	0.	0.	0.	.00
12	12727.8	4000.0	28.00	0.	0.	0.	.00
13	12936.1	4000.0	28.00	0.	0.	0.	.00
14	13207.1	4000.0	28.00	0.	0.	0.	.00
15	12218.1	4000.0	28.00	0.	0.	0.	.00
16	11057.4	4000.0	28.00	0.	0.	0.	.00
17	10156.4	4000.0	28.00	0.	0.	0.	.00

18	10402.4	4000.0	28.00	0.	0.	0.	.00
19	10339.2	4000.0	28.00	0.	0.	0.	.00
20	10147.0	4000.0	28.00	0.	0.	0.	.00
21	9741.1	4000.0	28.00	0.	0.	0.	.00
22	9815.9	4000.0	28.00	0.	0.	0.	.00
23	9315.2	4000.0	28.00	0.	0.	0.	.00
24	9273.5	4000.0	28.00	0.	0.	0.	.00
25	8427.8	4000.0	28.00	0.	0.	0.	.00
26	8134.2	4000.0	28.00	0.	0.	0.	.00
27	7409.8	4000.0	28.00	0.	0.	0.	.00
28	6550.2	4000.0	28.00	0.	0.	0.	.00
29	5857.1	4000.0	28.00	0.	0.	0.	.00
30	5684.7	4000.0	28.00	0.	0.	0.	.00
31	5380.8	4000.0	28.00	0.	0.	0.	.00
32	4527.2	4000.0	28.00	0.	0.	0.	.00
33	4165.5	4000.0	28.00	0.	0.	0.	.00
34	4003.5	4000.0	28.00	0.	0.	0.	.00
35	3209.5	4000.0	28.00	0.	0.	0.	.00
36	2457.1	4000.0	28.00	0.	0.	0.	.00
37	1982.5	4000.0	28.00	0.	0.	0.	.00
38	737.7	4000.0	28.00	0.	0.	0.	.00
39	1.2	4000.0	28.00	0.	0.	0.	.00
40	-101.5	4000.0	28.00	0.	0.	0.	.00
41	706.7	120.0	33.00	0.	0.	0.	.00
42	147.5	120.0	33.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	1541.43	3692.1	792.7	.0	2758.3
2	1560.64	5266.0	2261.3	.0	3145.4
3	1570.69	6277.1	2989.4	.0	3394.1
4	1581.59	6658.7	3738.6	.0	3488.0
5	1595.91	7244.2	4682.4	.0	3632.0
6	1606.26	8157.0	5432.2	.0	3856.5
7	1616.26	8442.5	6207.1	.0	3926.7
8	1626.71	9777.0	7368.7	.0	4254.9
9	1636.71	10544.0	8670.8	.0	4443.6
10	1647.20	11570.1	9613.5	.0	4695.9
11	1664.89	12135.5	10839.0	.0	4835.0
12	1685.84	12727.8	12148.5	.0	4980.7
13	1703.16	12936.1	13112.9	.0	5031.9
14	1713.54	13207.1	13401.0	.0	5098.5
15	1727.37	12218.1	13080.6	.0	4855.3
16	1747.77	11057.4	12486.6	.0	4569.8
17	1758.95	10156.4	12107.6	.0	4348.2
18	1768.87	10402.4	12406.8	.0	4408.7
19	1787.44	10339.2	13041.0	.0	4393.2
20	1806.55	10147.0	13530.8	.0	4345.9
21	1817.99	9741.1	13752.1	.0	4246.1
22	1827.10	9815.9	13856.1	.0	4264.5

23	1842.10	9315.2	13945.8	.0	4141.3
24	1850.88	9273.5	13885.0	.0	4131.1
25	1855.88	8427.8	13444.3	.0	3923.1
26	1864.28	8134.2	12995.5	.0	3850.8
27	1876.54	7409.8	12675.1	.0	3672.7
28	1892.06	6550.2	12098.9	.0	3461.3
29	1899.80	5857.1	11753.9	.0	3290.8
30	1905.00	5684.7	11444.6	.0	3248.4
31	1911.88	5380.8	10899.7	.0	3173.7
32	1916.88	4527.2	10186.0	.0	2963.7
33	1922.50	4165.5	9496.0	.0	2874.8
34	1925.96	4003.5	9186.9	.0	2834.9
35	1932.97	3209.5	8435.1	.0	2639.6
36	1939.51	2457.1	7702.7	.0	2454.6
37	1945.02	1982.5	6659.3	.0	2337.9
38	1954.97	737.7	4570.2	.0	2031.7
39	1959.95	1.2	3445.2	.0	1850.6
40	1960.98	-101.5	3174.1	.0	1825.3
41	1965.28	706.7	2040.1	.0	267.8
42	1970.45	147.5	582.0	.0	99.8

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	1551.27	25.08	87155.	8.17	13.21	.618
2	1570.00	25.08	178020.	14.37	24.48	.587
3	1571.37	25.08	185338.	14.79	25.35	.583
4	1591.82	25.08	286719.	20.71	36.96	.560
5	1600.00	25.08	324272.	22.85	41.08	.556
6	1612.52	25.08	385437.	25.91	49.46	.524
7	1620.00	25.08	417553.	27.57	53.99	.511
8	1633.41	25.08	479501.	30.17	68.82	.438
9	1640.00	25.08	505660.	31.21	75.69	.412
10	1654.39	25.08	565244.	33.27	84.53	.394
11	1675.38	25.08	634122.	35.88	96.12	.373
12	1696.31	25.08	682938.	37.99	106.36	.357
13	1710.00	25.08	700848.	39.06	112.19	.348
14	1717.09	25.08	709998.	39.60	111.16	.356
15	1737.65	25.08	717532.	41.09	106.85	.385
16	1757.89	25.08	709553.	42.40	101.26	.419
17	1760.00	25.08	707299.	42.49	100.53	.423
18	1777.74	25.08	686992.	43.23	106.25	.407
19	1797.13	25.08	647041.	43.43	111.10	.391
20	1815.98	25.08	591505.	43.03	114.41	.376
21	1820.00	25.08	576482.	42.82	114.79	.373
22	1834.21	25.08	522754.	42.08	116.14	.362
23	1850.00	25.08	451698.	40.78	116.29	.351
24	1851.76	25.08	443829.	40.64	115.13	.353
25	1860.00	25.08	403588.	39.70	108.94	.364
26	1868.55	25.08	363868.	38.75	107.65	.360
27	1884.52	25.08	283593.	36.46	103.60	.352

28	1899.61	25.08	205363.	33.94	98.05	.346
29	1900.00	25.08	203257.	33.87	97.85	.346
30	1910.00	25.08	151371.	32.15	92.89	.346
31	1913.76	25.08	133274.	31.68	88.77	.357
32	1920.00	25.08	104315.	30.67	81.00	.379
33	1925.00	25.08	83677.	30.15	77.27	.390
34	1926.91	25.08	76233.	30.08	75.85	.397
35	1939.02	25.08	33801.	31.54	64.74	.487
36	1940.00	25.08	30889.	32.03	63.64	.503
37	1950.03	25.08	10063.	44.19	47.35	.933
38	1959.90	25.08	9640.	17.15	28.82	.595
39	1960.00	25.08	9787.	16.64	28.60	.582
40	1961.96	25.08	13183.	8.38	24.30	.345
41	1968.60	25.08	1509.	4.55	9.70	.469
42	1972.30	.00	-17.	-2.21	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 7605.24 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 3633.49 (psf)

Total Length of failure surface = 535.38 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 2.162

Total shear strength available along specified failure surface = 420.55E+04 lb

****

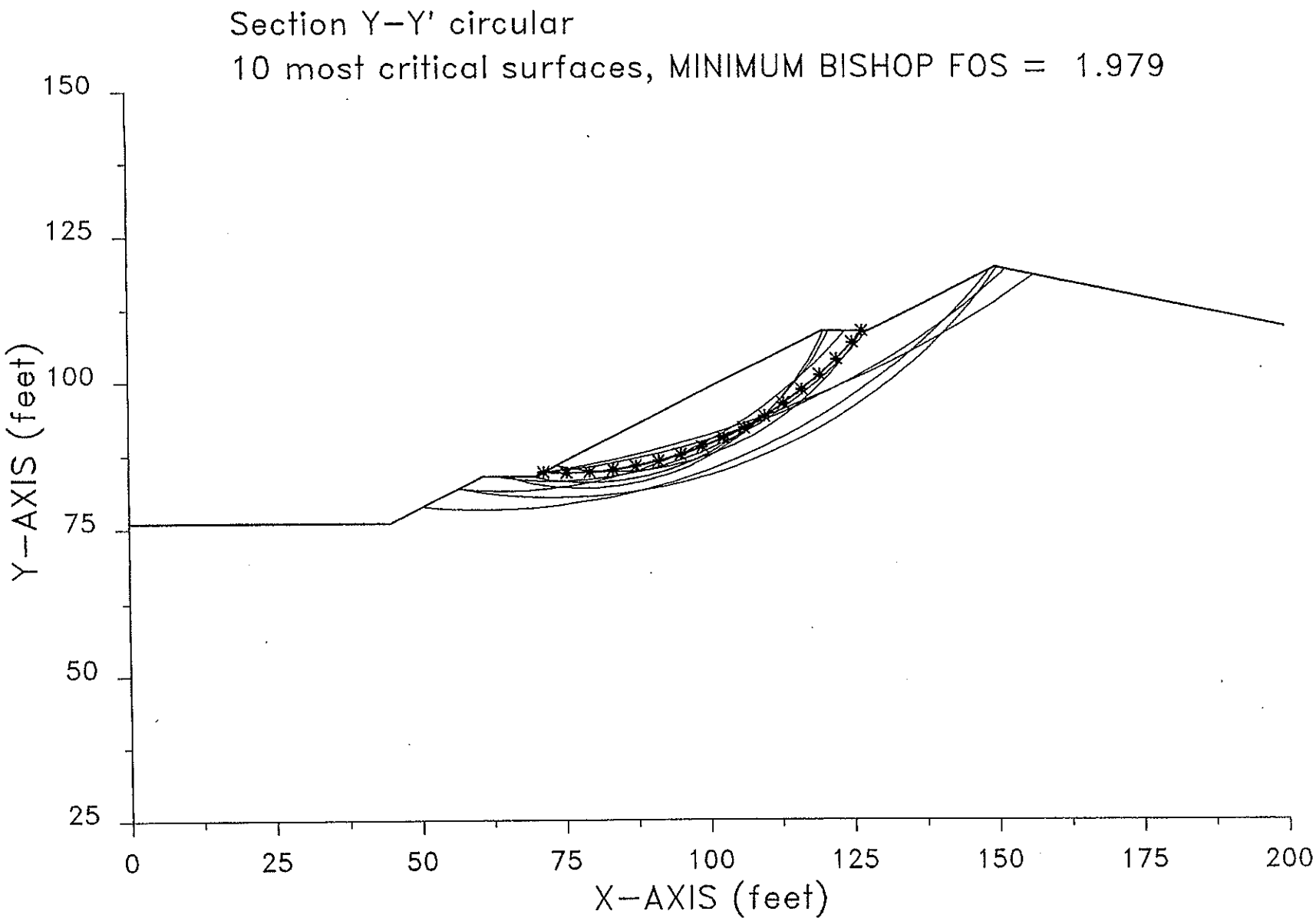
For the specified surface, the analysis computed the following:

Negative (tensile) Normal Effective Force = 1 slices
Negative (tensile) Interslice Force = 0 slices
Unreasonable Location of Interslice Force = 0 slices

In view of these errors, the computed FOS may be UNREASONABLE!

****

SECY-Y1 10-08-** 20:55



XSTABL File: SECY-Y1 10-08-** 20:55

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ä 95       *
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*                                       *
*  Ver. 5.105                95 Ä 1437  *
*****************************************
```

Problem Description : Section Y-Y' circular

SEGMENT BOUNDARY COORDINATES
---

7 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	76.0	45.0	76.0	1
2	45.0	76.0	61.0	84.0	1
3	61.0	84.0	70.0	84.0	1
4	70.0	84.0	120.0	109.0	1
5	120.0	109.0	128.0	109.0	1
6	128.0	109.0	150.0	120.0	1
7	150.0	120.0	200.0	110.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced
along the ground surface between x = 40.0 ft
and x = 80.0 ft

Each surface terminates between x = 120.0 ft
and x = 180.0 ft

Unless further limitations were imposed, the minimum elevation
at which a surface extends is y = .0 ft

* * * * * DEFAULT SEGMENT LENGTH SELECTED BY XSTABL * * * * *

4.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS :

The first segment of each failure surface will be inclined
within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := (slope angle - 5.0) degrees

****
-- WARNING -- WARNING -- WARNING -- WARNING -- (# 48)
****
Negative effective stresses were calculated at the base of a slice.
This warning is usually reported for cases where slices have low self
weight and a relatively high "c" shear strength parameter. In such
cases, this effect can only be eliminated by reducing the "c" value.
****

USER SELECTED option to maintain strength greater than zero

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface
is specified by 17 coordinate points

Point No.	x-surf (ft)	y-surf (ft)
1	71.58	84.79
2	75.58	84.67
3	79.58	84.79
4	83.56	85.16
5	87.51	85.76
6	91.42	86.60
7	95.28	87.67
8	99.06	88.98
9	102.75	90.51
10	106.35	92.26
11	109.83	94.23
12	113.19	96.40
13	116.41	98.77
14	119.49	101.33
15	122.40	104.07
16	125.14	106.98
17	126.82	109.00

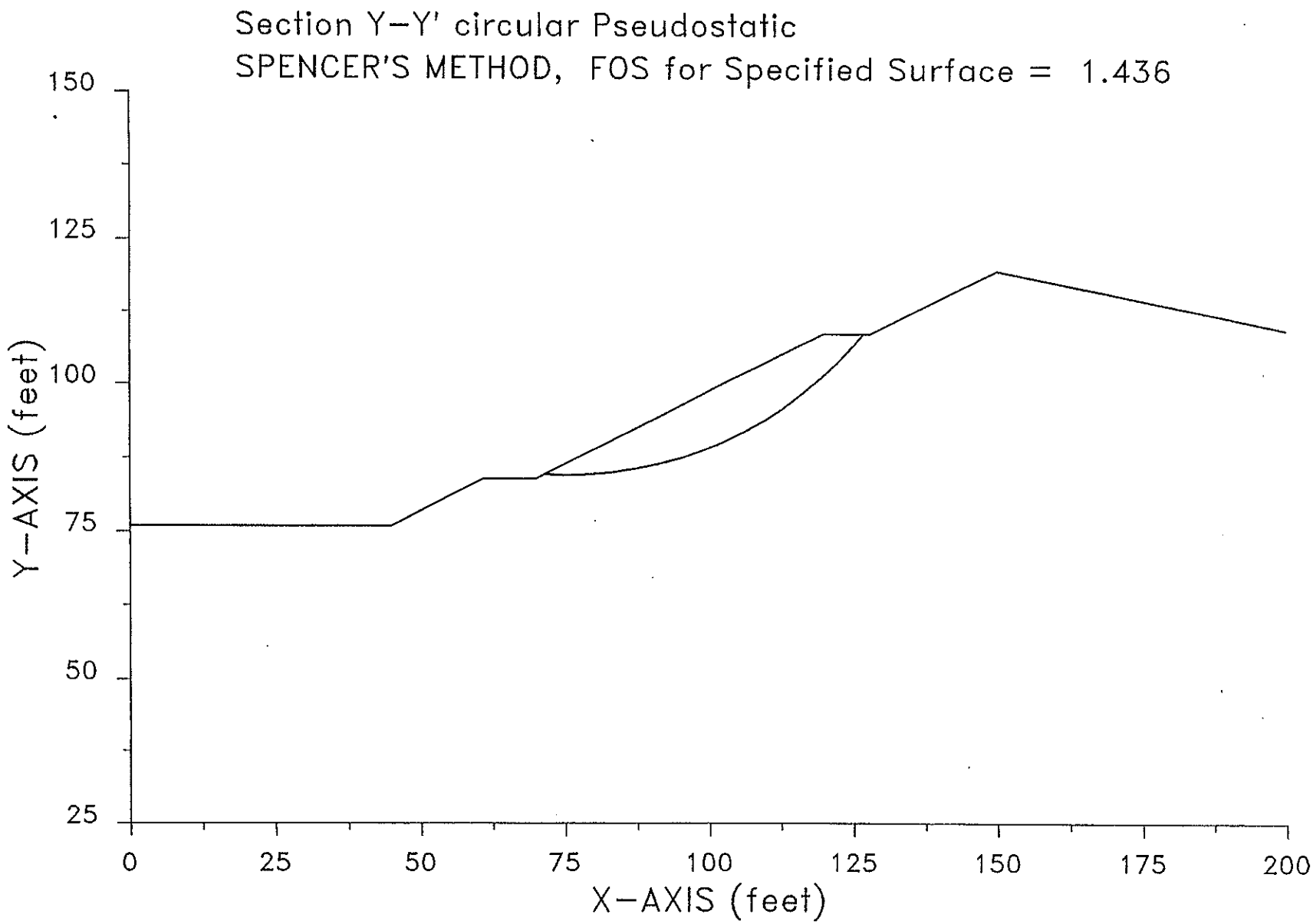
**** Simplified BISHOP FOS = 1.979 ****

The following is a summary of the TEN most critical surfaces

Problem Description : Section Y-Y' circular

	FOS (BISHOP)	Circle Center x-coord (ft)	Circle Center y-coord (ft)	Radius (ft)	Initial x-coord (ft)	Terminal x-coord (ft)	Resisting Moment (ft-lb)
1.	1.979	75.56	150.92	66.25	71.58	126.82	2.340E+06
2.	2.014	73.34	153.77	70.51	63.16	127.80	2.899E+06
3.	2.016	79.22	129.71	46.74	69.47	121.07	1.722E+06
4.	2.032	60.69	219.74	135.39	71.58	151.83	6.622E+06
5.	2.057	83.78	135.43	50.60	73.68	126.89	2.056E+06
6.	2.064	61.17	192.75	114.48	50.53	149.23	9.155E+06
7.	2.069	78.67	127.55	45.56	65.26	120.24	1.807E+06
8.	2.072	44.67	276.30	193.39	71.58	156.69	1.003E+07
9.	2.077	73.72	174.41	94.01	56.84	150.32	7.743E+06
10.	2.082	64.75	159.01	77.50	56.84	123.92	2.918E+06

* * * END OF FILE * * *


Section Y-Y' circular Pseudostatic
SPENCER'S METHOD, FOS for Specified Surface = 1.436
150
125
100
75
50
25
Y-AXIS (feet)
0
25
50
75
100
125
150
175
200
X-AXIS (feet)

XSTABL File: SECY-Y1P 10-08-** 20:56

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 Ã 95       *
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*                                       *
*  Ver. 5.105                95 Ã 1437  *
*****************************************
```

Problem Description : Section Y-Y' circular Pseudostatic

SEGMENT BOUNDARY COORDINATES
---

7 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	76.0	45.0	76.0	1
2	45.0	76.0	61.0	84.0	1
3	61.0	84.0	70.0	84.0	1
4	70.0	84.0	120.0	109.0	1
5	120.0	109.0	128.0	109.0	1
6	128.0	109.0	150.0	120.0	1
7	150.0	120.0	200.0	110.0	1

ISOTROPIC Soil Parameters
---

1 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	120.0	130.0	120.0	33.00	.000	.0	0

A horizontal earthquake loading coefficient
of .150 has been assigned

A vertical earthquake loading coefficient
of .000 has been assigned

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 17 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	71.58	84.79
2	75.58	84.67
3	79.58	84.79
4	83.56	85.16
5	87.51	85.76
6	91.42	86.60
7	95.28	87.67
8	99.06	88.98
9	102.75	90.51
10	106.35	92.26
11	109.83	94.23
12	113.19	96.40
13	116.41	98.77
14	119.49	101.33
15	122.40	104.07
16	125.14	106.98
17	126.82	109.00

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	73.58	84.73	1.06	4.00	-1.72	26.57	509.
2	77.58	84.73	3.06	4.00	1.72	26.57	1469.
3	81.57	84.98	4.81	3.98	5.31	26.57	2297.
4	85.54	85.46	6.31	3.95	8.64	26.57	2990.
5	89.46	86.18	7.55	3.91	12.12	26.57	3544.
6	93.35	87.13	8.54	3.86	15.49	26.57	3956.
7	97.17	88.32	9.26	3.78	19.11	26.57	4200.
8	100.90	89.75	9.71	3.69	22.52	26.57	4298.
9	104.55	91.39	9.89	3.60	25.92	26.57	4272.

10	108.09	93.25	9.80	3.48	29.51	26.57	4092.
11	111.51	95.32	9.44	3.36	32.86	26.57	3806.
12	114.80	97.58	8.82	3.22	36.35	26.57	3406.
13	117.95	100.05	7.93	3.08	39.73	26.57	2929.
14	119.74	101.57	7.30	.51	43.28	26.57	447.
15	121.20	102.94	6.06	2.40	43.28	.00	1745.
16	123.77	105.53	3.47	2.74	46.72	.00	1143.
17	125.98	107.99	1.01	1.68	50.25	.00	204.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	30.7481	1.4396	1.4143
3	29.7386	-----	1.4396
3	30.2434	1.4376	-----
4	29.8167	1.4360	1.4376
5	29.8493	1.4361	1.4360

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	234.9	120.0	33.00	0.	0.	0.	.00
2	494.0	120.0	33.00	0.	0.	0.	.00
3	679.1	120.0	33.00	0.	0.	0.	.00
4	811.1	120.0	33.00	0.	0.	0.	.00
5	893.2	120.0	33.00	0.	0.	0.	.00
6	938.0	120.0	33.00	0.	0.	0.	.00
7	943.8	120.0	33.00	0.	0.	0.	.00
8	924.5	120.0	33.00	0.	0.	0.	.00
9	881.1	120.0	33.00	0.	0.	0.	.00
10	813.9	120.0	33.00	0.	0.	0.	.00
11	733.5	120.0	33.00	0.	0.	0.	.00
12	637.3	120.0	33.00	0.	0.	0.	.00
13	532.0	120.0	33.00	0.	0.	0.	.00
14	451.3	120.0	33.00	0.	0.	0.	.00
15	371.4	120.0	33.00	0.	0.	0.	.00
16	185.9	120.0	33.00	0.	0.	0.	.00
17	29.5	120.0	33.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	73.58	234.9	127.2	.0	189.8
2	77.58	494.0	367.2	.0	307.0
3	81.57	679.1	577.2	.0	390.7
4	85.54	811.1	756.9	.0	450.3

5	89.46	893.2	906.3	.0	487.4
6	93.35	938.0	1024.8	.0	507.7
7	97.17	943.8	1111.2	.0	510.4
8	100.90	924.5	1164.9	.0	501.6
9	104.55	881.1	1186.8	.0	482.0
10	108.09	813.9	1176.0	.0	451.6
11	111.51	733.5	1132.8	.0	415.3
12	114.80	637.3	1057.8	.0	371.7
13	117.95	532.0	951.0	.0	324.1
14	119.74	451.3	876.3	.0	287.6
15	121.20	371.4	727.2	.0	251.5
16	123.77	185.9	417.0	.0	167.6
17	125.98	29.5	121.2	.0	96.9

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	75.58	29.85	820.	1.15	2.12	.544
2	79.58	29.85	1913.	1.85	4.00	.462
3	83.56	29.85	3019.	2.42	5.62	.430
4	87.51	29.85	3991.	2.89	6.99	.413
5	91.42	29.85	4711.	3.25	8.11	.401
6	95.28	29.85	5129.	3.52	8.97	.392
7	99.06	29.85	5201.	3.68	9.55	.385
8	102.75	29.85	4961.	3.73	9.86	.378
9	106.35	29.85	4445.	3.68	9.91	.371
10	109.83	29.85	3701.	3.52	9.68	.363
11	113.19	29.85	2816.	3.24	9.19	.352
12	116.41	29.85	1865.	2.85	8.44	.338
13	119.49	29.85	940.	2.34	7.41	.315
14	120.00	29.85	782.	2.24	7.19	.312
15	122.40	29.85	208.	1.92	4.93	.390
16	125.14	29.85	-84.	.31	2.02	.156
17	126.82	.00	0.	.52	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 645.55 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 375.47 (psf)

Total Length of failure surface = 62.62 feet

For the single specified surface and the assumed angle
of the interslice forces, the SPENCER'S (1973)
procedure gives a

FACTOR OF SAFETY = 1.436

Total shear strength available
along specified failure surface = 337.67E+02 lb

****
For the specified surface, the analysis computed the following:

Negative (tensile) Normal Effective Force = 0 slices
Negative (tensile) Interslice Force = 1 slices
Unreasonable Location of Interslice Force = 0 slices

In view of these errors, the computed FOS may be UNREASONABLE!
****

PRELIMINARY GEOTECHNICAL INVESTIGATION CHATSWORTH RIDGE ESTATES PROJECT TENTATIVE TRACT NO. 53138 CHATSWORTH AREA LOS ANGELES COUNTY, CALIFORNIA

Project No. 58-9194-02

VOLUME 1

VOLUME 2

Prepared by:

KLEINFELDER, INC.
1370 Valley Vista Drive, Suite 150
Diamond Bar, CA 91765

August 8, 2001

KLEINFELDER
An employee owned company

August 8, 2001
Project No. 58-9194-02-001

Mr. Richard Garlinghouse
Presidio Chatsworth Partners, LLC
595 Market Street
San Francisco, California 94105

Subject: Preliminary Geotechnical Investigation
Chatsworth Ridge Estates Project, Tentative Tract No. 53138
Chatsworth Area, Los Angeles County, California

Dear Mr. Garlinghouse:

Kleinfelder, Inc. is pleased to present this preliminary geotechnical investigation report for Presidio Chatsworth Partners, LLC conducted for the proposed Chatsworth Ridge Estates residential development project, Tentative Tract No. 53138, located in the Chatsworth area of Los Angeles County, California. This investigation report, in part, addresses comments contained in the Geologic and Soil Engineering review sheets prepared by Los Angeles County, Department of Public Works, dated March 21, 2001 and July 9, 2001. The results of our combined geologic and geotechnical investigation, along with our conclusions, and recommendations for preliminary design of the project, are presented in the attached report.

In general, the site is, in our opinion, considered suitable for the proposed residential development from both a geologic and geotechnical perspective, provided the recommendations contained herein are properly incorporated into the planning, design, and construction of the project. Although the site is situated in the general vicinity of the 1994 Northridge Earthquake, preliminary studies at the site indicate that evidence of active surface faulting was not observed on site. Seismic design of structures will require incorporation of UBC (1997) seismic design criteria. Compressible soils and/or liquefiable soils appear to be confined to near-surface soil deposits and in the drainages where development is not proposed. Three mapped landslides and several areas of surficial instability were identified along Browns and Devils Canyons where steeper slopes occur. Recommendations for avoidance or mitigation alternatives are included in this report.

We appreciate the opportunity to be of service to Presidio Chatsworth Partners on this project. If you have any questions, comments, or require additional information, please do not hesitate to contact our office.

Respectfully submitted,

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1 INTRODUCTION

This preliminary geotechnical investigation report has been prepared for Tentative Tract No. 53138, a 230-acre site proposed as a residential subdivision of 485 single family lots, 32 open space lots, 7 private "not a part" lots, and two bridges, located in the Chatsworth area of Los Angeles County, California. This investigation report addresses comments contained in the Geologic and Soil Engineering review sheets prepared by Los Angeles County, Department of Public Works, dated July 2001 (attached as Appendix G). The purpose of this report is to describe the geologic and geotechnical conditions of the site, to recommend applicable design and construction constraints, to evaluate potential geotechnical impacts on the project, and to recommend appropriate mitigation measures relative to the planned subdivision. Our scope of services included geologic mapping, review of select technical literature and aerial photographs, subsurface exploration, laboratory testing of select soil and rock samples, engineering analysis, and preparation of this written report.

1.1 PROPOSED DEVELOPMENT

The proposed project consists of 485 single-family residential lots, 32 open space lots to be developed on the 230-acre site as depicted on the 100-scale Vesting Tentative Tract 53138 Map dated August 2, 2001 by B & E Engineers of Arcadia, California. Preliminary earthwork estimates indicate that the site will be an approximately 2.2 million cubic yards cut/fill grading operation with the majority of the cuts being less than approximately 40 feet deep, and canyon fills of similar thickness. It is our understanding that the proposed earthwork approximately balances fill and cut quantities. The anticipated maximum depth of cut is approximately 100 feet deep, and the maximum depth of fill is approximately 80 feet. The highest fill slopes and cut slopes are 195 feet and 90 feet, respectively. Proposed graded slopes are planned at 2:1 (Horizontal : Vertical) or flatter finished grades.

Two bridges across Devil Canyon are proposed as a part of the project. One bridge is located where the main entrance road extends northeasterly from Topanga Canyon Boulevard crosses the canyon. The second bridge is located near the southeastern margin of the site where the northerly extension of Canoga Avenue crosses the canyon just downstream of the existing upper Twin Lakes dam. This investigation included a preliminary evaluation of the general vicinity of the proposed bridge abutment and approximate pier locations only. Future design-level studies will be required to assess these bridges in greater detail.

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1.2 SITE DESCRIPTION

The 230-acre site is predominately located west of Brown's Canyon, on the south half of Section 6, Township 2 North, Range 16 West, northeast of the intersection of Topanga Canyon Blvd. and SR 118 (Simi Valley Freeway) in the Chatsworth area of Los Angeles County California. The approximately project boundaries relative to topographic landmarks are shown on the Site Location Map, Plate 1.

Generally, the site is bounded on the south by SR 118 and several single-family residences of the former Twin Lakes subdivision, and on the west, north, and east by undeveloped natural terrain. Several widely scattered single family residences exist on the project site and are remnant of the former Deer Lake Highlands subdivision. Presently, site access is available from the southwest via Topanga Canyon Boulevard and southeast from Canoga Avenue via existing, poorly to moderately maintained roads, most of which are unpaved.

Two intermittent drainage courses exists onsite including Devil Canyon which transects the site through the southwestern portion of the site. Browns Canyon forms a portion of the eastern property limit. Both are shown as blue line creeks on the USGS 7.5-Minute Oat Mountain Quadrangle Map that serves as the base for Plate 1. Streams in both of the canyons were observed to have seasonally flowing water. The topography of the site is partially controlled by these two drainages and their tributaries. Total relief across the site is approximately 400 feet. The maximum elevation at the site is approximately 1,540 feet at the northeast portion of the property and the minimum elevation is approximately 1,140 feet near the southeasterly portion of the site in Devil Canyon. Topographically, the site consists of rather rugged terrain with the deeply incised Devil and Browns Canyons. Easterly facing descending slopes along Browns Canyon range from 2:1 (H:V) to locally 1:1 (H:V).

The majority of canyon walls along Devil Canyon are steep; the topography of which is controlled by the underlying geologic structure. The north-facing slopes along the south side of the canyon are on the order of 2:1 and may be considered as dip slopes. The south-facing slopes along the north side of the canyon are somewhat steeper, on the order of 1:1(H:V) and are anti-dip (dipping into slope) slopes.

Within the northeasterly portion of the property above Devil Canyon, exists the former Deer Lake Highlands, an area of more subdued topography with moderate to gentle south-draining

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slopes. Drainage is via well-defined natural drainage courses that direct runoff to the south and southeast into Devil Canyon, then into Browns Canyon.

Vegetation at the site varies from moderately wooded areas along tributaries and canyon bottoms to riparian vegetation, annual grasses, moderately dense Manzanita, and other low-growing, chaparral and shrubs existing throughout the site.

Existing improvements include several paved and unpaved roadways, abandoned building pads, five water wells (inclusive of one "oil" well), several existing residences, a small concrete/rock dam in Devil Canyon, and the former concrete lined "Deer Lake". Present access to the site is provided via several poorly to moderately maintained dirt roads. Other improvements include above-ground power lines, cisterns, ponds, and several other abandoned foundations.

1.3 SCOPE OF SERVICES

Our investigation for this tentative tract submittal included research, interpretation of aerial photographs, field geologic mapping, and field exploration over the period of November 20, 2000 through June 19, 2001. Subsurface exploration included drilling, sampling, and downhole geologic logging of 13 exploratory bucket auger borings, drilling, geologic logging and sampling of 6 exploratory continuous rock corings, excavation and logging of 31 exploration test pits, and two fault trenches. The subsurface exploration locations were severely constrained by site access limitations, stream crossings, and biologically sensitive areas.

Field exploration also included rock slope traverses and seismic refraction in exposed rock areas to assess Rock Mass Ratings and hardness relative to rippability potential. All Exploration locations are shown on Plates 13 and 14 and logs/data are provided along with a more detailed summary of subsurface exploration methods in Appendix A of this report.

The approximate location of field exploration points were located using the base map prepared by B&E Engineers and sighting and pacing from existing site improvements and topographic features. The exploration locations should be considered accurate only to the degree implied by this method.

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Laboratory testing was performed on representative samples collected from explorations and were analyzed for soil and rock characteristics. The results of our analyses are included in Appendix B. Presentation of the test results provides only that information considered pertinent. References to ASTM and other test standards refer to the standard currently in effect.

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2 ENGINEERING GEOLOGIC AND GEOTECHNICAL CONDITIONS

2.1 REGIONAL GEOLOGIC SETTING

The site is located in the western portion of Los Angeles County along the southern foothills of the Santa Susan Mountains of the Transverse Ranges geomorphic province (Plate 2). This province is characterized by west-northwest trending structure primarily the result of faulting and folding related to the compression of the region along the San Andreas Fault system. The Transverse Ranges are comprised by complex crystalline and sedimentary rock including Pre-Cambrian intrusions, Mesozoic plutonic, various metamorphic facies, and sedimentary rock.

The Santa Susana Mountains and related mountainous regions primarily consist of sedimentary rock and topographically define the boundary between the Los Angeles and Ventura Basins. Structurally, this region consists of a series of east-west trending faults and folds including the Iverson syncline, and Rocky Peak anticline, and faults such as the Northridge Hills, Red Mountain, San Cayetano, Oak Ridge, and Simi faults. Plate 3 shows the majority of these features with respect to the site.

2.2 HISTORIC SEISMICITY

The site is located in the seismically active southern California region (Plate 7). Major historic earthquakes felt in the vicinity of Chatsworth have usually originated from faults located outside the area. These include the 1857 Fort Tejon, 1925 Santa Barbara, 1933 Long Beach, 1952 Arvin-Tehachapi, 1971 San Fernando, 1987 Whittier Narrows, 1992 Landers, and 1994 Northridge earthquakes.

The MW 6.7 Northridge Earthquake occurred on January 17, 1994 and was located approximately 6 miles southeast of the proposed development site. This earthquake caused severe and widespread damage throughout southern California attributable to high intensity ground shaking and minor liquefaction. Mapping of ground rupture associated with this event was performed by the California Division of Mines and Geology (CDMG). This mapping effort concluded that surface deformation and cracking associated with the event was restricted to the Mission Wells, San Fernando, Veterans, and Hospital fault zones located a minimum of 3-1/2 miles east of the proposed project. Ground rupture was not observed along the Northridge Hills

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fault that projects onto the subject site nor is the Northridge Hills fault considered to be related to this earthquake event.

2.3 EARTH MATERIALS

The site has been regionally mapped by several authors including Evans (1978), Diblee (1992), and Yerkes (1995). These geologic maps pertaining to the subject property are included herein as Plates 4, 5, and 6, respectively. The majority of the site is underlain by Chatsworth Formation; renamed from Evans' mapping as Chico Formation but of consistent lithology. The Saugus Formation forms younger surfaces along the northern boundary of the site. Each of these engineering geologic units are described (youngest to oldest) in the following sections.

2.3.1 Landslide (Map Symbol: Qls)

Landslides are mapped onsite on the basis of involvement in bedrock and an estimated thickness exceeding 10 feet. Three landslides were concluded to exist onsite: two along Devil's Canyon and one along the northern property boundary. Both of the slides along Devil's Canyon appear to be relatively shallow, translational, block-glide failures and occur on the dip-slope side of the canyon. The third appears to be considerably shallower and occurs along the formational contact between the Saugus and Chico Formations. These slides are differentiated from areas of shallower rock creep and/or surficial deposit failures throughout steeper portions of the site.

One bucket auger boring and two exploration trenches were excavated in another area suspected to be a landslide located along Browns Canyon. These excavations and surface mapping suggest that the area in question (vicinity of BA-1) is not a landslide. Trenching in the assumed headscarp area (TP-1 & TP-2) did not reveal any significant evidence of slippage. No evidence of typical landslide gouge was observed in BA-1, nor did the bedrock in the boring or trenches appear distorted or disturbed as compared to other on-site outcrops.

2.3.2 Alluvium (Map Symbol: Qal)

Alluvium is mapped along the bottoms of both Browns and Devil Canyons. These alluvial deposits occur along active stream channels where development is not proposed. These deposits are typically high in permeability, often compressible and/or liquefiable, and contain primarily clean sands, gravel, and localized boulders. This unit was mapped to include other low-density surficial deposits including colluvium, residual soils, and localized slope wash. The only

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surficial deposit within the area of proposed development is the thin deposit of colluvium, consisting of poorly consolidated mixes of sand, silt, and gravel, which typically drapes the hillsides and flatter portions of the site.

2.3.3 Saugus Formation (Map Symbol: QTs)

The Saugus Formation consists of weakly consolidated, Plio-Pleistocene (i.e. 0.7 to 2.5 million years old) continental deposits. The Saugus Formation is mapped as isolated remnant outcrops on the northwest and northeast parts of the site and occurs throughout the terrain north of and adjacent to the northern property boundary. This earth unit generally consists of light gray to brown, pebble- to cobble-sized conglomerate supported by gray to red-brown sandstone to silty sandstone matrix. This unit can be characterized as a very soft to soft rock or dense soil. Clasts are generally sub-rounded to well-rounded and granitic, gneissic, metavolcanic, and gabbroic composition. This unit is poorly bedded to massive and generally relatively permeable. From a generalized engineering perspective, this unit rarely contains highly expansive soils, has moderate shear strength, and is relatively excavatable with typical earthwork equipment.

2.3.4 Chatsworth Formation (Map Symbol: Kcs)

Formerly mapped as the Chico Formations by Kew (1924) and Evans (1978), the Chatsworth Formation is a late Cretaceous (i.e. 65 to 135 million years old) marine sedimentary earth unit. It generally contains light gray to light brown, thick-bedded sandstone interbedded with thin layers siltstone and sandy shale. The rock is considered soft to moderately hard and moderately weathered. Bedding is typically well defined with many joints and fractures. The sandstone has moderate to high shear strength, with low permeabilities. Sandstone units are generally non-expansive with isolated beds of moderately expansive siltstone and claystone. Due to the hardness of the rock, difficulty in ripping and grading should be anticipated.

2.4 GROUNDWATER CONDITIONS

Surface water was observed onsite along Devil Canyon and adjacent Browns Canyon which are mapped as blue line streams on the USGS 7.5-Minute Quadrangle (Plate 1). A man-made pond was also observed near the northwest corner of the project and is described in a Phase I Site Assessment (PSA) for the project (Geosoils, 1999) as having existed since before 1928 and filled from a water well located approximately 100 feet to the north of the pond.

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Five onsite water wells were identified in the Geosoils (1999) PSA report. One of the water wells was initially drilled as a speculative wild cat oil well and subsequently converted to a water well. No records for these wells were on file at Los Angeles County Hydrology Department. The depth of these wells could only be identified for one well at a depth of approximately 360 feet below ground surface (bgs). This depth suggests that the regional groundwater table is at that approximate depth and probably occurs within fractured sandstone of the Chatsworth Formation.

Shallow groundwater occurs onsite as a seasonal condition in localized areas, particularly along major tributaries such as Browns and Devil Canyons. Springs were observed along with phreatophytic (water-loving) vegetation along these canyons. The springs are probably seasonal releases of groundwater that percolates through fractures within the Chatsworth Formation. Proposed residential irrigation can be expected to increase local, seasonal groundwater levels. The influence of development is generally expected to have little to no influence on regional groundwater levels as hardscape will reduce infiltration and landscaping will increase recharge. However, localized seepage may be induced by earthwork such as where permeable (e.g. rocky) fill is placed over less permeable (e.g. rock) formations.

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3 GEOLOGIC & GEOTECHNICAL FINDINGS

3.1 ONSITE FAULTING

The subject property is located adjacent to a number of west-trending Quaternary faults but none of which are mapped across the site. The site is not situated within any Earthquake Fault-Rupture Hazard Zone (Formerly A-P Zone) as currently designated by the State of California (Hart and Byrant, 2000). The nearest "A-P" Zone is that established for the San Cayetano fault located approximately 1.5 miles west of the site and the Verdugo fault located approximately 14 km east of the site. The nearest mapped Quaternary fault is the Northridge Hills Fault, as shown on Plate 3. Local, recent seismicity is shown on Plate 7. This seismicity is primarily the result of aftershock activity related to the 1994 M 6.7 Northridge earthquake. A considerable resurgence of fault studies occurred in response to the 1994 Northridge earthquake largely conducted by the CDMG under funding of the Fault Evaluation Report (FER) program. Renewed movement along the Northridge Hills fault was not observed by the CDMG following the 1994 Northridge earthquake and this fault remains unzoned. Plate 8 shows the CDMG mapping of faults concluded to have ground rupture in association with the 1994 event. These studies generally review existing data to determine the activity of faults in order to assess the need to establish Alquist-Priolo zones. These FER's concluded that the Northridge Hills (FER-52), Simi (FER-48), and Mission Hills, Devonshire, and related faults (FER-73) may have late Pleistocene displacement but no evidence for Holocene faulting was noted. The CDMG index map of FER's within the site vicinity is included as Plate 9.

Although the Northridge Hills fault is mapped as projecting onto the site, FER-52 concludes that:

> *"The Northridge Hills fault is most probably a late Quaternary fault along which some dip slip movement has occurred. It is most probable that the fault movement is up relatively on the north, and thus may be related to the San Fernando and/or Santa Susana faults, although such may be disputed. There is no available evidence to support or deny a strike slip component of faulting. Neither Holocene activity nor inactivity can be conclusively demonstrated." (Smith 1977).*

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The conclusion that the Northridge Hills fault may be related to the active Santa Susana and/or San Fernando faults allows the interpretation that secondary displacement could be expected along the Northridge Hills and other potentially related faults. Secondary displacement is ground fracturing that occurs with some minor, associated displacement resulting from high intensity ground shaking that relieves minor accumulated stress along pre-existing zones of weakness (such as along older, pre-Holocene faults). Such ground surface expression is usually constrained to fracturing (i.e. no displacement) with possible isolated segments having very minor displacement.

Since a number of major folds, bedrock faults, and other questionable features are mapped on or adjacent and projecting toward the site, aerial photographs were reviewed and observed, possible fault-related lineaments were identified, as shown on Plate 10. During site mapping, both regionally mapped faults and identified photo-lineaments were further reviewed in the field. Evidence of recent ground rupture was not observed. Several folds have been mapped adjacent to and projecting onto the site. These folds are believed to be the result of pre-Quaternary (more than 1.6 million years ago) deformation disrupting an otherwise homoclinal (i.e. bedding layers tilted in one direction as a singular structural block), northeast-dipping structure across the site.

The Iverson syncline, Rocky Peak anticline, and Devil Canyon anticline are mapped projecting onto the west side of the property. Synclines are folds forming a trough-shaped bend in bedding planes and anticlines are those forming crest-shaped bends. These folds were either removed or confirmed as folds by field mapping and/or using the backhoe to scrape shallow bedrock exposures. The approximate locations of these fold axes are shown on Plates 4 & 5. Two lineaments were reviewed that appeared to coincide with an onsite projection of the Northridge Hills fault (NHF). One coincides with mapping by Evans (1978) of a "shear zone" and was observed in the field to be along bedding displacement. A shear zone is a zone along which earth units have been displaced. This feature was observed in the field and appeared to be minor displacement along bedding. These along-bedding shears are typical of folded sediments consisting of interbedded layers of materials having unique shear strengths and represents differential slip during folding events. As described previously, folding associated with the Chatsworth Formation is believed to be pre-Quaternary.

Aerial photographs were reviewed to assess the presence of linear features (photolineaments) onsite or immediately adjacent to and projecting toward the site that may represent a potential for onsite faulting. Fold axes such as the Iverson syncline were not observable but were confirmed

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by field mapping of bedrock structure. Three sets of lineaments were mapped including (from south to north):

- Northwest-trending, central lineament "A" (see Plate 10) – This lineament may align with onsite projection of Northridge Hills fault (Jennings, 1994). It is discontinuous, poorly expressed by linear vegetation contrasts, and some degree of alignment of breaks in ridgelines and slopes.

- Northwest-trending, northern lineament "B" (see Plate 10) – Aligns with Evans' (1975) shear zone and is poorly expressed as described for the above lineament, but considerably more continuous.

- West/Southwest-trending northern lineament "C" (see Plate 10) – Three lineaments in and offsite of the northeast corner of the site are moderately well expressed by vegetation contrasts and topography. These lineaments align with the Devonshire fault mapped by Yerkes (1995).

Although none of these photolineaments align with faults with known Holocene rupture and/or lie within an Alquist-Priolo Earthquake Fault Zone, two exploratory trenches were excavated and logged and one backhoe shallow pit was excavated across selected segments of the photolineaments. Logs of these two trenches are provided in Appendix E and are located on Plates 13 and 14. Subsurface exposures confirmed surface mapping of outcrops concluding that along-bedding shearing occurs preferentially within the weaker (finer-grained), siltstone beds of the Chatsworth Formation. Although Pleistocene stratigraphy was not present in these trenches to preclude Holocene displacement, surface mapping during this study and previous geologists findings conclude that these faults do not cut Plio-Pleistocene Saugus Formation deposits, where present.

3.2 SEISMICITY

Faults mapped in this portion of Southern California that may generate earthquakes that could significantly influence the site are shown on Plate 3 (Jennings, 1994) and are summarized in Table 1 (Significant Faults) relative to their site distance, maximum moment magnitude, and seismic source type.

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Table 1
Significant Faults

Fault Name	Approx. Site Distance Km (mi)	Maximum Moment Magnitude	Seismic Source Type (1)
Santa Susana	2.4 (1.5)	6.6	B
Simi	6.0 (3.7)	6.7	B
San Fernando (Mission Wells)	9.6 (6.0)	6.7	B
Verdugo	14.4 (9.0)	6.7	B
San Gabriel	15.4 (9.6)	7.0	A
San Andreas (Mojave)	46 (29)	7.9	A

(1) A – M (magnitude) ≥ 7.0 & SR (slip rate) ≥ 5.0 mm/yr, C – M < 6.5 & SR ≤ 2.0 mm/yr, B – all other faults.

Future seismicity at the site can be estimated using both deterministic and probablisitic methods. Deterministic evaluations assume a defined event occurs and probabilistic methods consider the probability of that event. In recent years, probabilistic methods have found wider recognition among seismologists. Ground shaking due to earthquakes is expressed in terms of ground acceleration values for a peak (initial) condition. The peak horizontal ground acceleration (PGA) for the site was first evaluated deterministically assuming a 6.6 moment magnitude event (similar to that of the 1994 Northridge event) along the Santa Susana fault at a distance of 2.4 km (1.5 miles) from the site. Based upon the mean rock value using Abrahamson and Silva's 1997 attenuation model, an acceleration of 0.87g is estimated for rock, 0.59g for soil, and an average value of 0.73g was computed by averaging for the soft rock conditions at the site. A probabilistic acceleration of > 0.70g was estimated from the Probabilistic Seismic Hazard Map (Peterson et al, 1999) for a 10% probability of exceedance in 50 years (Design Basis Earthquake; DBE) and soft rock sites (Plate 11). Based on a comparison of these two unique values, a value of 0.73g appears to accommodate either basis.

3.3 LIQUEFACTION

Liquefaction is the loss of soil strength due to sudden shock (as caused by earthquake shaking) that causes the soil to become a fluid mass. In general, for the effects of liquefaction to be manifested at the ground surface, groundwater levels must be within 50 feet of the surface and the soils within the saturated zone must also be susceptible to liquefaction. Finer grained soils, including silts and clays are less susceptible to liquefaction than coarser grained soils. Loose, silty to clean fine sands are generally the soils most susceptible to liquefaction.

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The site is located within a liquefaction hazard zone, as shown on the Seismic Hazard Zones Map (Plate 12). Liquefaction at the site was evaluated in accordance with screening methods described within SP117 (CDMG, 1997). Essentially all of the site is underlain by shallow, dense bedrock. The only surficial deposits that could not be ruled out by a screening level analysis and thus concluded to be "clearly non-liquefialbe" are shallow soils located in the drainages across the site and the deeper alluvium along the bottom of the canyons and tributaries. Shallow soils across the site will be removed during site earthwork and deeper alluviated tributaries located outside of the proposed development areas. The liquefaction potential at this site is therefore considered to be very low and liquefaction investigation or analysis is not considered to be necessary.

Seismically induced settlement of alluvial soil or engineered fill may occur, especially where deep fills are planned. Differential settlement of deep canyon fills where large differences in fill depths across building pads is of concern. In planned building areas and access road alignments, removal of alluvial soils to bedrock and remedial grading to reduce differences in fill thickness under structures may reduce the settlement potentials.

3.4 SLOPE STABILITY

The proposed development site is located within a Seismically-Induced Landslide hazard zone, as shown on the Seismic Hazard Map (Plate 12). Slope stability at this hillside site requires consideration of both natural and proposed slopes. The performance of onsite earth units is clearly defined by the presence of several landslides and surficial slope failures and areas of instability. As shown on Plates 13 and 14, three primary types of failures were mapped, including:

- Translational (along bedding) bedrock failures within dip-slopes of the Chico sandstone;
- Rotational bedrock failures within anti-dip slopes of the Chico sandstone and massive Saugus Formation, and;
- Surficial instability including shallow toppling rock slope failures, rock creep in zones of moderately to highly weathered Chico Sandstone, and soil creep and shallow slumps within soils and colluvium formed over both Chico and Saugus Formation materials.

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Many of these slopes are suspected to have failed during recent high intensity shaking due to the 1994 Northridge earthquake.

Our analysis of existing natural slopes and proposed cut slopes considered all three of these styles of failure. All slopes, either natural or man-made will be subject to strong ground shaking and were therefore analyzed taking into consideration potential seismic loading. The following sections describe our methods and results of slope stability analyses.

3.4.1 Existing Landslide Reactivation

Three landslides were mapped within the area of influence of the proposed development footprint. Each is mapped and numbered for correspondence with this text and related tables on Plates 13 and 14. Landslide Qls-1 occurred along a portion of Devil's Canyon north of Lots 52-55 and is depicted in cross-section C-C'. This landslide is a translational failure in Chatsworth Formation (sandstone) bedrock and is considered capable of reactivation influencing upslope lots.

Landslide Qls-2 is located north of Lots 26-34 and is depicted by Cross-Section G-G'. This slide is also interpreted to be a translational Chatsworth Formation failure and is similarly considered capable of reactivation and influence to the above lots.

Landslide Qls-3 is located north of Lots 180-181 and is depicted by Cross-Sections Q-Q' and P-P'. This slide occurred within a tributary canyon adjacent to these two lots and, if reactivated, would contribute quantities of debris into this drainage. Young tension cracks behind the headscarp suggest that this slide is recent and may have occurred during the 1994 Northridge earthquake.

3.4.2 Natural and Proposed Slopes

Natural and proposed cut slopes were analyzed by first identifying susceptible slopes based on location relative to the proposed development, steepness, and height, in accordance with County design guidelines. Susceptible slopes are numbered on Plates 13 and 14 and a cross-section is constructed through each location. A summary of these slopes is provided in Appendix D.

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3.4.2.1 Strength Parameters

Existing natural slopes, proposed cut slopes, and proposed fill slopes required global slope stability analyses. Strength parameters for these analyses were selected on the basis of observed subsurface characteristics, rock slope traverses to develop Rock Mass Ratings (RMR), laboratory testing, and experience within similar earth units. Strength parameters were developed for along-bedding and across-bedding within the Chatsworth Formation, the Saugus Formation (assumed isotropic), and homogenous engineered fill. Across-bedding strengths within the Chatsworth Formation were developed by performing rock slope traverses in the areas of cross-section L-L' and G-G'. Data was obtained from traverses to compute RMR including observed strength, Rock Quality Designation (RQD), spacing, condition, and orientation of discontinuities, and groundwater conditions (Bieniawski, 1989). RMR values obtained for these areas were then compared to correlation tables (ISRM, 1981; Hoek and Bray, 1981) unconfined compressive strength values and then converted to corresponding phi (ϕ) and cohesion (c) values of 28° and 4,000 psf, respectively. A more detailed description of field methods and obtained data is provided in Appendix A. Along-bedding strength values for the Chatsworth Formation were developed by back calculation of the Qls-1 failure and a remolded-residual reshear test from samples obtained from Boring KA-1.

3.4.2.2 Analytical Methods

Slope stability analyses were generally performed using two methods. Initially, rock slopes were analyzed using Xstabl® based on strength values described above. This method of analysis was used to analyze slope 7 (Section L-L'). For comparison purposes and to assess the reliability of rotational and translational analyses for other slope areas, this area was also analyzed using Janbu (rotational) and Bishops Modified (translational) failure analytical models. A static FOS of 1.82 was computed using Bishops method as compared to 1.9 using Xstable. Both methods were therefore considered applicable and were used to develop FOS values for each natural slope area or proposed cut slope. The results of our analyses are provided in Appendix C along with a table summarizing style of failure analyzed, slope type and materials, Factor of Safety (FOS), and findings. Fill slopes were also analyzed on an individual basis and were found to be stable as designed at a 2:1 (H:V) slope gradient. All slopes requiring stabilization are discussed further in Conclusions and Recommendations later in this report and stabilization measures are depicted on the Site Plan and Geologic Maps (Plates 13 and 14) and corresponding Cross-Sections (Plates 15 and 16).

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3.4.3 Surficial Failures and Debris Flows

Slope analyses described above were performed to evaluate global stability and do not address near surface "surficial" stability performance of natural, cut slopes, and/or fill slopes. All slopes will be exposed to weathering, resulting in decomposition of surficial earth materials, thus reducing shear strength properties. In addition, these slopes become increasingly susceptible to rodent burrowing. As these slopes deteriorate, they can be expected to become susceptible to surficial instability such as soil slumps, erosion, rock creep, soil creep, and debris flows. Therefore, development areas immediately adjacent to ascending or descending natural or proposed cut slopes should address future sloughing of debris.

The deeply incised drainage channel of Devil Canyon contains many areas of surficial failures of soil over bedrock. In addition, planned fill slopes and cut slopes within the Saugus Formation may also be prone to surficial failures if the slopes are not properly designed, constructed, and maintained.

Debris flows hazards commonly exist near steep slopes where slopewash or colluvium drape the hillsides and where drainages are well-defined and sediments have accumulated. In the northern portion of the planned development, there are several moderately to well-defined drainage courses that will be affected by the planned grading and creation of south facing cut slopes. Where the cut faces intersect these drainages, flooding and debris flow potentials are considered moderate to high. A review of these specific hazards and development of specific mitigation measures should be implemented at the 40-scale grading plan design stage.

Erosion of existing hillsides, especially adjacent to the well-defined drainage courses is apparent within alluvial/colluvial materials. Bedrock areas are generally not prone to significant erosion.

3.5 TSUNAMI, SEICHE, AND RESERVOIR FAILURE

Due to the site's elevated inland location, hazards from tsunamis are considered nil. Currently there are no water storage reservoirs located upgradient from the site. As such, hazards for reservoir failures or seiches are considered nil at this time. In the event that future storage facilities are located upgradient of the site, consideration of potential flood hazards should be included in the project design.

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3.6 COMPRESSIBLE SOILS

The majority of the site is underlain by dense sandstone of the Chatsworth Formation and dense, weakly- to moderately-cemented sands of the Saugus Formation. Neither of these units are expected to be compressible. However, residual soil profiles, colluvium, alluvium, and slope wash generated from either of these units will likely be compressible. Landslide and surficial slope failures are also expected to be compressible. The extent of these earth units relative to the tentative map design is restricted to soil, colluvium, and localized surficial slope failures as mapped within the development area (Plates 13 and 14). Alluvium and slope wash are present outside of the proposed development areas.

3.7 EXPANSIVE SOILS

Expansive soils are restricted to those clayey units onsite that may undergo shrinkage/expansion when subjected to significant changes in moisture content. Potentially clay-rich materials are known to occur as strata within the Saugus Formation but were not observed on the site. Clay-rich zones within the Chatsworth Formation are also known to exist and were observed during our field exploration and are relatively localized and difficult to predict their location and extent. These zones are also expected to be only moderately expansive, if present. Soil profiles and colluvium may also be moderately expansive. Fill generated from any or all of the above earth units are expected to range from low to moderate expansion potential. Expansion tests were not performed on samples collected during our field exploration for this tentative tract design-level study.

3.8 SOIL CORROSIVITY AND CONCRETE REACTION

Representative samples were collected from the Saugus and Chatsworth Formations at three locations distributed across the development area. These samples were analyzed for sulfate content, chlorides, pH, and resistivity. The results of these analysis are presented in Appendix B.

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4 CONCLUSIONS AND RECOMMENDATIONS

This report summarizes our investigation of the site intended for a tentative tract design-level study. Based upon Los Angeles County Department of Public Works guidelines, the level of investigative effort needs to emphasize those issues which may represent a fatal flaw resulting in unbuildable lots and/or infrastructure, as tentatively designed. Based upon the results obtained during this research, geologic mapping, and preliminary geologic exploration evaluation of the site, it is our opinion that the proposed project is feasible from a geologic and geotechnical perspective, provided the recommendations presented in this report are properly incorporated into project planning, design, and construction. It is Kleinfelder's professional opinion that the proposed development will not be subject to hazards relating to landslides, settlement or slippage provided the recommendations of this report and future design-level studies (i.e. grading plan review stage) are incorporated into project design and construction. It is also our professional opinion that the proposed improvements will not adversely affect the geologic stability of the site or adjacent properties provided the recommendations of this report are incorporated into project design and construction. Statements of professional opinion do not constitute a warranty or guarantee. The following sections of this report provide a summary of potential geologic and/or geotechnical conditions, and potential impacts on the project.

Two bridges are proposed as part of the infrastructure for this subdivision. Preliminary geotechnical information for the design of abutments and piers for those proposed bridges is provided in Appendix G, herein.

The following sections of this report summarize our conclusions regarding potentially adverse subsurface conditions and, where concluded to be adverse, general recommendations for mitigation.

4.1 GROUND RUPTURE POTENTIAL

The potential for ground rupture at the site is believed to be restricted to minor sympathetic adjustment of older faults. Although the site is situated in the general vicinity of the 1994 Northridge Earthquake, preliminary studies at the site indicate there are no Holocene (i.e active) faults onsite. However, inactive (i.e. pre-Holocene) faults are present onsite that represent old zones of weakness. In these locations, the influence of any minor displacement, should it occur,

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may be mitigated by constructing a uniform, engineered fill cap in conjunction with stiffened foundation systems capable of tolerating such subsurface conditions. The depth of removal and recompaction associated with construction of these fill caps should be on the order of 5 to 10 feet to provide a homogenous buffer to the overlying foundations. The precise locations of these fill caps, including thicknesses, will be developed as part of a detailed geotechnical report in conjunction with final project grading plans.

4.2 SEISMIC CONSIDERATIONS

Mean peak ground accelerations from the anticipated maximum earthquake are expected to be approximately 0.73g based upon probabilistic and deterministic analysis described earlier. Seismic design of structures should be based on the UBC (Uniform Building Code) 1997 seismic design methods incorporating the PGA values computed herein in Section 3.2. The Santa Susana fault is the source fault (Source Type B) and is between 2 and 5 km from the site. 1997 UBC seismic design criteria are provided in the following table.

Table 2
Summary of Seismic Design Parameters

Seismic Zone	4
Seismic Source Type (Santa Susana Fault)	B
Distance from Seismic Source	2 km
Soil Profile Classification (1997 UBC Table 16-J)	S_C
Seismic Zone Factor – Z (1997 UBC Table 16-I)	0.40
Seismic Coefficient - C_a (1997 UBC Table 16-Q)	$0.40N_a$
Seismic Coefficient - C_v (1997 UBC Table 16-R)	$0.56N_v$
Near Source Factor - N_a (1997 UBC Table 16-S)	1.3
Near Source Factor - N_v (1997 UBC Table 16-T)	1.6
Horizontal Acceleration (DBE)*	0.73g

*10% probability of being exceeded in 50 years

4.3 GROUNDWATER AND SUBDRAINAGE

Groundwater conditions at the site are primarily restricted to tributaries and drainages where seepage was observed in Browns and Devils Canyons. Development is not proposed in these areas. Regional groundwater beneath the site is on the order of 360 feet below site grades. However, earthwork may create fill-over-cut permeability contacts along which seepage may occur such as backyards having fill-over-cut slopes. Once grading plans have been developed for the project, these areas should be identified and subdrain systems with adequate outlet

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systems should be designed. It should be understood that precise location of these drainage systems cannot be designed even with grading plans and will need to be verified by the project geologist and/or geotechnical engineer during grading.

4.4 LIQUEFACTION

Portions of the site are located in a liquefaction hazard zone according to the Seismic Hazard Zones Map by CDMG. In accordance with the CDMG SP 117 Guidelines, a screening level liquefaction evaluation was performed concluding that the potentially liquefiable soils onsite are present only in the alluviated drainages outside of the development areas. The only potentially liquefiable soil known to be present within the proposed development areas are the near-surface residual and colluvial soil which are expected to be removed by excavation in cut areas or removed in advance of fill placement. Therefore, the liquefaction hazard onsite is believed to be very low and no further liquefaction evaluation is considered necessary. The canyon bottom alluvium located outside the area proposed for development may be subject to potential liquefaction. This issue will be addressed for each bridge in the bridge design reports.

4.5 SLOPE STABILIZATION

Slopes that may influence the proposed development include existing natural slopes, surficial failures, and landslides as well as proposed cut slopes and fill slopes. The potential for debris flow generation onsite is also addressed in this section. Stability analysis of each of these conditions was performed by first evaluating the presence and style of slope instability at the site in its undeveloped condition. These observations were then used as a basis for determining the method of analysis most appropriate for onsite conditions. A summary of our analytical methods, input parameters selection, and findings (Appendix C) is provided in a previous section 3.4. In general, global slope stability was found to be favorable with the exception of the north-facing canyon wall along Devils Canyon, due to adversely-oriented bedding planes. All proposed cut slopes and fill slopes were found to be stable against global instability. Surficial instability is present along steeper portions of natural slopes and as proposed cut slopes and fill slopes deteriorate with time. Debris flows and debris generation are anticipated within tributary drainages adjacent to areas of proposed development. The following sections describe areas concluded to be unstable thus requiring stabilization.

Table C-1 in Appendix C summarizes all the analysis performed and the resulting factors of safety for each analysis. The analysis shows both existing and proposed factors of safety for the

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slopes that did not achieve a minimum factory of safety of 1.5. For slopes that achieved a factor of safety of less than 1.5 for static stability, we considered and evaluated several remediation alternatives. A description of all the remediation measures considered are presented below.

4.5.1 Existing Landslides

Three landslides have been mapped that are within the area of influence of the proposed development. Each is shown on Plates 13 and 14 and are discussed in section 3.4.1. Our analyses were used as a basis for the following recommendations:

Landslide Qls-1: A setback has been established from the landslide and potentially unstable upslope conditions. This setback area has been defined on the basis of a projection of the landslide rupture surface along bedding and is shown on Cross-Section C-C' and on Plate 13 for use in establishing an appropriate Restricted Use Area. Analyses were performed to evaluate the stability of underlying, undisturbed bedding planes, concluding a minimum FOS of 1.4 for that area accommodated by this setback. This setback line is approximately 100 feet south of the daylight cut limits. A factor of safety of 1.5 was calculated for that area outside of the 100 foot setback line as shown on Plate 13.

Landslide Qls-2: Bedding planes beneath this landslide were found to yield inadequate FOS's and thus will require stabilization. This shear key is 50 feet wide by 50 feet deep and is shown on Cross-Section G-G' and Plate 13. A reinforced Earth slope is proposed towards the top of the slope for the area by Section G-G'. The reinforced earth slope is required to be constructed to increase the factor of safety of the existing slope to 1.5 from 1.4. In general the reinforced earth slope will consist of engineered fill and geogrids installed at 8 levels to provide the necessary reinforcement to stabilize the slope. Soils used for reinforced fills should be placed in accordance with the recommendations as described below.

Before placing Miragrid geogrids, the surface should be cleared of all debris and the foundation base proofrolled. The grids should be rolled out, cut to length, thus eliminating field connections; and laid at the proper elevation, location and orientation. Since geogrids vary in strength with roll direction, Miragrid should be laid in the direction of main reinforcement.

After rolling out, the material should be tensioned by hand until it is taut, free of wrinkles, and lying flat. Adjacent geogrid rolls may be butted together side-by-side without overlap. Splices should be avoided.

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Certain fill placement procedures may require the reinforcement to be held in place by stakes, sandbags, or fills, as directed by an engineer. A razor blade, sharp knife or scissors may be used to cut the material. Fill placement should follow the standard practice, or as defined in the project specifications or directed by the engineer. Care should be taken to prevent wrinkles and/or slippage of reinforcement during fill placement and spreading.

The reinforced earth slope will be 50 feet wide at the base and 50 feet wide at the top and about 50 feet high. There should be 16 equally spaced layers of Mirafi Miragrid 5XT (or equal) product placed in accordance with the manufacturer recommendations. The primary reinforcements will be about 50 feet long measured from the slope face at their corresponding elevations. The finished slope face will be approximately 1:0.8 (h:v), although a less steep slope is acceptable. The back cut will also be 2.0:1 (h:v). The FS against slope stability for the reinforced earth slope was 2.6. The computer program Miraslope by Mirafi was used in evaluation the stability of the reinforced slope. All slope facing should be wrapped with the geogrids and the geogrid should be extended a minimum of 10 feet into the slope. Fill should be placed at a minimum of 92 percent relative compaction at a moisture condition above but within 3 percent of the optimum per ASTM test method D-1557. The required reinforcement of the fill slope can be achieved utilizing geogrid consisting of Mirafi EXT or equivalent grid placed within the fill at 3-foot vertical intervals through the entire height of the slope. The first layer should be at 2 feet above the bottom of the keyway and the uppermost layer should be at 4 feet below finished grade in the rear yards of the homes. The individual layers of geogrid shall extend, laterally from within 12 inches of the face of the finished slope to the back of the excavation. Where necessary, to cover width of the filled area, overlap of the geogrid shall be a minimum of 18 inches. Special care shall be taken by the contractor to avoid damage to the geogrid by earthwork equipment during fill placement and compaction. We recommend a minimum of 9 to 12 inches (loose thickness) of fill material be placed over the geogrid prior to working with compaction equipment.

Landslide Qls-3: This landslide is unstable and will likely reactivate. If this slide reactivated, it would contribute large quantities of debris into the existing designed debris basin. At the grading plan review stage, the volume of this basin should be evaluated and resized to accommodate this debris or the slide should be completely removed.

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4.5.2 Natural Slopes and Surficial Failures

The global stability of natural slopes was evaluated by individual analysis of slopes by underlying earth unit, orientation, height and steepness as outlined in Appendix D. Our analyses of these slopes concluded that only Natural Slope Nos. 4 and 5 are unstable. Setback recommendations are provided for Natural Slope 4 on Plate 13 and on Cross-Section C-C' and are explained in greater detail in section 4.5.1, above. A shear key is proposed for Slope 5, as also previously discussed.

All lots, infrastructure, and other site improvement proposed at the top or toe of existing natural slopes may be influenced by potential surficial instability of these natural slopes. Once 40-scale grading plans become available, these areas should be identified and adequate setbacks, if required, should be established on the basis of slope gradient and condition at that time. These setbacks are not considered to present a substantial geotechnical impact to the feasibility of proposed lots at this time. If these setbacks cannot be established, routine surficial slope stabilization methods can be incorporated such as retaining walls, catchment areas or walls, or deepened foundations that penetrate the depth of potential surficial failure. Specific areas for such mitigation will be identified in the final geotechnical report in conjunction with the final 40-scale grading plan.

4.5.3 Cut Slopes and Fill Slopes

There are 6 cut slopes higher than 50 feet and 4 fill major slopes planned for this project. All proposed cut slopes and fill slopes are designed at a slope gradient of 2:1 (H:V). The 6 cut slopes and 4 fill slopes were analyzed for global stability and were found to be stable as designed.

These slopes will be constructed using typical slope drainage systems in accordance with UBC (1997) including mid-slope drainage swales and brow ditches and are subject to typical homeowners maintenance requirements.

4.5.4 Debris Flow Generation

Several areas of potential debris flow generation have been identified along the norther property boundary. These areas are represented by proposed areas of development adjacent to tributary

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drainages. Debris basins have been designed at each of these locations and are shown on the Vesting Tentative Tract Map used as a base map for Plates 13 and 14.

4.6 TEMPORARY STABILITY OF BACKCUTS

Temporary cuts will be necessary when excavating shear keys such as that proposed at natural Slope 5 (and landslide Qls-2). Since stabilization is being performed in areas found to be unstable in their current configuration, steeper backcuts are unstable by definition. The stability of proposed backcuts should be analyzed during the grading plan review stage when greater design detail is available. Backcuts should not be excavated especially where worker safety or stability of adjacent structures may be jeopardized until stability analyses can be performed and safety measures developed.

4.7 TSUNAMI, SEICHE, AND RESERVOIR FAILURE

Due to the inland location of the site, hazards from tsunamis are considered nonexistent. As no water storage reservoirs are currently located near the site, hazards from seismically induced seiches or reservoir failure at the site are considered low at this time.

4.8 REMOVAL OF COMPRESSIBLE SOILS

Colluvium and topsoil will generally be removed as a normal part of the mass excavation process. Where fills are planned, normal to heavy benching operations will frequently result in complete removal on slopes steeper than 5:1. On slopes flatter than 5:1 and in drainage swales, separate cleanout operations may be necessary. For planning purposes, we estimate a removal thickness of less than 5 feet in swales prior to typical benching.

4.9 EXPANSIVE SOILS

Expansion testing was not performed as part of this scope of work. Moderately expansive siltstone and claystone may occur as beds within sandstone and conglomerate layers of the Chatsworth Formation; the most common earth unit at the site. Cut pad areas exposing these potentially moderately expansive interbeds may be susceptible to differential expansion during wetting and drying cycles. Differential expansion could influence the design of pavements, building foundations, and hardscape and/or will require removal and recompaction with non-expansive soils. Final lot and foundation design should be based on lot-specific data collected

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during future detailed design stages and upon exposure of final pad grade materials during construction.

4.10 SOIL CORROSION AND CONCRETE REACTION POTENTIAL

Six samples of the subsurface soils obtained from our exploratory borings were tested for preliminary potential corrosion to concrete and reinforcing steel. The material was tested for pH, resistivity, soluble sulfates and soluble chlorides. The results of the preliminary corrosion tests are presented in Appendix B.

Based on the preliminary corrosion screening tests, the corrosion values from the soils tested are normally considered to have be representative of soils with a low corrosivity towards concrete and a high to severe corrosivity toward buried metals. Kleinfelder does not practice corrosion engineering. We recommend that a corrosion engineer be retained to evaluate the corrosion potential of the site to proposed improvements, to recommend further testing as required, and to provide specific corrosion mitigation methods appropriate for the project. We have provided the above corrosion tests as requested by the client. These tests are only a preliminary indicator of soil corrosivity for the samples tested. Other soils found on site may be more, less, or of a similar corrosive nature.

4.11 SHRINKAGE/BULKING AND SUBSIDENCE

Materials excavated for re-use as fills may shrink or bulk depending on their in-situ density and compaction characteristics. The degree of shrinkage or bulking will vary with depth and earth unit. Earth units mapped onsite include Saugus Formation sandstone and conglomerate, Chatsworth Formation sandstone, and lower density, surficial deposits including topsoil and colluvium. Shrinkage and bulking factors are very difficult to estimate because of the natural variability of earth materials and other unknowns. The recommended shrinkage and bulking values presented are estimates only and should be used accordingly. Since the majority of the planned development at the site will occur within the Chatsworth Formation, the overall subsidence resulting from surface compaction and the placement of fill is expected to be less than 0.1 foot. Although subsurface exploration, sampling, and laboratory analyses will need to be performed to provide shrink/bulk estimates to be used in conjunction with design civil and contractor information for similar projects in similar earth units, we estimate these values for preliminary planning purposes as follows:

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- **Saugus Formation (QTs)** occurs along the northern project boundary and is moderately dense. Several cut slopes may occur in this area and, although this earth unit probably does not represent the primary source of fill materials, it will be a factor in computing the earthwork balance. Excavations to approximately 20 feet below existing grade should be expected to experience very little shrinkage/bulking. Deeper cuts may bulk slightly between 0 and 5%.

- **Chatsworth Formation (Kcs)** represents the most widely distributed earth unit onsite and thus will become the primary source of fill materials. This unit is older and more dense than the Saugus Formation and can be expected to bulk. Bulking will vary with depth substantially as described by seismic refraction studies. For planning purposes, this unit should be estimated to bulk approximately 5 to 8 percent in the upper 25 feet and between 8 to 10 percent deeper than 25 feet.

- **Shallow topsoil and colluvium** represents a small portion of the excavation for the project but will shrink substantially due to it's low density nature. For planning purposes, we estimate that the shrinkage associated with the on-site colluvium will be on the order of 10 to 15 percent.

4.12 SUITABILITY OF ONSITE SOILS AS FILL MATERIALS

The on-site soils encountered during our site exploration, excluding debris and/or other deleterious materials, are considered suitable for use as engineered fill. When adequately compacted at an appropriate moisture content, these materials can be expected to possess suitable bearing and settlement characteristics for the proposed construction.

Based on the sandy nature of the potential fill materials to be placed in deep canyon areas, we expect that most of the settlement will occur during construction. We estimate that about 1 to 2 inches of settlement may occur as post-construction settlement resulting from placement of 80 feet of engineered fill. We recommend that a fill settlement monitoring plan be developed and implemented for all fills deeper than 50 feet.

4.13 RIPPABILITY OF EARTH UNITS

Seismic refraction studies were performed by others during previous studies concluded that the Chatsworth sandstone units (the hardest of onsite earth units) may be difficult to excavate below

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a depth of about 25 feet below existing ground surfaces. The locations of these profiles are shown on Plates 13 and 14. Ground velocities obtained from the refraction survey were correlated with the findings of the subsurface exploration program. Generally, the surficial units were concluded to be excavatable with typical suitably sized hillside earthwork equipment in good operating condition.

Seismic or ground velocity and rock type are not the only indicators of rippability. Penetration of the ripper tooth into the material regardless of seismic velocity is often the key to successful ripping. The uniformity or homogeneity of the material, degree and type of cementation, alteration, or weathering, and rock type also factor into the ability of a rock material to be effectively ripped. Structures within the rock, such as faulting, shear zones, foliation, fractures, jointing, and the direction of the ripping pattern with respect to the orientation of these structures also affect the ability of the rock material to be ripped without pre-blasting. Additional seismic refraction analyses in conjunction with rock coring to assess fracture spacing and character can be conducted as part of the final geotechnical report in conjunction with the final project 40-scale grading plan.

Excavations in rock areas will produce oversized rock (i.e. rock greater than six inches in maximum dimension). Oversized rock greater than six inches in size but less than three feet may be placed in the deeper fill areas where settlement considerations can be addressed and where deep utilities are not proposed. The larger rock will require special handling to reduce its size or place as windrows in a rock disposal fill.

4.14 GENERAL EARTHWORK AND GRADING RECOMMENDATIONS

General grading and earthwork guidelines are provided in Appendix F, herein. These guidelines are general in nature and pertain to "typical" earthwork in hillside environments. Preliminary, site specific recommendations are contained in the report text and, where redundant with the grading and earthwork guidelines, should supercede those recommendations

4.15 RETAINING WALLS

Retaining walls will be required in localized areas throughout the project site to facilitate the proposed grade separations depicted on the grading plans. Our preliminary design recommendations are presented in the following sections for the various wall locations and

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planned wall types. Final geotechnical design recommendations will be provided at the 40-scale plan stage.

4.15.1 Proposed Walls

Wall 1 – Wall Below Lots 435-438 (Section M-M'). The preliminary design of the wall system below lots 435 through 438 consists of a set of 5 individual walls tiered down the existing slope to provide the required grade change of 90 feet in a horizontal distance of approximately 65 feet. The individual walls will retain up to approximately 10 feet of engineered fill sloped at approximately 2:1 (H:V). Deepened footings will be required to maintain adequate distance between the edge of footing and the slope face and the walls may need to be designed for surcharge pressures of the upslope adjacent wall. Depending on site constraints and final design configuration, drilled piers with permanent lagging walls may be required or may be the most feasible construction method. With this option, tie back anchors may be required for the upper walls where up to 40 feet of fill is to be placed.

4.15.2 Structural Reinforcement

Structural reinforcement of the slopes by use of soldier pile walls and tie-back or rock anchors is also a remediation alternative that can be used to increase slope factor of safety to greater than 1.5. Section M-M may require a combination of a mechanically stabilized earth wall and drill pier and grade beams. The drilled piers should be installed close to the daylight line and will most likely be on the order of 4-foot diameter at approximately 8-feet on center. The piers will need to be about 100 feet deep and may also need to be tied back. Design of a structural reinforcement system is not within the scope of this proposal; however, we can furnish these design alternatives and associated costs upon request.

Wall 2 – Wall Below Lots 85 to 90 (Section H-H'). A 10-foot high retaining wall is proposed at the toe of the slope that descends from lots 85 to 90. The retaining wall will support an approximate 2:1 (H:V) engineered fill slope. Standard masonry block or reinforced concrete construction may be used for the wall. Wall foundations may consist of shallow spread foundations once any unsuitable alluvial deposits are overexcavated and replaced as engineered fill or drilled piers extending into competent sandstone materials. The alluvial naturals are mapped to be on the order of 10 feet in thickness.

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Wall 3 – Wall Back of Lots 41 through 44 (Sections E-E and F-F'). A 6- foot high retaining wall is shown on the grading plan at the back of lots 41 through 44. Typical masonry block or reinforced concrete construction is anticipated with shallow spread-type foundations. The wall is planned at the top of a natural slope, and will probably require founding in competent bedrock.

Wall 4 – Midslope Wall Below Lots 104 and 105 (Section I-I'). A minor retaining wall is preliminarily planned to be constructed at about elevation 1,200 feet on the proposed engineered fill slope below lots 104 and 105. The wall is planned to be located between B Street and the proposed horse trail. The wall is anticipated to be approximately 4 to 6 feet in height, of masonry or reinforced concrete construction, and supported on shallow spread foundations supported in engineered fill.

Wall 5 – Within Lots 334 through 337 (Section U-U'). A high retaining wall is planned within lots 334 through 337 to maintain required line-of-site for the curve in B Street. The wall will be on the order of 20 feet in height. We anticipate the wall will be of reinforced concrete construction and will retain level to 2:1 sloping ground. We anticipate the wall may be supported on shallow spread foundations. Walls taller than 15 to 20 feet may need to be tied back or braced depending on the actual earth pressures used in design. A MSE (mechanically-stabilized earth) retaining wall could be considered at this location. Construction would receive some overexcavation of bedrock materials to allow the placement of the soil reinforcement (geogrids) that typically extend a distance behind the wall of 0.7 to 0.85 times the height of the wall.

Wall 6 – Above Lots 332 and 333 (Section N-N'). A midslope, approximately 2- to 6-foot high, retaining wall is planned to be constructed on the proposed cut slope northeast of lots 332 and 333. We anticipate the wall will be of masonry block or reinforced concrete construction and will be supported on shallow spread foundations in the underlying bedrock.

Wall 7 – Retaining Wall Below Rock Pedestal (Section T-T'). A retaining wall is planned approximately 20 feet east of the rock pedestal and 10 to 30 feet east of B Street near the southern tip of the site. Due to the out-of-slope bedding conditions that will be exposed by the construction of the wall, the wall will need to be designed to resist the potential downslope movements of the rock mass above the toe of the retaining wall, which will be highly influenced by the large rock pedestal located west of the wall. We anticipate that the required design pressures to resist slope movement with a factor of safety of 1.5 will exceed standard lateral earth pressures. Permanent tie-back anchors may be required for design of the wall.

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As an alternative, the use of soil nails or drilled piers to anchor or stabilize the rock mass could be evaluated. This alternative would include installation of drilled piers or soil nails to extend through the lowest plane out-of-slope bedding material that could potentially fail with the proposed cut. The soil nails and/or piers would act as anchors to resist potential downslope movement of the materials and rock pedestal upslope from the soil nails or piers.

4.15.3 Preliminary Design Recommendations for Walls Below Grade

Lateral Earth Pressures

The following preliminary recommendations are presented for preliminary design and feasibility analyses of retaining walls. Active lateral earth pressures from horizontal backfill using the on-site native soils on walls that are free to rotate at least 0.1 percent of the wall height can be taken as equivalent to a fluid weighing 30 pounds per cubic foot (pcf). Walls which are restrained against movement or rotation at the top should be designed for an at-rest equivalent fluid pressure of 50 pcf or a uniform pressure of 24H psf, where H is the height of the wall in feet. These values do not include additional lateral surcharge to adjacent foundations or traffic. Lateral load resistance may be derived from passive resistance along the vertical sides of the footings, friction acting at the base of the footing, or a combination of the two. An allowable passive earth pressure of 300 psf per foot of depth may be used for design.

The above preliminary values are applicable if the on-site soils are used for backfill behind the walls. The recommended value does not include compaction- or truck-induced wall pressures. Care must be taken during the compaction operation not to overstress the wall. Heavy construction equipment should be maintained a distance of at least 3 feet away from the walls while the backfill soils are being placed. Hand-operated compaction equipment should be used to compact the backfill soils within a 3-foot-wide zone adjacent to the walls.

The recommended lateral earth pressures assume that drainage will be provided behind the walls, by the on site soils, to reduce the potential build up of hydrostatic pressures. Drilling behind walls may consist of a 2-foot wide zone of Class 2 permeable base behind the wall with a collector pipe at the toe of the wall. Alternatively, a drainage board may be used behind the wall that is attached to a collector pipe that will discharge the collected water. The actual backfill materials should be evaluated by the geotechnical engineer prior to placement behind the

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retaining walls. The above recommendations will need to be updated based on actual field conditions and the final project design.

Shallow Foundations

Retaining walls that are supported on shallow spread footings bearing on engineered fill and/or competent bedrock materials. Foundations should have a minimum width of 24 inches and should be placed at a minimum depth of 18 inches below the lowest adjacent grade or adjacent finish floor elevation, whichever is lower.

Preliminary geotechnical recommendations for design of foundations on engineered fill are presented below. Confirmation of the bearing value of fill should be conducted prior to final design.

Table 1
Soil Pressure Values

Soil Type	Allowable Bearing	Passive Pressure*	Friction Coefficient**
Engineered Fill	2,000 to 3,000 psf	250 to 300 pcf	0.3 to 0.4
Bedrock	3,000 to 4,000 psf	300 to 350 pcf	0.3 to 0.4

*EFP = Equivalent fluid pressure

**Friction and passive resistance may be combined without reduction.

The recommended bearing value is for total dead plus live loads and may be increased by one-third for wind, seismic or other transient loading conditions.

NOTE: The pressures recommended above were based on the assumption that the on site soils will be compacted to approximately 90% of maximum dry density. The use of select granular fill may lower the recommended driving earth pressure. The resisting pressure provided is an ultimate value. The resisting pressure value may be increased by 1/3 for total loads, including seismic forces.

- Resistance to lateral loading may be provided by friction acting along the foundation base. The coefficient of friction was estimated to be 0.4 for native site soils or for recompacted site soils, and may be used with dead loads. This value includes a reduction factor of one-third. This value may be increased by 1/3 for total loads, including seismic forces.

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- The lateral earth pressure to be resisted by retaining walls should be increased to allow for surcharge loads. The surcharge considered should include the loads from any structures or vehicle traffic within a distance approximately equal to the height of the retaining wall.

- Backfill immediately behind any retaining structure should be a free-draining granular material. Comments on the characteristics of import soils will be given by the geotechnical consultant after the material is on the project, either in place, or stockpiled in adequate quantities to complete the project.

- Backfill behind retaining walls should be with soils that have been properly moisture conditioned to approximately optimum moisture content and uniformly compacted to at least 90% of maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. To aid in the compaction operation, retaining wall backfill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

- Compaction within the area of a 1:1 slope from the bottom of wall excavations should be performed by hand operated compaction equipment. This is intended to reduce potential "locked-in" lateral pressures caused by compaction with heavy grading equipment.

- Weepholes, backdrains, or an equivalent system of backfill drainage should be incorporated into the retaining or subterranean structure wall design (see Appendix F for backdrain details). It is strongly suggested that the drainage fabric (Miradrain™ type material) option be utilized for any project retaining walls.

- The final grade should be such that all water is diverted away from the retaining wall's foundation or backfill.

4.16 PRELIMINARY BRIDGE FOUNDATION RECOMMENDATIONS

Several design concepts have been prepared for the two bridges that cross Devil Canyon. Preliminary recommendations for the bridge foundations are presented in Appendix G of this report. Additional bridge specific investigations will be necessary prior to finalization of the design recommendations.

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5 ADDITIONAL SERVICES

This report was based on the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to check conformance with the recommendations of this report. Maintaining Kleinfelder as the geotechnical engineering consultant from beginning to end of this project will help provide continuity of services. The recommended services include, but are not necessarily limited to, the following:

- Consultation as required during the final design stages of the project.
- Review of pier, foundation, and/or grading plans.
- Observation and testing during site preparation, pier installation operations, placement of engineered fill, and backfill of utility trenches.
- Consultation as required during construction.

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6 LIMITATIONS

This report has been prepared for the exclusive use by the Presidio Chatsworth Partners, LLC for specific application to the proposed Tentative Tract 53138, Chatsworth Ridge Estates residential project located in the Chatsworth area of Los Angeles County, California. The findings, conclusions and recommendations presented in this report were prepared in a manner consistent with the standards of care and skill ordinarily exercised by members of its profession practicing under similar conditions in the geographic vicinity and at the time the services will be performed. No warranty or guarantee, expressed or implied, is made. Tentative map or preliminary grading or foundation plans were not available at the time of this evaluation. Our preliminary field exploration for this project was based on the preliminary development concept maps as provided to us by the client.

The client has the responsibility to see that all parties to the project, including the designer, contractor, subcontractors, etc., are made aware of this report in its entirety.

This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report for an adjacent or nearby project shall notify Kleinfelder of such intended use. Based on the intended use of this report and the nature of the new project, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

The scope of our services did not include any environmental site assessment for the presence or absence of hazardous/toxic materials. Kleinfelder will assume no responsibility or liability whatsoever for any claim, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

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AERIAL PHOTOGRAPHS

Date	Flight Number	Frame	Scale	Source
11-3-1952	AXJ-2K	95 – 97	1:1,666	Continental Aerial Photo
11-3-1952	AXJ-2K	133 – 134	1:1,666	Continental Aerial Photo
5-10-1993	C88-27	15 - 16	1:2,000	Continental Aerial Photo

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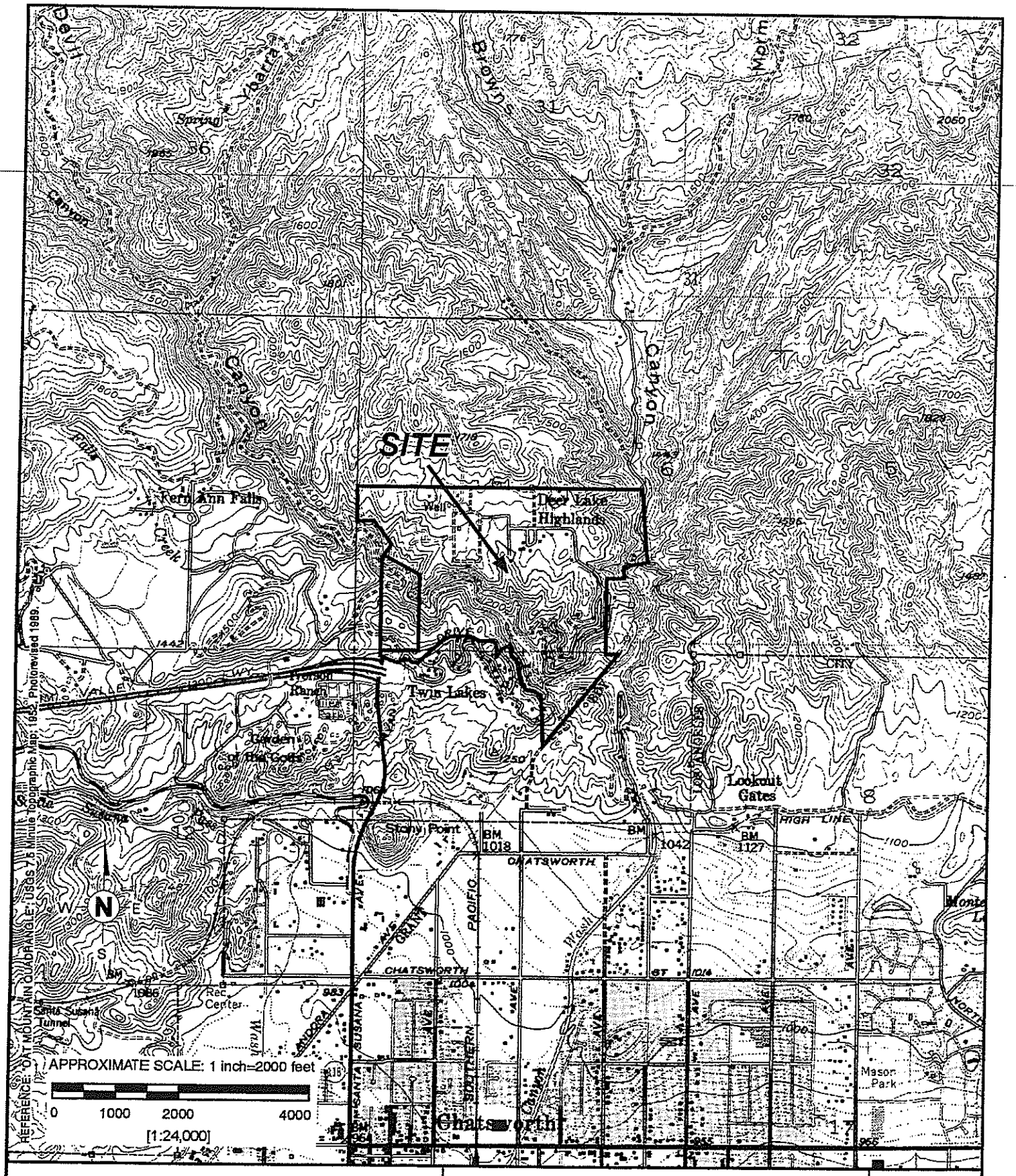
Plates



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SITE LOCATION MAP

CHATSWORTH RIDGE ESTATES
TENTATIVE TRACT 53138
CHATSWORTH, CALIFORNIA

PLATE

1

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REFERENCE: "GEOLOGY OF CALIFORNIA, Chapter 1, Page 3"; by R.M. Norris and R.W. Webb, University Of California, Santa Barbara; Published By: John Wiley & Sons, Inc.; dated 1976.

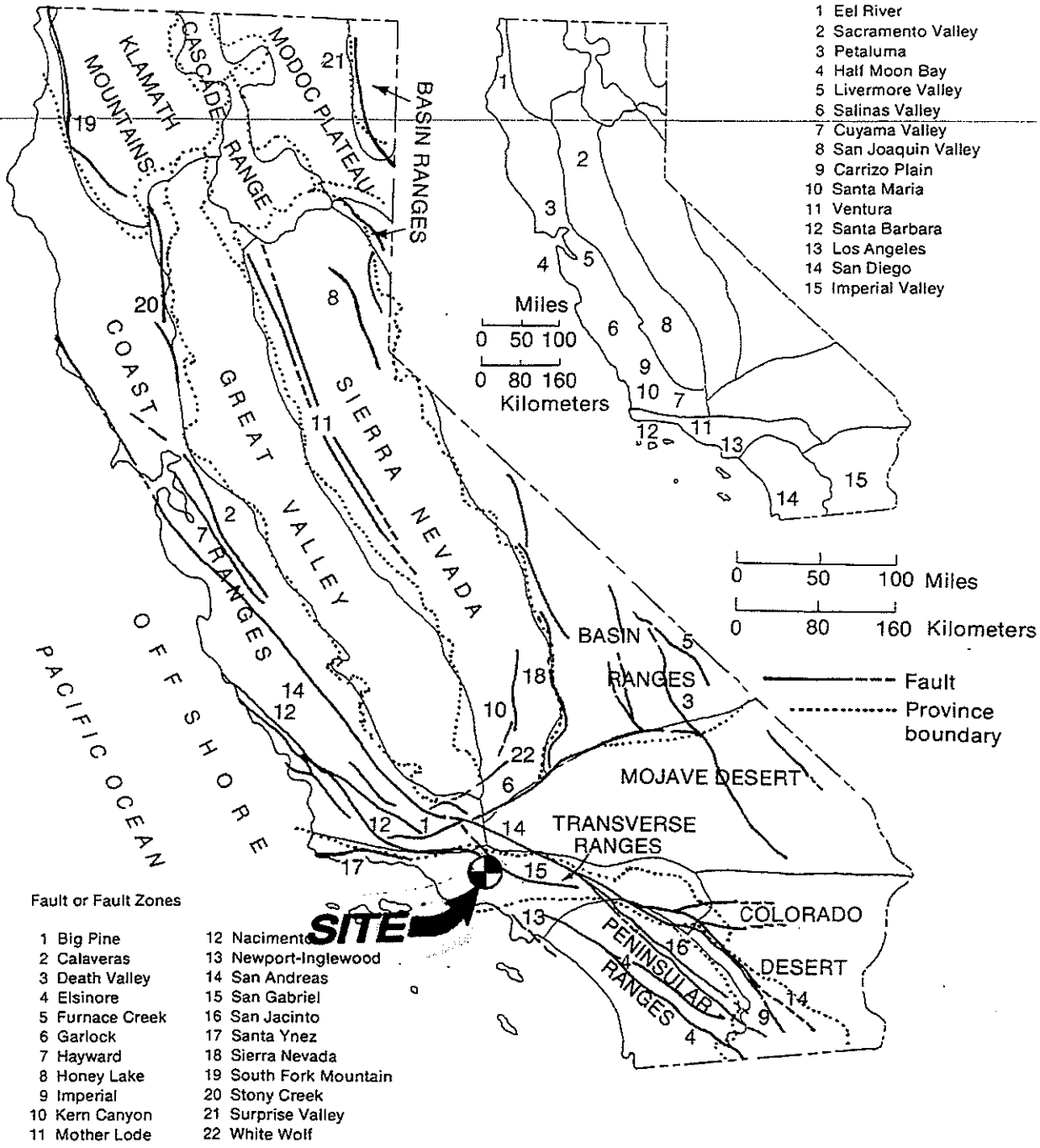

Figure 1-2.

Geomorphic provinces and principal faults. Insert (upper right) shows principal marine sedimentary basins. (Source: California Division of Mines and Geology)

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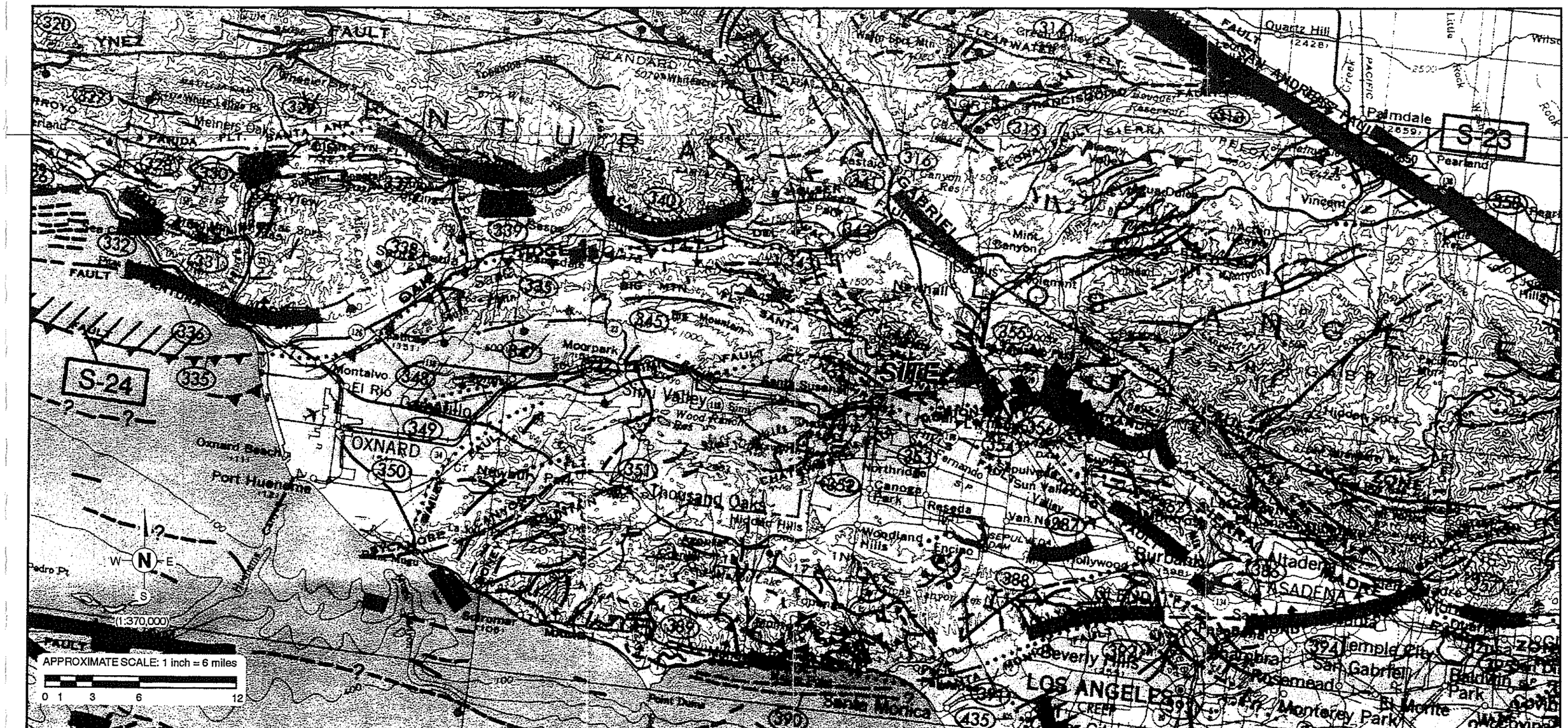
S-23
S-24
SITE
OXNARD
Thousand Oaks
Simi Valley
Moorpark
Newhall
Palmdale
Pearland
Vincent
Quartz Hill
Hidden Spot
Canoga Park
Reseda
Northridge
Woodland Hills
Encino
Burbank
Altadena
PASADENA
Temple City
San Gabriel
Rosemead
Monterey Park
El Monte
Baldwin Park
Montebello
Whittier
Pico Rivera
Bell Gardens
Bell
Downey
Huntington Park
Inglewood
Hawthorne
Lawndale
Manhattan Beach
Hermosa Beach
Redondo Beach
Santa Monica
Beverly Hills
LOS ANGELES
Oxnard Beach
Port Hueneme
Point Dume
Montalvo
El Rio
Meiners Oaks
Mint Canyon
Sun Valley
Van Nuys
Hollywood
Glendale
Pacoima
Sylmar
Santa Susana
Big Mountain
Wood Ranch
Green Valley
Whitney Mtn
Tejon Pass
Gorman
Frazier Mtn
Pyramid Res
Castaic Res
Bouquet Reservoir
Mint Canyon
Sierra Pelona Mtns
Sierra Madre
Santa Ana
Santa Susana
Simi
Oak Ridge
Pacific Ocean
Santa Monica Mtns
Puente Hills
Chino Hills
Santa Ana Mtns
Palos Verdes Hills
Pacoima Mtn
Hidden Hills
Sun Valley
Pacoima
Sylmar
Newhall
Saugus
Santa Clarita
Canyon Res
Big Mtn
Mint Canyon
Vincent
Palmdale
Pearland
Quartz Hill
Green Valley
Whitney Mtn
Tejon Pass
Gorman
Frazier Mtn
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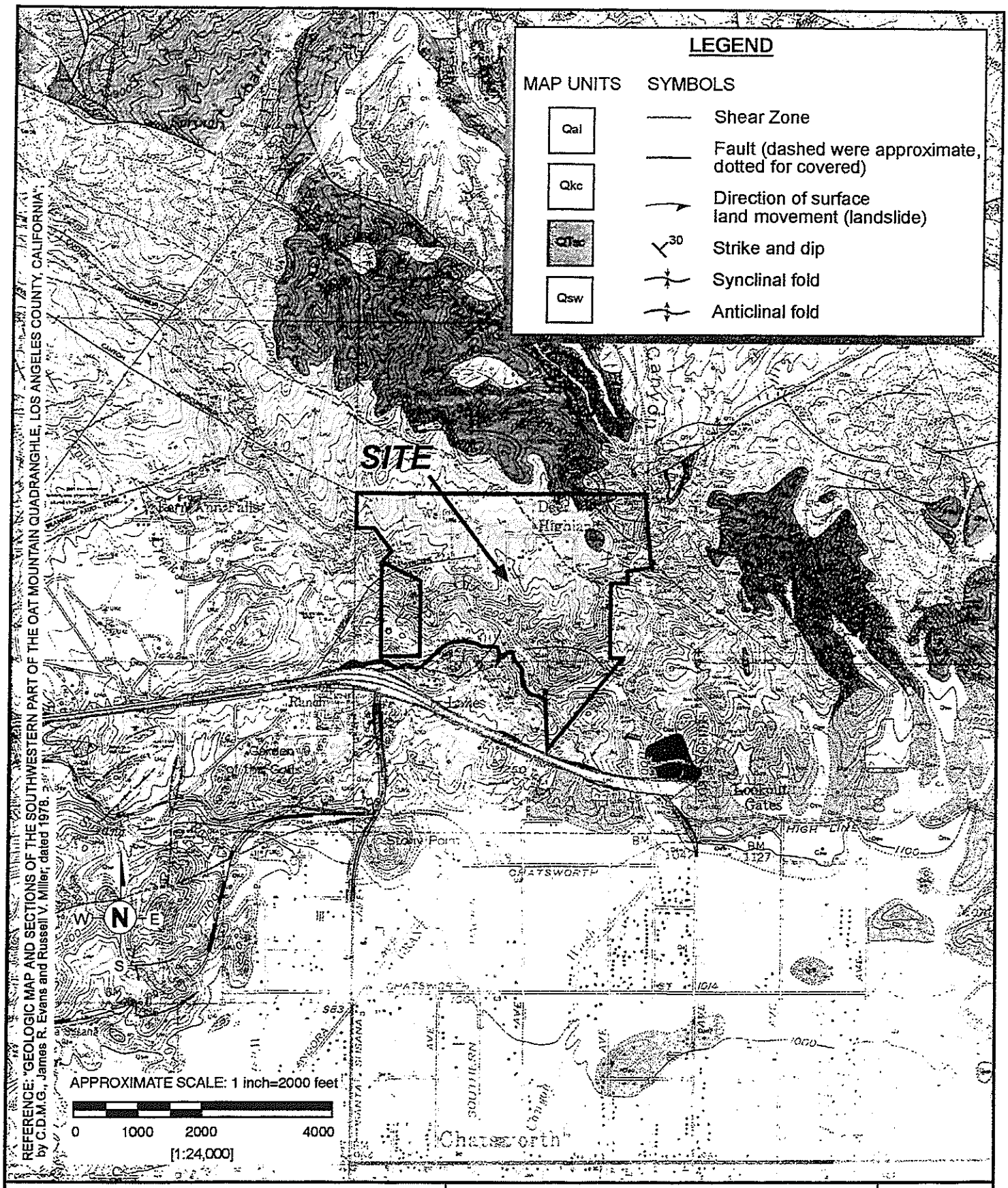
Castaic Res
Bouquet Reservoir



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REGIONAL GEOLOGIC MAP, EVANS 1978

CHATSWORTH RIDGE ESTATES
TENTATIVE TRACT 53138
CHATSWORTH, CALIFORNIA

PLATE
4

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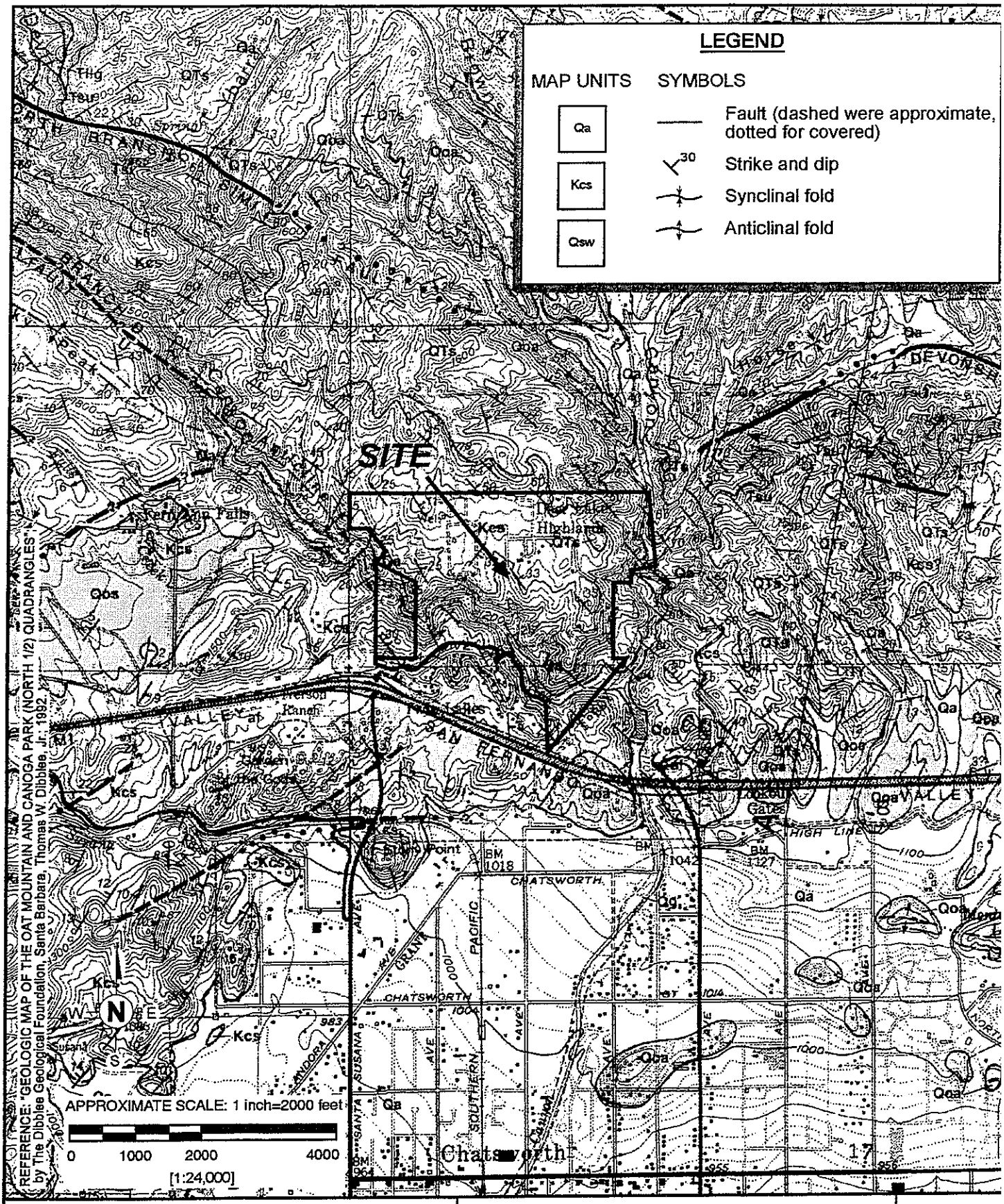

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REGIONAL GEOLOGIC MAP, DIBBLEE 1992

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TENTATIVE TRACT 53138
CHATSWORTH, CALIFORNIA

PLATE
5

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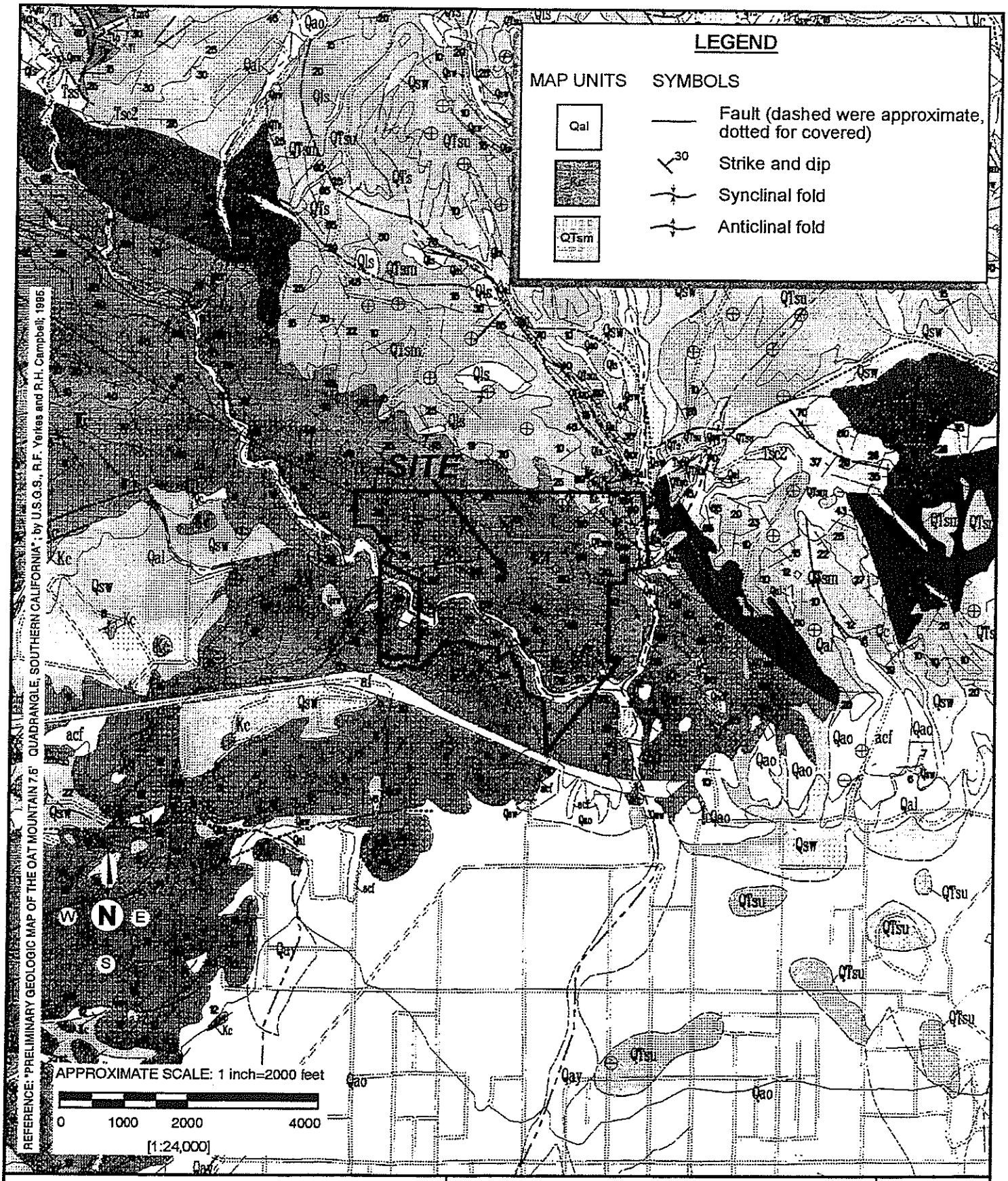

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REGIONAL GEOLOGIC MAP, YERKES 1995

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CHATSWORTH, CALIFORNIA

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6

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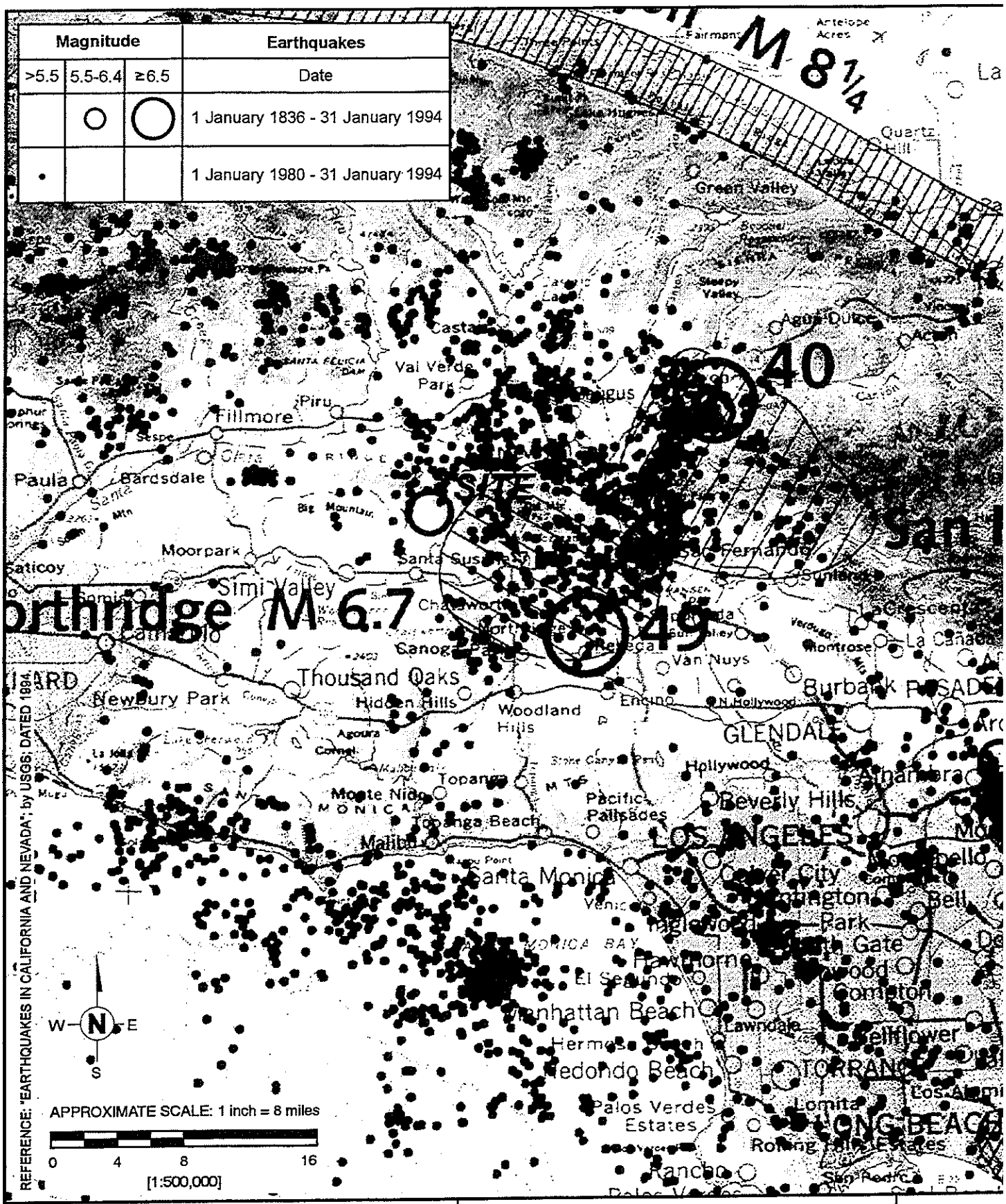

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HISTORIC SEISMISITY MAP

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TENTATIVE TRACT 53138
CHATSWORTH, CALIFORNIA

PLATE
7

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REFERENCE: "THE NORTHRIDGE, CALIFORNIA EARTHQUAKE OF 17 JANUARY 1994, SPECIAL PUBLICATION 116, Page 90" ; by C.D.M.G., Earl W. Hart, Jerome A. Treiman, and William A. Bryant; 1995.

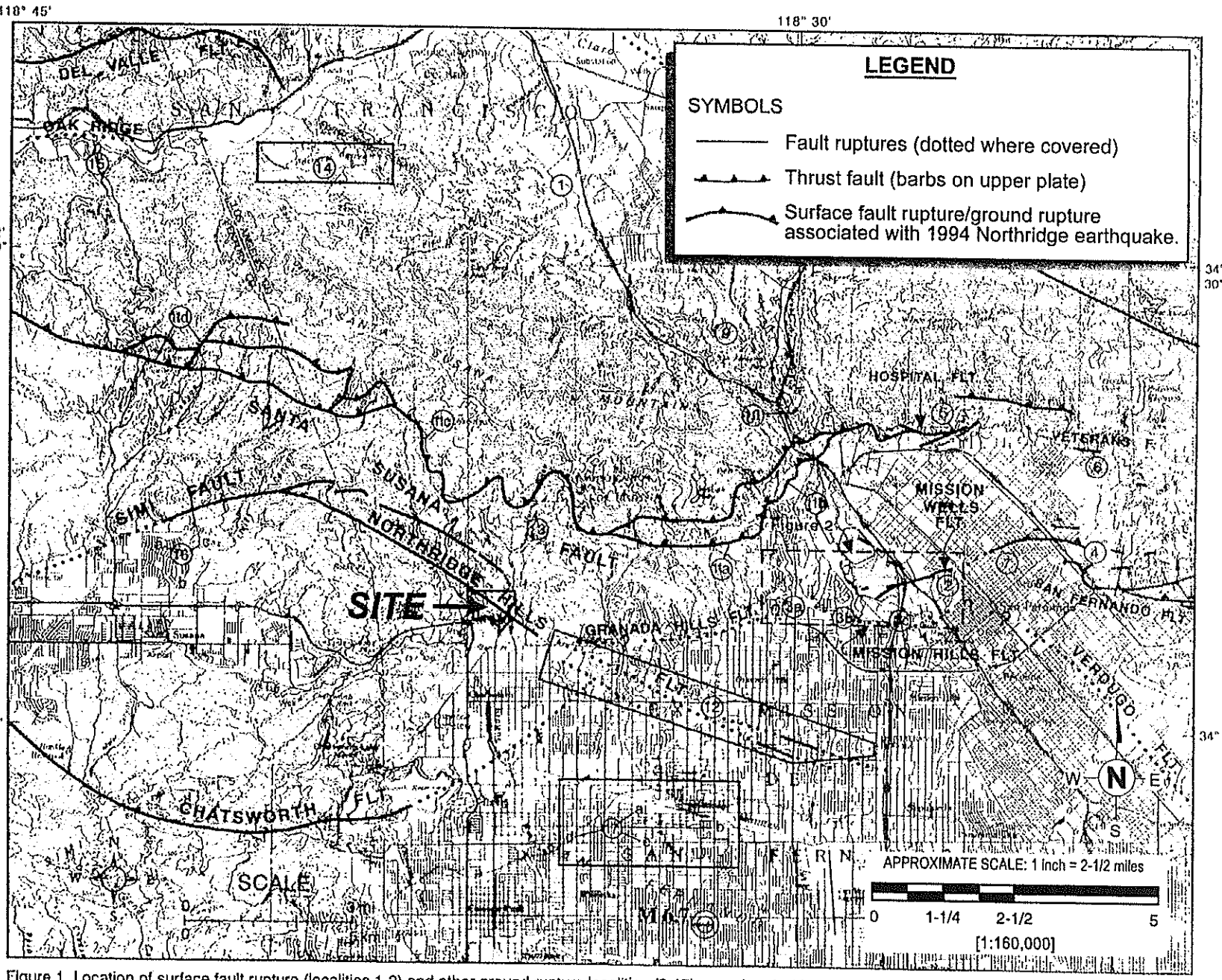

Figure 1. Location of surface fault rupture (localities 1-2) and other ground rupture localities (3-17) associated with the Northridge earthquake of January 17, 1994. Principal late Quaternary faults, the 1994 earthquake epicenter, and the 1971 fault ruptures (heavy lines) are shown.

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1994 COSEISMIC GROUND RUPTURE MAP

CHATSWORTH ESTATES
TENTATIVE TRACT 53138
CHATSWORTH, CALIFORNIA

PLATE 8

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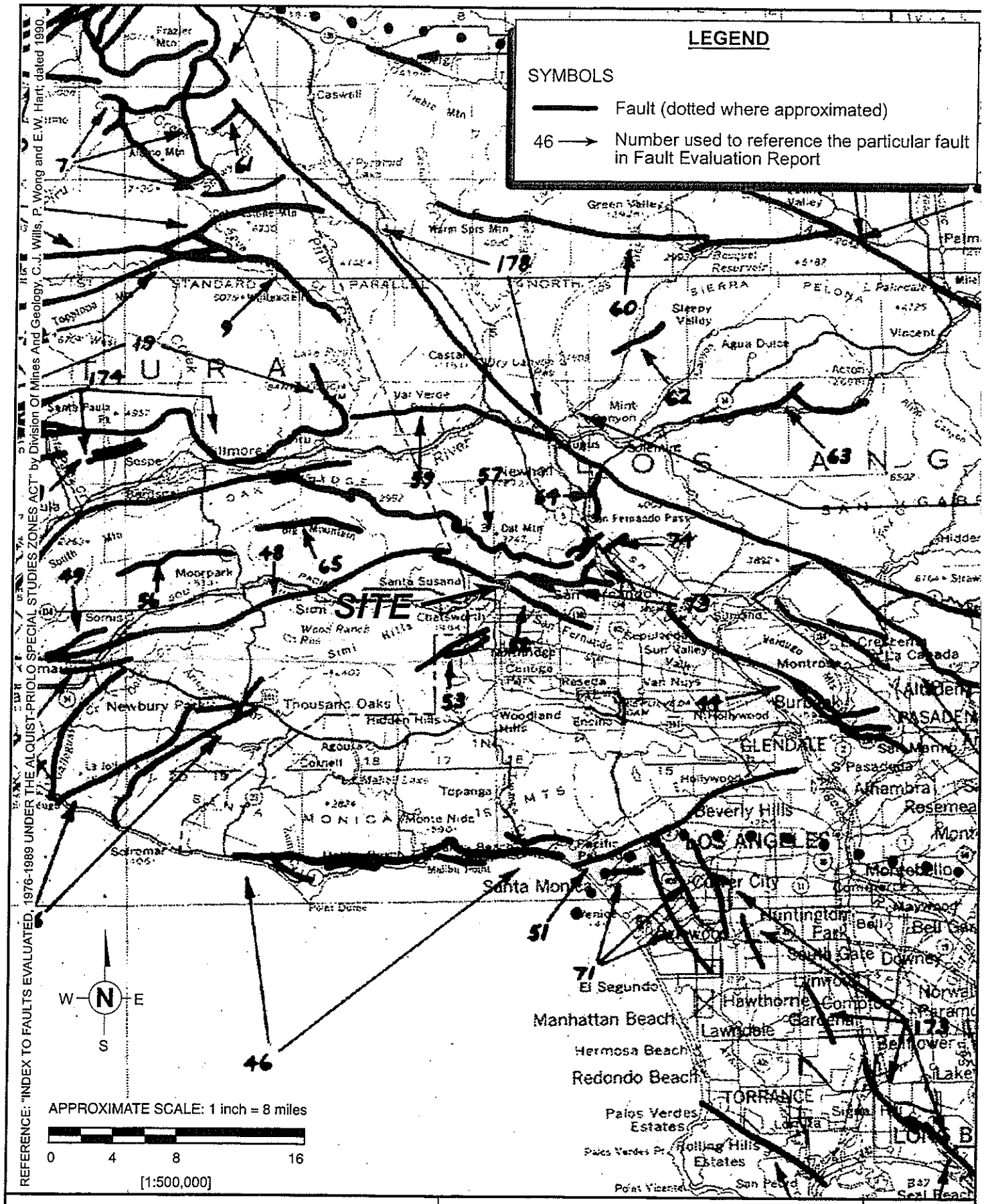
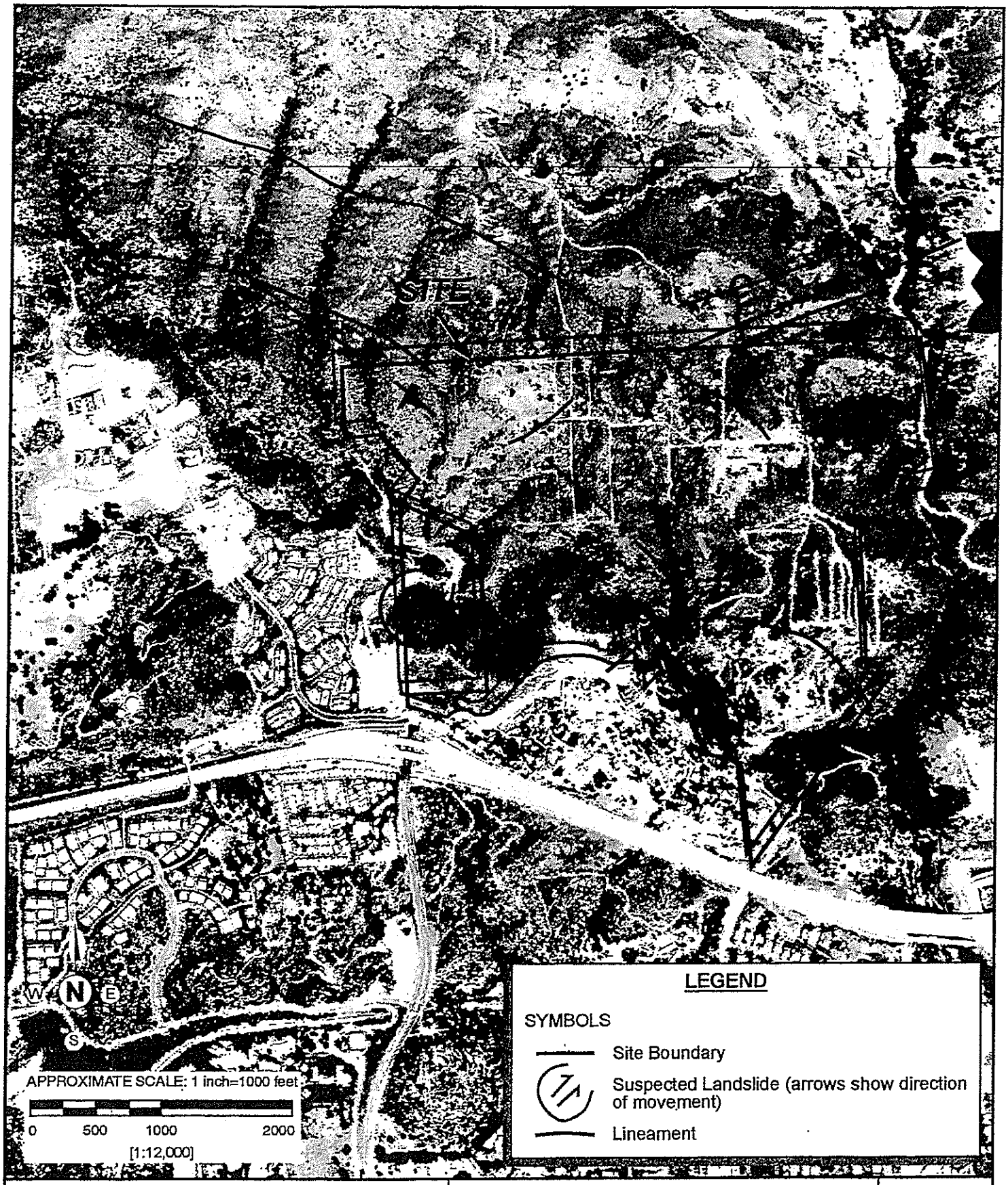

LEGEND
SYMBOLS
Fault (dotted where approximated)
46 → Number used to reference the particular fault in Fault Evaluation Report
SITE
Santa Susana
Simi
Moorpark
Thousand Oaks
Newbury Park
Calabasas
Woodland Hills
Topanga
Malibu
Santa Monica
Venice
Beverly Hills
Hollywood
Burbank
Glendale
Pasadena
Alhambra
Montebello
Huntington Park
South Gate
Downey
Norwalk
Bellflower
Lakewood
Long Beach
Torrance
Lomita
Palos Verdes Estates
Rolling Hills Estates
Rancho Palos Verdes
Redondo Beach
Hermosa Beach
Manhattan Beach
El Segundo
Lawndale
Hawthorne
Inglewood
Culver City
Sepulveda
Van Nuys
Reseda
Northridge
Chatsworth
Sylmar
Sun Valley
Montrose
La Cañada
Altadena
Rosemead
Sleepy Valley
Agua Dulce
Green Valley
Warm Spgs Mtn
Castaic
Val Verde
Newhall
Saugus
Santa Clarita
Sespe
Fillmore
Piru
Somis
Oxnard
Point Dume
Point Vicente
San Pedro
Seal Beach
Palmdale
Vincent
Acton
Mint Canyon
Cat Mtn
San Fernando Pass
Santa Paula Pk
Topatopa Mtn
Frazier Mtn
Caswell
Alamo Mtn
Pyramid Lake
Pine Mtn
Tejon Pass
Green Valley
Pelona
Sierra
Standard
Parallel
North
Oak Ridge
Simi Hills
Santa Monica Mts
Los Angeles
Pacific
Ventura
Santa Barbara
Kern
San Bernardino
Los Angeles
Orange
San Gabriel
Hidden Hills
Agoura
Calabasas
Malibu Point
Pacific Palisades
Sepulveda Pass
Cheviot Hills
Encino
Tarzana
Reseda
Van Nuys
Sun Valley
Montrose
La Cañada
Altadena
Rosemead
Monterey Park
Maywood
Bell
Bell Gardens
Lynwood
Compton
Gardena
Carson



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AERIAL PHOTOGRAPH INTERPRETATION MAP

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TENTATIVE TRACT 53138
CHATSWORTH, CALIFORNIA

PLATE
10

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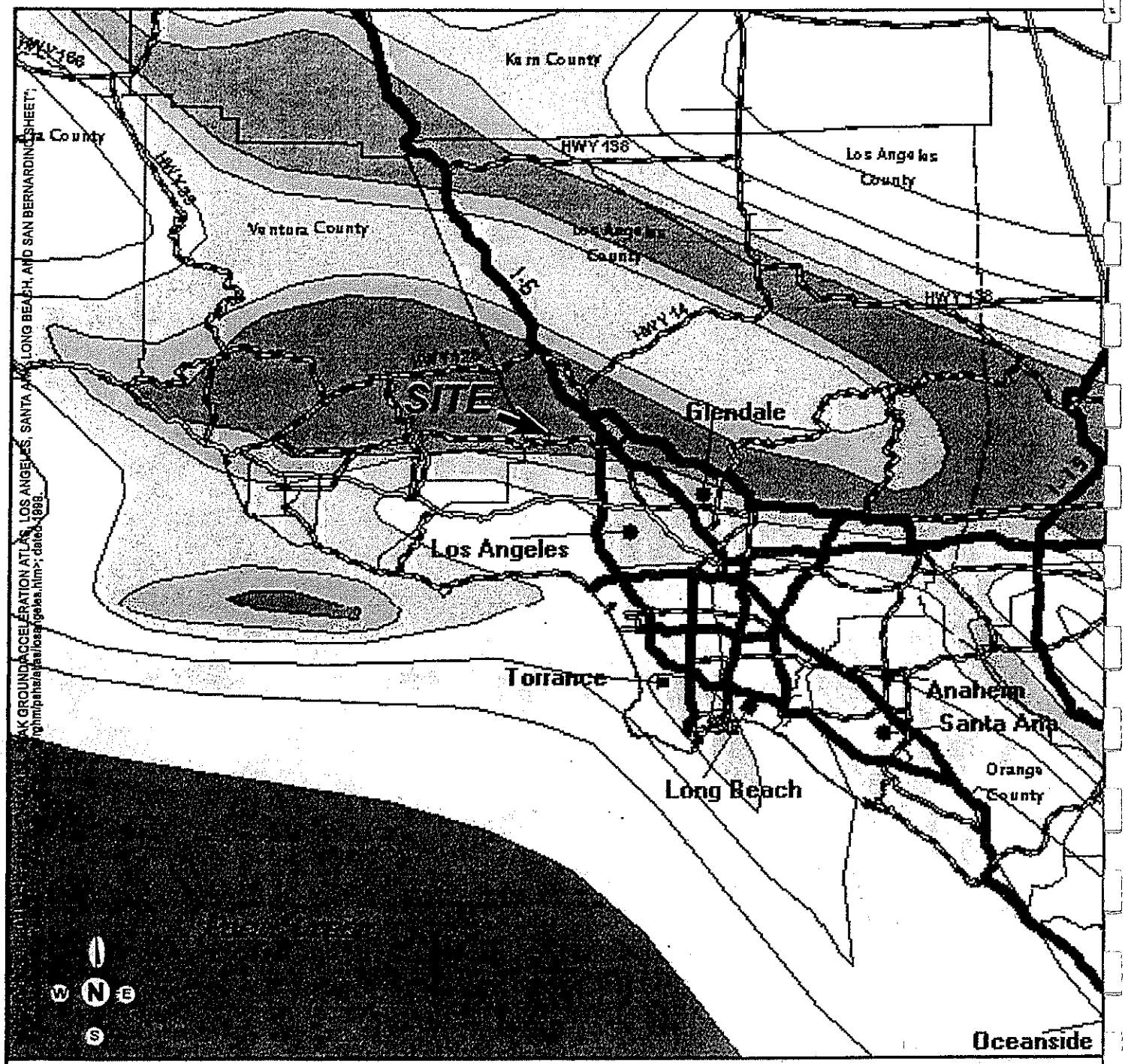

Legend

- > 70% g
- 60% to 70% g
- 50% to 60% g
- 40% to 50% g
- 30% to 40% g
- 20% to 30% g
- 10% to 20% g

0 10 20
Miles

10% PROBABILITY OF EXCEEDANCE IN 50 YEARS (SOFT ROCK)

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PROBABILISTIC PEAK ACCELERATION MAP

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TENTATIVE TRACT 53138
CHATSWORTH, CALIFORNIA

PLATE
11

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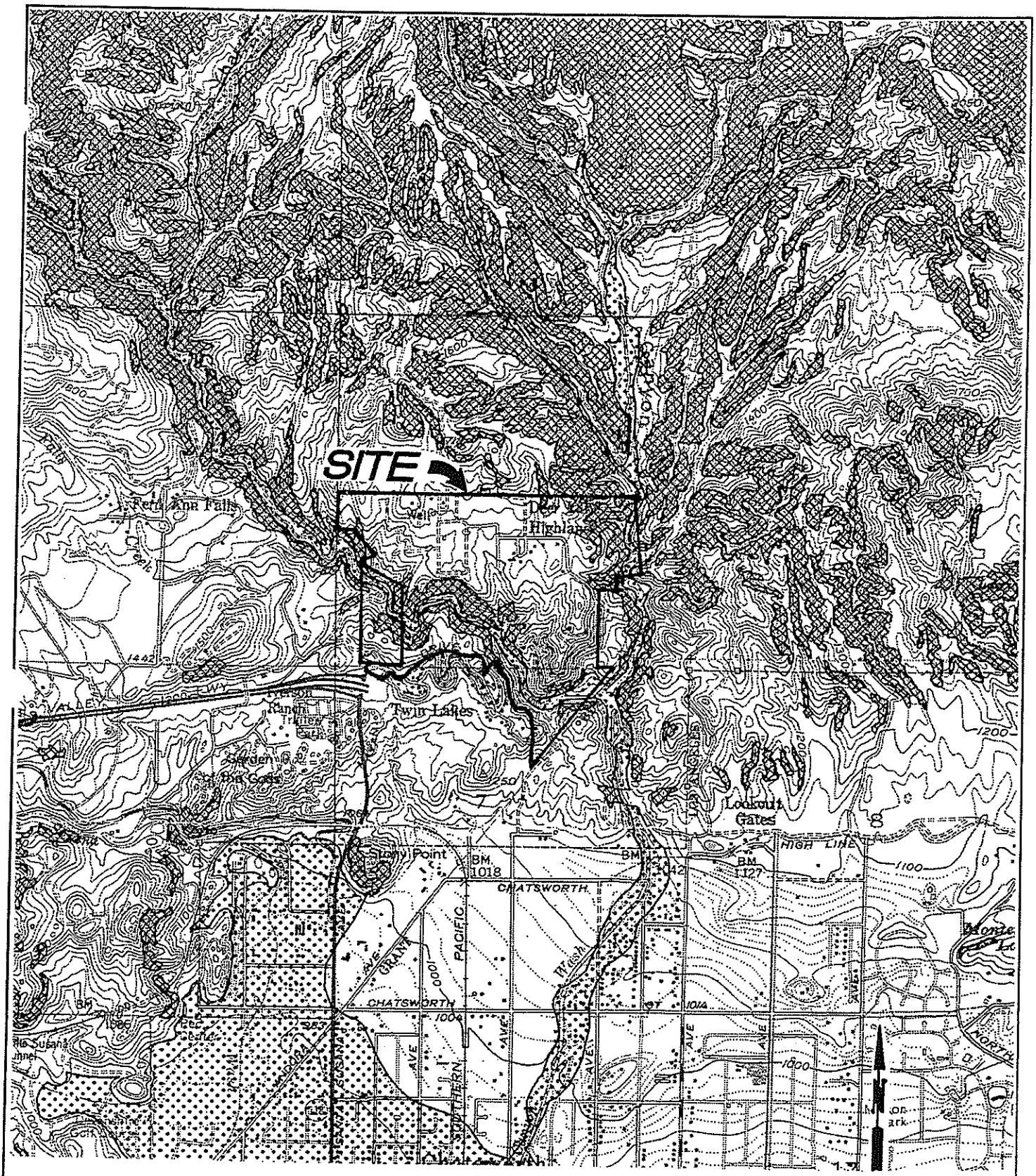

SOURCE: CDMG, 1998 Seismic Hazard Zone Map of the Oat Mountain 7.5–minute quadrangle,official map released February 1, 1998

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Project No. 58-919402-002	Filename: a9194p12

SEISMIC HAZARD ZONE MAP

CHATSWORTH RIDGE ESTATES
TENTATIVE TRACT 53138
CHATSWORTH, CALIFORNIA

PLATE 12

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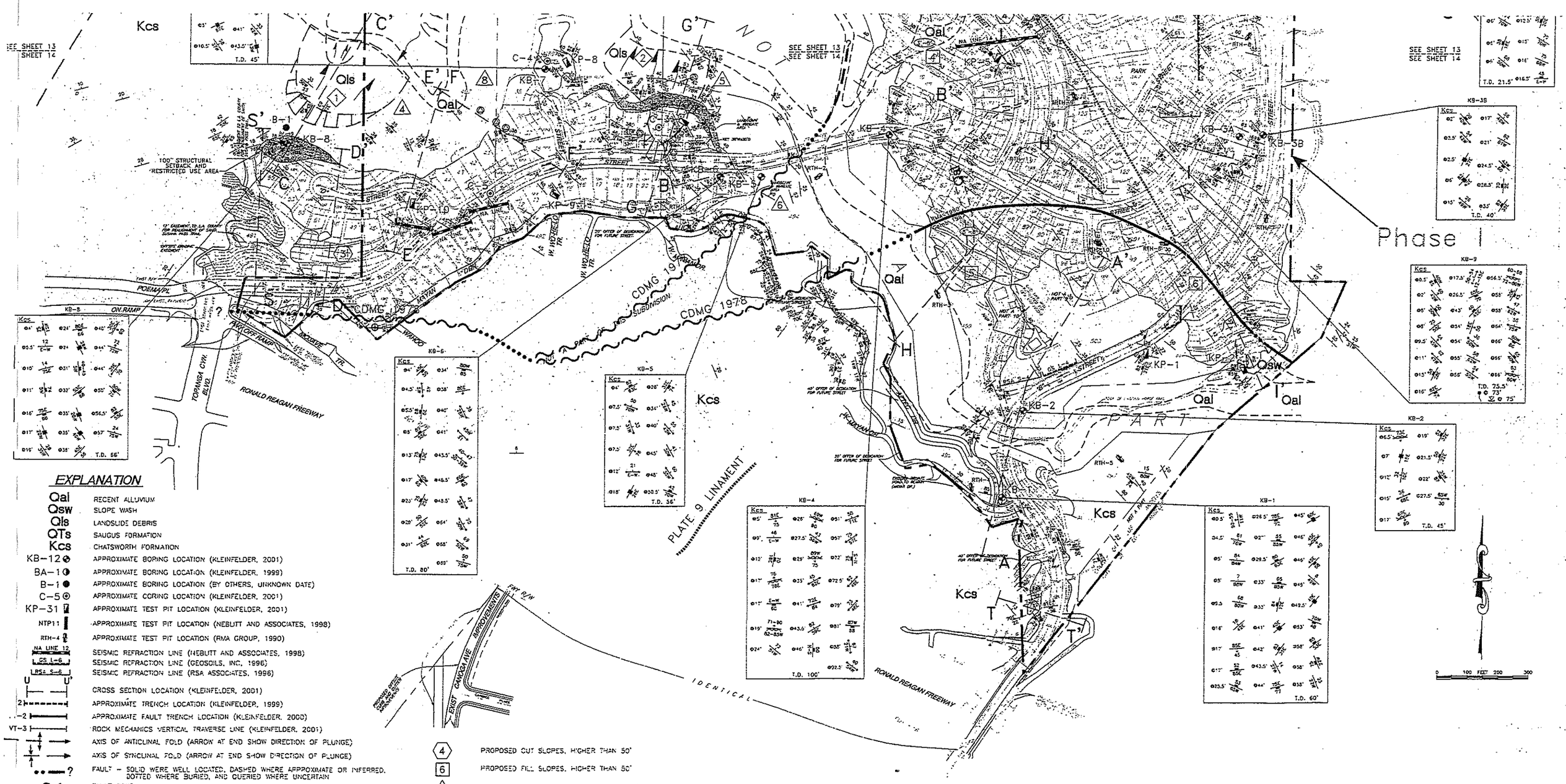


EXPLANATION

Qal	RECENT ALLUVIUM
Qsw	SLOPE WASH
Qls	LANDSLIDE DEBRIS
QTs	SAUGUS FORMATION
Kcs	CHATSWORTH FORMATION
KB-12	APPROXIMATE BORING LOCATION (KLEINFELDER, 2001)
BA-1	APPROXIMATE BORING LOCATION (KLEINFELDER, 1999)
B-1	APPROXIMATE BORING LOCATION (BY OTHERS, UNKNOWN DATE)
C-5	APPROXIMATE CORING LOCATION (KLEINFELDER, 2001)
KP-31	APPROXIMATE TEST PIT LOCATION (KLEINFELDER, 2001)
NTP11	APPROXIMATE TEST PIT LOCATION (NEBLITT AND ASSOCIATES, 1998)
RTH-4	APPROXIMATE TEST PIT LOCATION (RMA GROUP, 1990)
NA LINE 12	SEISMIC REFRACTION LINE (NEBLITT AND ASSOCIATES, 1998)
GS L-6	SEISMIC REFRACTION LINE (GEOSOILS, INC., 1996)
LRSA S-6	SEISMIC REFRACTION LINE (RSA ASSOCIATES, 1996)
U U'	CROSS SECTION LOCATION (KLEINFELDER, 2001)
2	APPROXIMATE TRENCH LOCATION (KLEINFELDER, 1999)
2	APPROXIMATE FAULT TRENCH LOCATION (KLEINFELDER, 2000)
VT-3	ROCK MECHANICS VERTICAL TRAVERSE LINE (KLEINFELDER, 2001)
	AXIS OF ANTICLINAL FOLD (ARROW AT END SHOW DIRECTION OF PLUNGE)
	AXIS OF SYNCLINAL FOLD (ARROW AT END SHOW DIRECTION OF PLUNGE)
?	FAULT – SOLID WERE WELL LOCATED, DASHED WHERE APPROXIMATE OR INFERRED, DOTTED WHERE BURIED, AND QUERIED WHERE UNCERTAIN
	FAULT ZONE
	PLATE 9 LINEAMENT
	LIMITS OF PROPOSED DEVELOPMENT
	GEOLOGIC CONTACT
	POTENTIAL DEBRIS FLOW AREA
	HORIZONTAL BEDDING
OP	OIL WELL LOCATION
WELL #5	DOMESTIC WATER WELL
	ROCK MASS RATING DATA POINT
	GROUNDWATER SEEPAGE
S'–B'	ESTIMATED DEPTHS OF ALLUVIAL REMOVAL
4	PROPOSED CUT SLOPES, HIGHER THAN 50'
6	PROPOSED FILL SLOPES, HIGHER THAN 50'
8	EXISTING NATURAL SLOPES HIGHER THAN 50'
3	LANDSLIDE AREA
	LANDSLIDE
	AREA OF SURFICIAL INSTABILITY
40 / 40 55W	BEDDING ATTITUDES
40 / 40 55W	CLAY ATTITUDES
40 / 40 50W	JOINT ATTITUDES
40 / 40 55W	FAULT ATTITUDES
40 / 70DW 35W	SHEAR ATTITUDES

CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1276 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765

Project: 98-9194-02 August 2001

SITE PLAN AND GEOLOGIC MAP (SOUTH)

PLATE 13

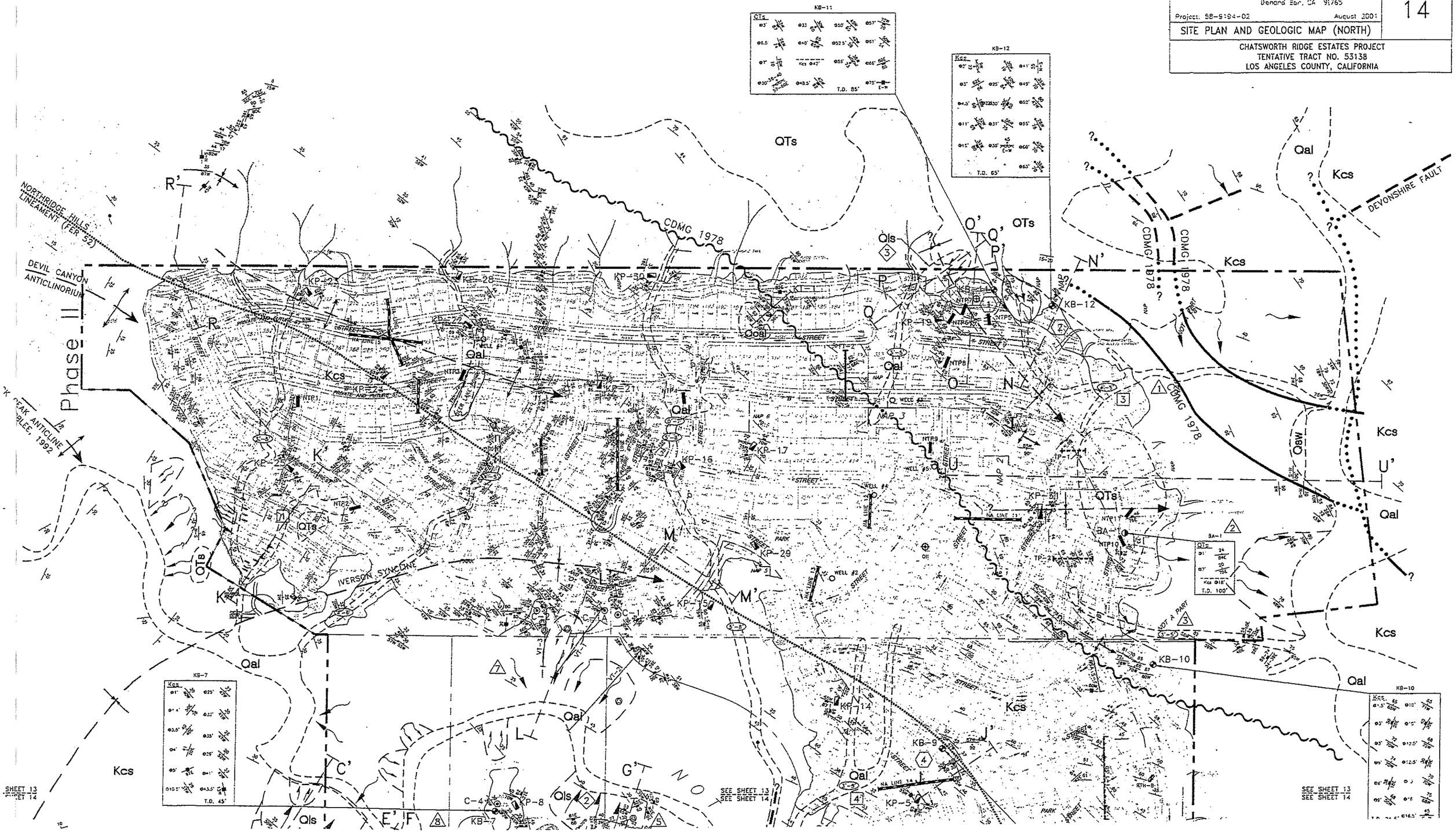
KLEINFELDER
1270 Valley Vista Dr. Suite 150
Diamond Bar, CA 91765

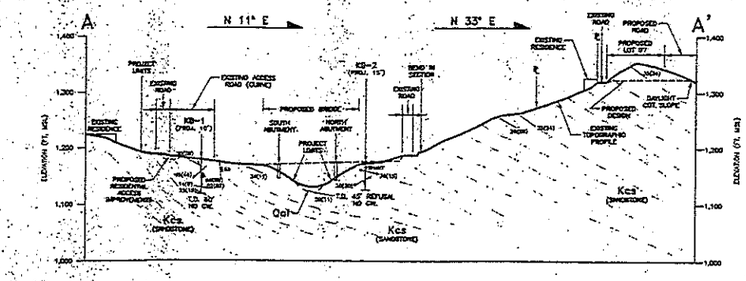
Project: 98-9184-02 August 2001

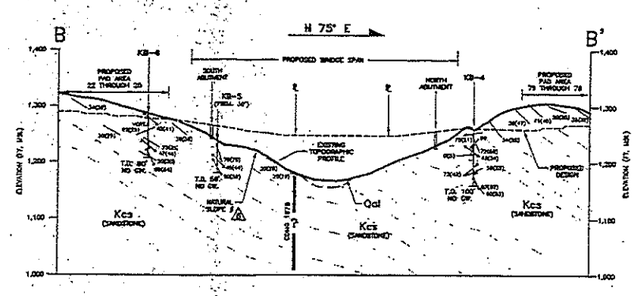
PLATE 14

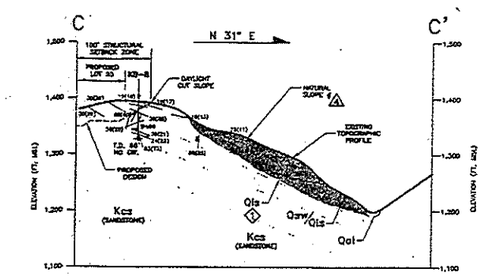
SITE PLAN AND GEOLOGIC MAP (NORTH)

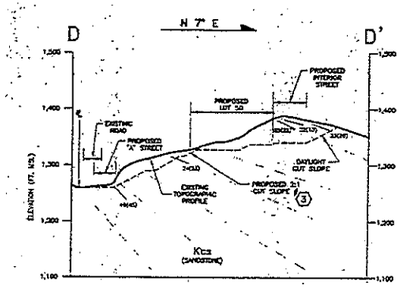
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138
LOS ANGELES COUNTY, CALIFORNIA

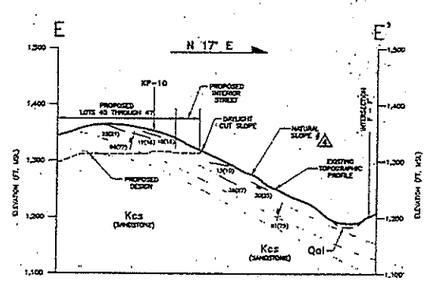


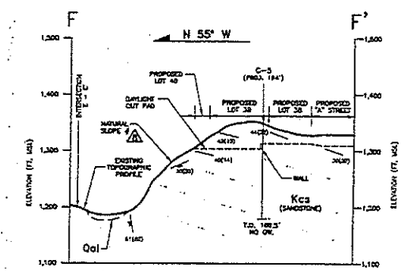


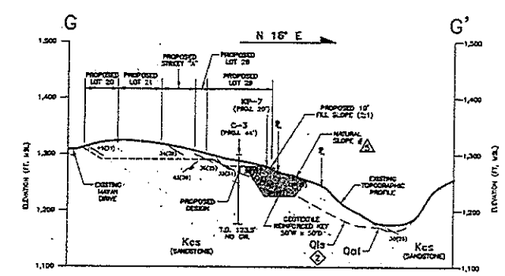


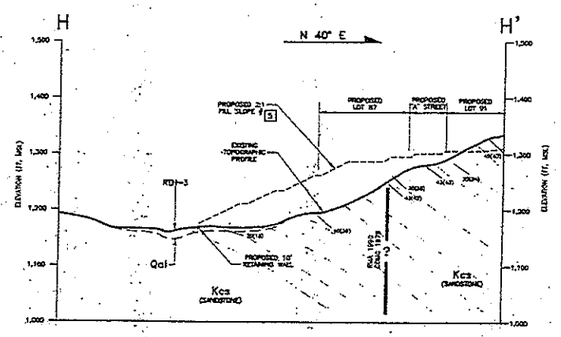


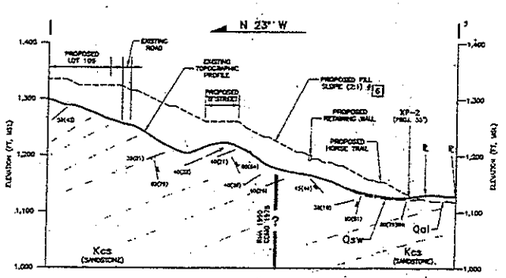


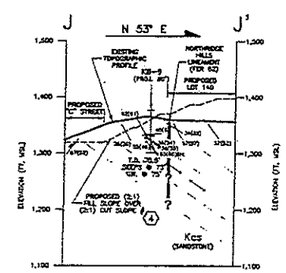


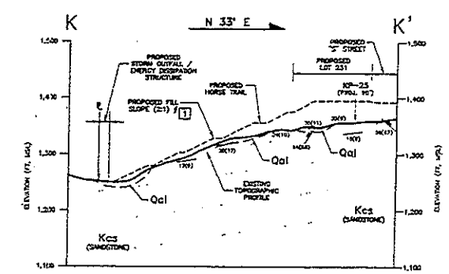












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY:

DATE:

DESIGNED BY: J. HERNANDEZ / A. HARDING
DRAWN: D. FAHRNEY
CHECKED: K.D. COOK
APPROVED: K.D. COOK
CEOL. MGR.: K.D. COOK
DATE: AUGUST 2001

CLIENT: CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53139

LOCATION: CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
1370 Valley Vista Dr., Suite 150
Diamond Bar, CA 91765
(909) 396-0333

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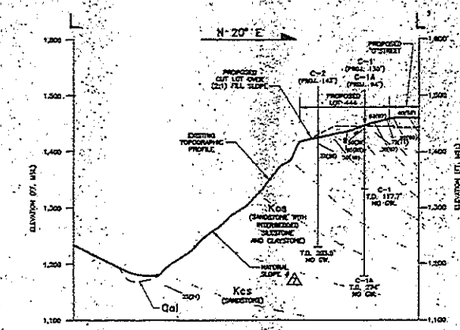
DESCRIPTION

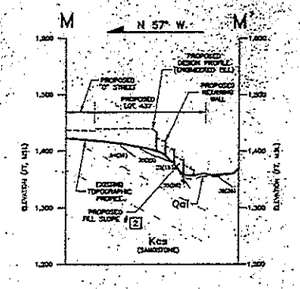
GEOLOGIC CROSS-SECTIONS A – A' THRU K – K'

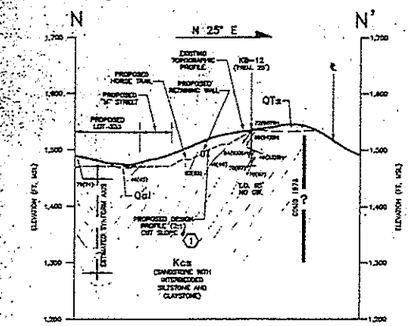
PROJ. NO. 58-9194-02 | FILED AS A9194 | DRAWING NO. A9194P03

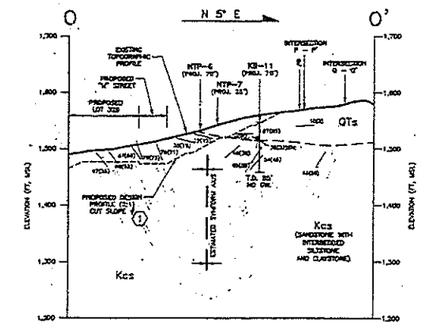
PLATE 15

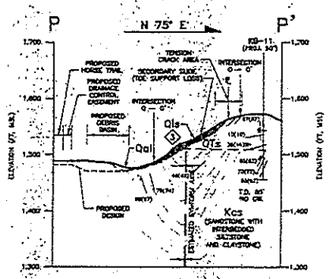
SHEET OF

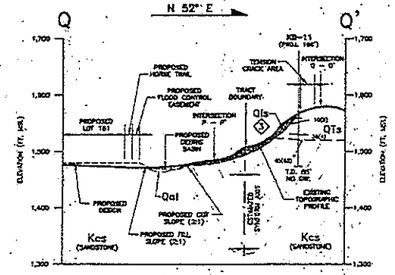


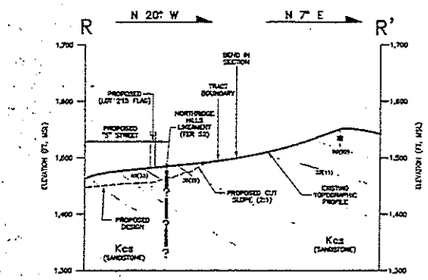


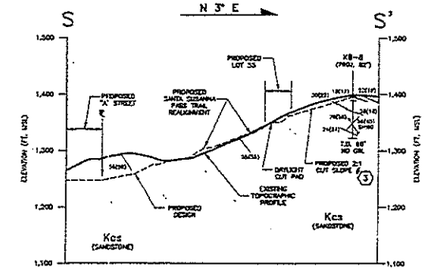


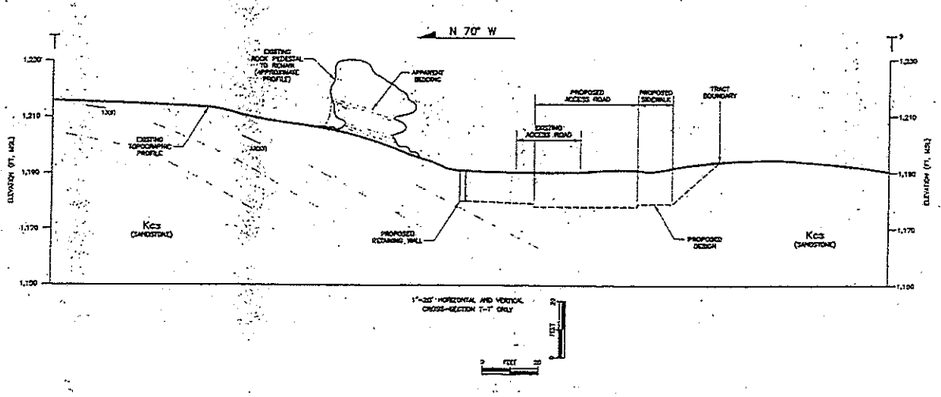


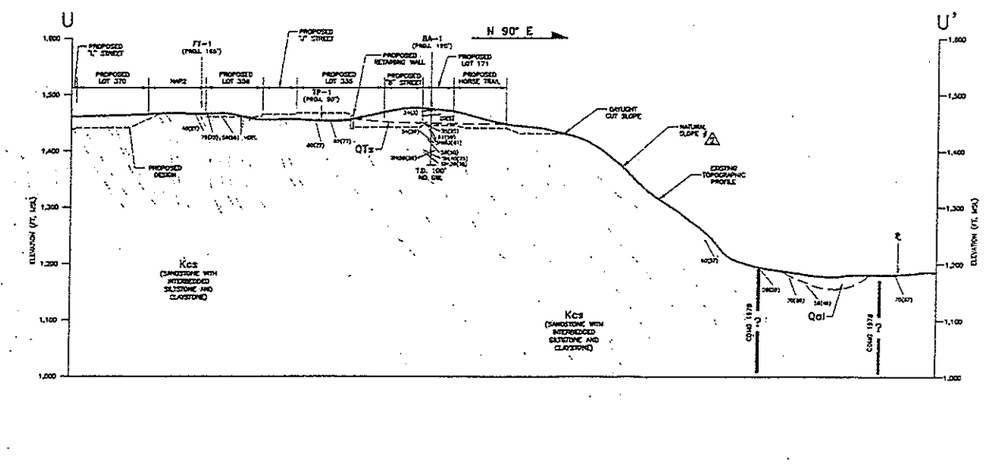












NOTE: SEE PLATE 13 FOR LEGEND

REV.	DATE	DESCRIPTION	DWN.

APPROVED BY:

DATE

DESIGNED BY: J. HERNANDEZ / A. HARDING
DRAWN: D. FAHRNEY
CHECKED: K.D. COOK
APPROVED: K.D. COOK
GEOL. MGR.: K.D. COOK
DATE: AUGUST 2001

CLIENT: CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53139

LOCATION: CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

KLEINFELDER
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(909) 396-0335

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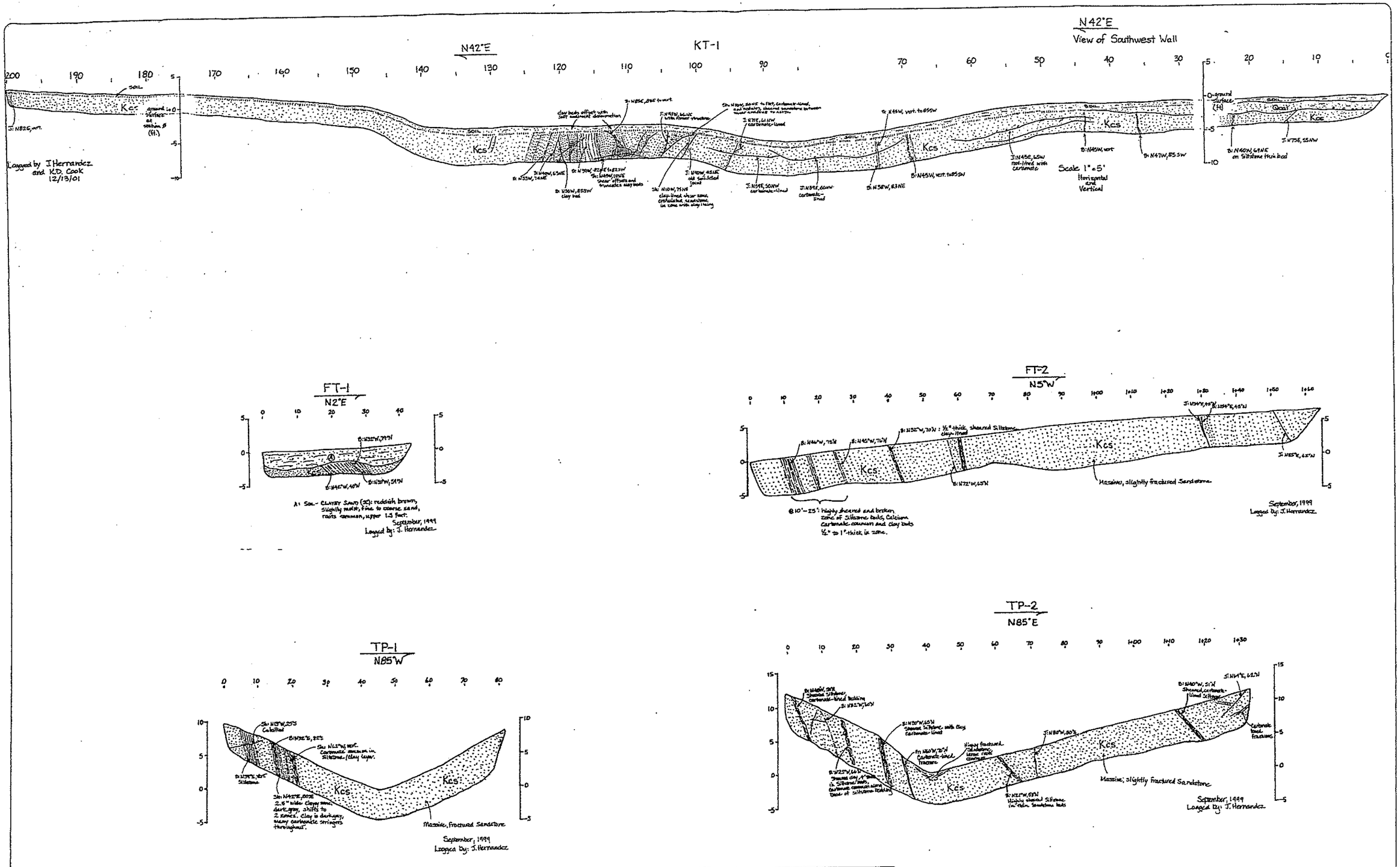
DESCRIPTION

GEOLOGIC CROSS-SECTIONS L - L' THRU U - U'

PROJ. NO. 58-9194-02 | FILED AS A9194 | DRAWING NO. A9194P04

PLATE 16

SHEET OF



REV.	DATE	DESCRIPTION	DWN.

APPROVED BY: _____ DATE _____

DESIGNED BY _____
DRAWN J. HERNANDEZ
CHECKED K.D. COOK
APPROVED K.D. COOK
GEOL. MGR. K.D. COOK
DATE AUGUST 2001

CLIENT
CHATSWORTH RIDGE ESTATES PROJECT
TENTATIVE TRACT NO. 53138

LOCATION
CHATSWORTH AREA
LOS ANGELES COUNTY, CALIFORNIA

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DESCRIPTION
FAULT TRENCH AND TEST PIT LOGS

PROJ. NO. 58-9194-02 | FILED AS A9194 | DRAWING NO. A9194P17

PLATE 17
SHEET ___ OF ___

APPENDIX A
FIELD EXPLORATION

Previous studies at the site performed by other firms, included field explorations by both RMA (1989) and Geosoils (1996). Test pits logged by RMA (1989), and geophysical seismic lines performed by Geosoils (1996) are plotted and included on Plate 12. Copies of logs from the above referenced reports identified on Plate 12 are included in Appendix B.

Kleinfelder's subsurface exploration program for the proposed development during this investigation included the following:

- drilling, sampling, and downhole geologic logging of 13 exploratory large diameter bucket-auger borings,
- drilling, geologic logging and sampling of six exploratory continuous rock cores,
- excavation and logging of 31 exploration backhoe test pits,
- excavation and logging of one fault trench, and,
- geologic mapping of the site.

DRILLING/CORING EXPLORATION

Prior to the onset of subsurface drilling or coring activities, RSC Construction, Inc. of Simi Valley, California, prepared drilling pads and temporary drilling equipment access routes using a CAT 650 bulldozer. The temporary access routes were limited to approximately 12 feet in width (the approximate width of the largest drilling vehicle used during our investigation). Drilling pad sizes were limited to only allow drilling equipment and support vehicles to access the proposed boring/coring locations. Furthermore, where possible, efforts were made to protect existing vegetation along temporary drilling pad access routes. Where necessary, drilling and construction equipment crossed stream channels only at existing, well-established, unpaved crossings. Such precautions were taken to protect biologically sensitive areas on the subject property, and to minimize surface disturbance throughout the site.

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- Large Diameter Bucket-Auger Drilling:

A total of 13 borings were completed using large diameter bucket-auger truck-mounted drill rigs. With the exception to boring KB-10, Tri Valley Drilling of Ventura, California completed the borings. Boring KB-10 was drilled by Big Johnny's & Pam's Drilling of Azusa, California. Boring BA-1 was advanced to a depth of 100 feet below existing grade and down-hole logged by our engineering geologist, Mr. K. Douglas Cook and project geologist, Mrs. Janis Hernandez. Borings KB-1 through KB-12 were advanced to depths of approximately 15 to 100 feet below the ground surface. Borings KB-1 through KB-12 were down-hole logged by our engineering geologist, Mr. K. Douglas Cook and project geologist, Mrs. Janis Hernandez. The cuttings from the borings were placed in the borehole cavities after down-hole logging of the borings was completed.

The Logs of Borings BA-1, and KB-1 through KB-12 are presented as Plates A-2 through A-14. An explanation of the classified soils/bedrock encountered according to the Unified Soil Classification System and Unified Rock Classification System (as applicable) is shown in Plates A-1A and A-1B, respectively. A key to the Log of Boring is presented in Plate A-1C of this appendix. The boring log describes the earth materials encountered, samples obtained, and show field tests performed. The logs also show the boring number, drilling date and the name of the logger and drilling subcontractor. The boundaries between earth material types shown on the logs are approximate because the transition between different soil and/or rock layers may be gradual. Bulk and intact samples of representative earth materials were obtained from the borings.

A California Sampler was used to obtain relatively undisturbed samples of the earth materials encountered. This sampler consists of a 3-inch O.D., 24-inch I.D. split barrel shaft that is driven a total of 12-inches into the soil/weathered rock at the bottom of the boring. The earth materials retained in one (1)-inch brass rings for future laboratory testing. An additional two (2)-inches of soil from each drive remained in the cutting shoe and was usually discarded after visually classifying the soil/weathered rock. The number of blows required to push or drive the sampler 12 inches is presented on the boring logs.

The sampler was driven using a Kelly bar. The effective weight of the Kelly bar varies with depth as follows for each drilling contractor used:

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Tri-Valley Drilling:

Depth (feet)	Effective Weight (lb.)
0 to 30	5,952
30 to 57	3,951
57 to 86	2,531
86 to 115	1,407

Big Johnny's & Pam's Drilling:

Depth(feet)	Effective Weight(lb.)
0 to 25	2,500
25 to 45	1,500
45 to 70	750
70 +	1,500

The total number of hammer blows required to drive the sampler the 12 inches is termed the blow count and is recorded on the Logs of Borings. Bulk samples of the surface soils were retrieved directly from the bucket.

- Continuous Rock Coring:

A total of six exploratory continuous rock corings (C-1 through C-5, and C-1A) were drilled using a CME-75 truck-mounted drill rig furnished by J.E.T. Drilling, Inc. of Signal Hill, California. Borings C-1 through C-5 and C-1A were advanced to depths ranging between 109 to 274 feet below the existing ground surface. With the exception to coring C-3, all cores were completed by wire-line method using a diamond-tipped core drilling bit (HQ core bit) to obtain relatively undisturbed samples of the earth materials encountered. This system employs a 3.75-inch O.D. core barrel casing within which the retractable diamond-tipped HQ core bit and sampling tube is inserted/extracted. The HQ core bit produces a continuous 2.5-inch diameter rock core sample, in segments of 5 feet (which is equivalent to the length of the sampling tube and core barrel casing segments used).

Coring C-3 was completed by hard line method using a diamond-tipped rock core drilling bit (Nx core bit) to obtain relatively undisturbed samples of the earth materials encountered. This system employs a 3-inch O.D. core barrel casing within which the diamond-tipped Nx core bit and sampling tube is inserted. The Nx core bit produces a continuous 1.75-inch diameter rock core sample, in segments of 5 feet.

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Drilling fluids are circulated internally through either core bit to cool cutting surfaces (as a result of friction), provide lubrication during cutting, and lift earth material cuttings out of the core hole along the outer core barrel casing. Following geological classification, the continuous, intact core samples were transferred to partitioned wax-coated cardboard rock sample core boxes, labeled, and photographed both in the field and following transport to the office. The time required to advance the core barrel 5 feet is presented on the coring logs.

Our project geologists, Mr. T. Anthony Harding and Mrs. Janis Hernandez geologically logged the rock core samples in the field. Following drilling activities, the core hole cavities were backfilled using a mixture of CETCO high solids Volclay Grout and CETCO Super Gel-x extra high yield Na-bentonite powder and capped with Na-bentonite medium chips and native soil. At the location of coring C-5, Na-bentonite medium chips were blended with the above noted mixture to prevent coring sealant (fluid) loss.

The Logs of Borings C-1A, and C-1 through C-5 are presented as Plates A-36 through A-41. An explanation of the classified soils/bedrock encountered according to the Unified Soil Classification System and Unified Rock Classification System (as applicable) is shown in Plates A-1A and A-1B, respectively. A key to the Log of Coring is presented in Plate A-1D of this Appendix. The coring log describes the earth materials encountered, structural features encountered, samples obtained, rock quality determinations, core recovery percentage, core drilling rates, and show laboratory tests performed. The logs also show the coring number, drilling date and the name of the logger and drilling subcontractor. The boundaries between earth materials shown on the logs are approximate because the transition between different soil and/or rock layers may be gradual.

TRENCHES AND TEST PIT EXCAVATIONS

Fault trenches and test pits were excavated on site as a part of this investigation. The trenches and test pits were excavated with a rubber-tire Ford 755 backhoe with 24 inch wide bucket, provided by RSC Construction, Inc. and M.F. Excavating of Simi Valley, California. The backhoe equipment and operator was supplied to Kleinfelder by Presidio Group, LLC. Test pits were excavated to identify surface and subsurface features of bedding structure and to review surface lineament features identified during our aerial photograph review. Additionally, several shallow test pits were excavated along the western portion of the site to assist in revealing bedding structure and material anticipated during grading operations.

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Fault trenches were excavated for this study to investigate previously mapped lineaments and faults across the site. The trenches and faults were logged by our geologist and reviewed by our engineering geologist. Additionally, photographs were taken of the mapped trenches and test pits for logging documentation. Stakes were left on site at the head and toe of each mapped trench and test pit for later land survey or GPS survey. All test pits, shallow test pit excavations and fault trenches were loosely back-filled with the excavated materials and tamped at the surface with the bucket and driven over with the backhoe tires.

The Logs of Test Pits KP-1 through KP-35 are presented as Plates A-15 through A-35. An explanation of the classified soils/bedrock encountered according to the Unified Soil Classification System and Unified Rock Classification System (as applicable) is shown in Plates A-1A and A-1B, respectively. The test pit logs describe the earth materials encountered, structural features, and includes a scaled cross-sectional view of the test pit identifying features encountered. The logs also show the test pit number, scale used for the cross-sectional view, and the name of the logger, and date excavation activities were performed. The boundaries between earth material types shown on the logs are approximate because the transition between different soil and/or rock layers may be gradual.

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Date Drilled:	Water Depth:
Drilled By:	Date Measured:
Drilling Method:	Reference Elevation:
Logged By:	Datum:

Elevation (feet) Depth	Sample	Sample No.	Blow Count (Blows/ft.)	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
		1	6			108	10	DS, SE
		2	12					GS
5								
	(1)	(2)	(3)	(4)	(5)	(6)	(6)	(7)
10								

NOTES ON FIELD INVESTIGATION

1. SAMPLE – Graphical representation of sample type as shown below.
   - Split Spoon – Standard Penetration Test Sample (SPT)
   - Drive Sample – California Sample (Cal)
   - Bulk Sample – Obtained by collecting cuttings in a plastic bag
   - Tube Sample – Shelby/Pitcher Tube Sample
2. SAMPLE NO. – Sample Number
3. BLOWS/FT – Number of blows required to advance sampler 1 foot (unless a lesser distance is specified).
   Samplers in general were driven into the soil at the bottom of the hole with a standard (140 lb) hammer dropping a standard 30 inches.
   Drive samples collected in bucket auger borings may be obtained by dropping non-standard weight from variable heights.
   When a SPT sampler is used the blow count conforms to ASTM D-1586.

   SCR/RQD – Sample Core Recovery (SCR) in percent (%) and Rock Quality Designation (RQD) in percent (%). RQD is defined as the percentage of core in each run which the spacing between natural fractures is greater than 4 inches. Mechanical breaks of the core are not considered.
4. GRAPHIC LOG – Standard symbols for soil and rock types, as shown on plate A-1b.
5. GEOTECHNICAL DESCRIPTION

   Soil – Soil classifications are based on the Unified Soil Classification System per ASTM D-2487, and designations include consistency, moisture, color and other modifiers. Field descriptions have been modified to reflect results of laboratory analyses where deemed appropriate.

   Rock – Rock classifications generally include a rock type, color, moisture, mineral constituents, degree of weathering, alteration, and the mechanical properties of the rock. Fabric, lineations, bedding spacing, foliations, and degree of cementation are also presented where appropriate.

   Description of soil origin or rock formation is placed in brackets at the beginning of the description where applicable, for example, Residual Soil.
6. DRY DENSITY, MOISTURE CONTENT: As estimated by laboratory or field testing.
7. ADDITIONAL TESTS – (Indicates sample tested for properties other than the above):

MAX – Maximum Dry Density	SG – Specific Gravity	PP – Pocket Penetrometer
GS – Grain Size Distribution	HA – Hydrometer Analysis	WA – Wash Analysis
SE – Sand Equivalent	AL – Atterberg Limits	DS – Direct Shear
EI – Expansion Index	RV – R-Value	CP – Collapse Potential
CHEM – Sulfate and Chloride Content, pH, Resistivity	CN – Consolidation	UC – Unconfined Compression
PM – Permeability	CU – Consolidation Undrained Triaxial	T – Torvane
UU – Unconsolidated Undrained Triaxial	CD – Consolidated Drained Triaxial	

8. ATTITUDES – Orientation of rock discontinuity observed in bucket auger boring or rock core, expressed in strike/dip and dip angle, respectively, preceeded by a one-letter symbol denoting nature of discontinuity as shown below.

   B: Bedding Plane J: Jointing C: Contact F: Fault S: Shear

KLEINFELDER	EXPLANATION OF LOGS	PLATE A-1a

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

PRIMARY DIVISIONS			GROUP SYMBOLS	SECONDARY DIVISIONS
COURSE GRAINED SOILS MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COURSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN) 5% FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVEL WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF OF COURSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN) 5% FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN HALF OF MATERIALS IS SMALLER THAN #200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
	HIGHLY ORGANIC SOILS		PT	PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS
TYPICAL FORMATIONAL MATERIALS	SANDSTONES		SS	
	SILTSTONES		SH	
	CLAYSTONES		CS	
	LIMESTONES		LS	
	SHALE		SL	

CONSISTENCY CRITERIA BASED ON FIELD TESTS

RELATIVE DENSITY – COARSE – GRAIN SOIL

RELATIVE DENSITY	SPT * (# blows/ft)	RELATIVE DENSITY (%)
Very Loose	<4	0 – 15
Loose	4 – 10	15 – 35
Medium Dense	10 – 30	35 – 65
Dense	30 – 50	65 – 85
Very Dense	>50	85 – 100

CONSISTENCY– FINE–GRAIN SOIL

CONSISTENCY	SPT (# blows/ft)	TORVANE UNDRAINED SHEAR STRENGTH (tsf)	POCKET ** PENETROMETER UNCONFINED COMPRESSIVE STRENGTH (tsf)
Very Soft	<2	<0.13	<0.25
Soft	2 – 4	0.13 – 0.25	0.25 – 0.5
Medium Stiff	4 – 8	0.25 – 0.5	0.5 – 1.0
Stiff	8 – 15	0.5 – 1.0	1.0 – 2.0
Very Stiff	15 – 30	1.0 – 2.0	2.0 – 4.0
Hard	>30	>2.0	>4.0

* NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1 3/8 INCH I.D.) SPLIT BARREL SAMPLER (ASTM-1586 STANDARD PENETRATION TEST)

** UNCONFINED COMPRESSIVE STRENGTH IN TONS/SQ.FT. READ FROM POCKET PENETROMETER

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

KLEINFELDER

EXPLANATION OF LOGS

PLATE A-1b

Date Drilled:
Drilled By:
Drilling Method:
Logged By:

Water Depth:
Date Measured:
Reference Elevation:
Datum:

Elevation (feet) Depth	Sample Type	Box No.	Core Recovery %	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION	Rock Mass Rating (RMR)	RQD (%)	Core Drilling Rate (CDR): Min. / Core Interval (ft)
		1	6			6	10	DS, SE
		2	12					GS
5								
		(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(1)							
10								

NOTES ON FIELD INVESTIGATION

1. SAMPLE TYPE – Graphical representation of sample type as shown below.
   Continuous Core – Core retrieved by HQ, Nx core bits.
   No Recovery – Zone encountered in which a sample was not able to be collected.
2. BOX NUMBER – Identification number of box containing core
3. CORE RECOVERY PERCENT – Percent of core recovered within a given drilling interbval.
4. GRAPHIC LOG – Standard symbols for soil and rock types, as shown on plate A–1b.
5. GEOTECHNICAL DESCRIPTION

   Soil – Soil classifications are based on the Unified Soil Classification System per ASTM D–2487, and designations include consistency, moisture, color and other modifiers. Field descriptions have been modified to reflect results of laboratory analyses where deemed appropriate.

   Rock – Rock classifications generally include a rock type, color, moisture, mineral constituents, degree of weathering, alteration, and the mechanical properties of the rock. Fabric, lineations, bedding spacing, foliations, and degree of cementation are also presented where appropriate. Includes orientation of rock discontinuities, expressed as strike/dip and dip angle respectively.

   Description of soil origin or rock formation is placed in brackets at the beginning of the description where applicable, for example, Residual Soil.
6. ROCK MASS RATING – Geomechanics classification of rock masses after Z. T. Bieniawski
7. ROCK QUALITY DETERMINATION – Ratio of recovered core sections >4" relative to total recovered core length.
8. CORE DRILLING RATE – Expressed as time (min.) required to drill given interval of length (ft.).

ADDITIONAL TESTS – (Indicates sample tested for properties other than the above):

MAX – Maximum Dry Density
GS – Grain Size Distribution
SE – Sand Equivalent
EI – Expansion Index
CHEM – Sulfate and Chloride Content, pH, Resistivity
PM – Permeability
UU – Unconsolidated Undrained Triaxial
SG – Specific Gravity
HA – Hydrometer Analysis
AL – Atterberg Limits
RV – R–Value
CN – Consolidation
CU – Consolidation Undrained Triaxial
CD – Consolidated Drained Triaxial
PP – Pocket Penetrometer
WA – Wash Analysis
DS – Direct Shear
CP – Collapse Potential
UC – Unconfined Compression
T – Torvane

KLEINFELDER

EXPLANATION OF LOGS

PLATE A–1c

UNIFIED ROCK CLASSIFICATION SYSTEM

PRIMARY DIVISIONS		GROUP SYMBOLS	SECONDARY DIVISIONS
TYPICAL FORMATIONAL MATERIALS	GRAVELS	GP	POORLY GRADED GRAVELS OR GRAVEL–SAND MIXTURES, LITTLE OR NO FINES
	SANDSTONES	SS	
	SILTY SANDSTONE	SLTSS	
	SANDY SILTSTONE	SSLTST	
	SILTSTONES	SLTST	
	CLAYSTONES	CS	
	SHALE	SL	

CLASSIFICATION CRITERIA BASED ON FIELD TESTS

SUGGESTED CLASSIFICATION FOR WEATHERED ROCKS[1]

Grade	Symbol	Diagnostic Feature
Fresh	F	No visible sign of decomposition or discoloration. Rings under hammer impact.
Slightly weathered	WS	Slight discoloration inward from open fractures, otherwise similar to F.
Moderately weathered	SM	Discoloration throughout. Weaker minerals such as feldspar decomposed. Strength somewhat less than fresh rock, but cores cannot be broken by hand or scraped by knife. Texture preserved.
Highly weathered	WH	Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming indistinct but fabric preserved.
Completely weathered	WC	Minerals decomposed to soil but fabric and structure preserved (saprolite). Specimens easily crumbled or penetrated.
Residual soil	RS	Advanced state of decomposition resulting in plastic soils. Rock fabric and structure completely destroyed. Large volume change.

[1]After ISRM Working Party (1975)

SUGGESTED HARDNESS CLASSIFICATION FOR INTACT ROCK[1]

Class	Hardness	Field Test	Strength[†] mg/cm²
I	Extremely hard	Many blows with geologic hammer required to break intact specimen	>2000
II	Very hard to hard	Hand-held specimen breaks with hammer end of pick under more than one blow	2000-700 700-250
III	Moderate	Cannot be scraped or peeled with knife, hand-held specimen can be broken with single moderate blow with pick.	250-100
IV	Soft	Can just be scraped or peeled with knife. Indentations 1mm to 3mm deep show in specimen with moderate blow of pick	100-30
V	Very soft	Material crumbles under moderate blow with sharp end of pick and can be peeled with a knife, but is too hard to hand-trim for triaxial text specimen.	30-10

[1]After ISRM Working Party (1975)
[†]Uniaxial compressive strength [Core Logging Comm. (1978)].

ENGINEERING CLASSIFICATION FOR IN-SITU ROCK QUALITY

RQD, %	Velocity Index	Rock-Mass Quality
90-100	0.80-1.00	Excellent
75-90	0.60-0.80	Good
50-75	0.40-0.60	Fair
50-25	0.20-0.40	Poor
25-0	0-0.20	Very Poor

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Very Well	Will not crumble or break with finger pressure

KLEINFELDER

EXPLANATION OF LOGS

PLATE A–1d

Date Drilled:	11/20/00	Water Depth:	>60 feet
Drilled By:	Tri Valley Drilling	Date Measured:	11/20/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1180.4 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK - Chatsworth Formation (Kcs) SANDSTONE: yellowish-brown, dry, very dense, very dense, fine to medium grained sand, graded bedding, grain sand, massive, moderately to slightly weathered, moderately cemented. @ 0.5': F: N11W, Vertical; 1/4-inch wide, continuous, exits boring at 4 feet @ 4': Drive sample attempted, too dense @ 4': fault dips 55 SW from 1/2 foot above @ 4.5': B: N76W, 81NE @ 5': hard drilling @ 5': B: N84W, 84NE @ 6': hard drilling @ 6.1': Claystone bed, tan, some fine sand, bedding parallel to sandstone above, moist, 1.5-inch thick, roots parallel to bedding @ 8': GB: N88W, 7NE; Gravel channel: approximately 4-inches thick, with sand matrix @ 9.5': J: N80W, 68NE; 1.5-inch wide, well-healed, iron oxide stained along outside edges, filled with silty sand material, exits boring at 12.5 feet @ 10': hard drilling, well cemented, very dense @ 16': B: N42E, 16NW; well cemented, very dense, fine to medium-grained sandstone @ 17': F: N85E, 45SE; 2 old parallel faults, 2-inches apart, offsetting clay bed, offset is 4-inches between both faults, well healed fault zone,, silica cemented @ 17': J: N85E, 52NW; tight, silica cemented Drilling rate: 6 feet/hour @ 18.5': very dense, well cemented sandstone			
5								
10								
15								

KLEINFELDER

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-1

PLATE A-2a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
		1	2/1"		@ 20': very dense, sampler bouncing, bag sample obtained only			
25					@ 25.5': J: N65W, 53NE, tight @ 26.5': J: N78E, 72SE @ 27': J: N85W, 55NE; 1/2-inch wide, yellowish-brown clay lining w/fine sand within weathered joint, some iron oxide staining, slightly moist, stiff to very stiff, not wet or sheared.			
30					@ 29.5': J: N63E, 80NW; approximately 1/16-inch wide, tight, trace yellowish-brown weathered clay lining, not sheared. @ 30': very dense, too dense to sample			
35					@ 33': J1: N85W, 65NE; J2: N12E, 84NW; intersection of 2 joints, void space at intersection approximately 5-inches long, 1.5-inches wide, old decomposed root within void space, iron oxide staining within void, above joint is tight, along J1: weathered clay lining; along J2: iron oxide staining			
40		2	3/1"		@ 40': very dense, well cemented, sampler bouncing with Kelly bar, unable to obtain sample @ 41': J: N40E, Vertical; tight, lined with clayey sand, iron oxide staining @ 42': J: N35E, 83NW			

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LOG OF BORING KB-1

PLATE A-2b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					@ 43.5': B: N27W, 14NE @ 44': J: N75E, 77SE; tight			
45					**UNOXIDIZED ZONE** Sandstone is cemented and unoxidized, color changes from yellowish-brown to medium gray. @ 45': J: N60E, Vertical; 1-inch wide, iron oxide staining in sand and clay lining joint, clay is dry to slightly moist, stiff and cemented @ 46': Sh: N45E, 40SE; paper thin shear, slickensides in shear zone, well healed, shear strike parallel to joint at same depth @ 46': J: N45E, 68SE @ 48': changes to oxidized zone, fine to medium grain sand with alternating layers of 2-inch thick clay and sandy clay @ 49': GB: N49W, 8NE @ 49.5': J: N40E, Vertical; weathered clay-lined, approximately 1/16-inch thick @ 50': very dense, well cemented, unable to sample			
50		3	4/1"					
					@ 53': J: N70W, 48SW, tight			
55								
					@ 58': Two joints intersect: J1: N53E, 85NW; J2: N22W, 75SW; tight @ 58': B: N22W, 25NE			
60					Total depth of boring: 60.0 feet No groundwater or seepage encountered Downhole logged by J. Hernandez on 11/20/00 Boring backfilled and tamped with soil cuttings KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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LOG OF BORING KB-1

PLATE A-2c

Explanation To Logs On Plate A-1

Date Drilled:	12/8/00	Water Depth:	>45 feet
Drilled By:	Tri Valley Drilling	Date Measured:	12/08/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1172 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests	PID (ppm)
					FILL SAND: light yellowish-brown, dry, medium dense, fine sand, trace asphalt pieces				
5					**BEDROCK - Chatsworth Formation (Kcs)** SANDSTONE: light yellowish-brown, dry, fine grain sand, moderately to slightly weathered, some well healed fractures @ 6.5': Sh: N73E, 85SE: 1/8-1/4 inch thick, carbonate lined, well-healed, shear zone extends to 11 feet terminating in a sandstone bed, shear is sand-lined, dry, slightly iron oxide stained along shear edges @ 7': Fr: N15E, vertical, 2-inches wide, filled with sand, well cemented at 11 feet				
10		1	11/4"		@ 10': very dense, upper 2-rings disturbed @ 11': fracture and shear from above both terminate into sandstone bed @ 12': GB: N10E, 32NW			CHEM, GS	
15					-- sandstone has occasional fine to coarse gravel @ 15': B: N68E, 36NW; clay bed @ 17': Sh: N67E, vertical; clay-lined, moist, light yellowish brown clay, some fine to medium sand, carbonate lining, medium stiff to stiff, 3/4 to 1.5-inches thick, enters boring at 14 feet, exits at 20 feet @ 19': Fr: N32E, 52NW, clay-lined fracture, 1/4-inch thick, enters at 17.5 feet, exits at 20.5 feet, carbonate lining at 20 feet				

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PLATE A-3a

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LOG OF BORING KB-2

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					@ 20': very dense, well cemented, too hard to sample			
					@ 21.5': J: N 22E, 50NW			
					-- interbedded siltstone/sandstone layers, well cemented @ 22': Fr: N35W, 87SW @ 23' - changes to primarily sandstone, well-cemented, hard drilling			
25								
					@ 26': unoxidized silty sandstone, very dense, well cemented, hard drilling			
					@ 27.5': B: N85W, 30SW: clay bed, hard, iron oxide stained @ 28': sandstone is well-cemented			
30		2			@ 30': changes to Silty Sandstone, grayish-brown, slightly moist, fine to medium sand			
35		3			@ 35': changes to unoxidized materials, fine grained sand, very dense, well cemented			
					@ 38': less unoxidized than above, changes to oxidized material, some thin cemented layers			
40					@ 40': difficult drilling			

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LOG OF BORING KB-2

PLATE A-3b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					@ 43': unoxidized zone predominant			
45					@ 45': difficult drilling, lifting up rig at 45 feet, refusal encountered .			
					Total depth of boring: 45 feet, refusal No groundwater or seepage encountered Boring downhole logged by J. Hernandez on 12/8/00 Boring backfilled and tamped with soil cuttings on 12/8/00			
					KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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LOG OF BORING KB-2

PLATE A-3c

Explanation To Logs On Plate A-1

Date Drilled:	11/29/00	Water Depth:	>15.5 feet
Drilled By:	Tri Valley Drilling	Date Measured:	11/29/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1384 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK - Chatsworth Formation (Kcs) SANDSTONE: light yellowish-brown, dry, very dense, fine to medium grained sand, some coarse sand to fine gravel interbeds, joints common			
5					@ 5': changes to grayish-brown, SILTY SANDSTONE			
10					@ 9.5': -- cemented layers @ 10': well cemented, too hard to drive a sample, bulk obtained			
15					@ 13.5': SILTSTONE: Unoxidized, hard, cemented layers @ 14.5': difficult drilling on cemented siltstone @ 15.5': siltstone very hard, well cemented, grinding on rock			

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LOG OF BORING KB-3A

PLATE A-4a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					Total depth of boring: 15.5', refusal on hard bedrock No groundwater or seepage encountered Boring backfilled and tamped with soil cuttings Alternate boring location chosen to drill Boring not downhole logged due to extremely cemented bedrock KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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LOG OF BORING KB-3A

PLATE A-4b

Explanation To Logs On Plate A-1

Date Drilled:	12/11/00	Water Depth:	>40 feet
Drilled By:	Tri Valley Drilling	Date Measured:	12/11/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1342 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK - Chatsworth Formation (Kcs) SANDSTONE: light yellowish-brown, dry, dense to very dense, medium bedded packages of sandstone with siltstone/claystone beds			
					@ 2': J: N40W, 70NE, tight			
					@ 2.5': B: N42W, 54NE; Silty Claystone, 1.5-inches thick -- bedding exits boring at 4.5 feet, N42-51W, 42-54 NE orientation			
					@ 2.5': Fr: N27E, Vertical; 1/4-1/2 inch thick, several parallel fractures w/sandstone between, fractures root-lined, iron oxide stained, exits boring at 4.5 feet			
5		1	9/4"		@ 4.5': alternating thin silty claystone beds to 6 feet depth	95	2.8	
					@ 5': sample possibly disturbed, difficult driling, fine to medium grained sandstone, well cemented			
					@ 6': Fr: N42E, 82SW to vertical: moderately well cemented, carbonate lined, some iron oxide staining along fracture edges, exits boring at 9.5 feet			
10					@ 9.5': well-cemented			
		2			@ 12': too dense to drive a sample, bulk obtained			
15					@ 15': GB: N49W, 26NE; silty claystone, 2-inches thick, exits boring at 16 feet			
					@ 17': B: N46W, 56NE; light yellowish-gray sandstone bed, 2" thick, uncemented to weakly cemented, root lined on top of bed			

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LOG OF BORING KB-3B

PLATE A-5a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
		3	9 5/1"		@ 21': B: N61W, 62NE; 1/16-inch thick CLAYSTONE interbed, olive brown, very stiff, dry to slightly moist, fractured	115	4.2	
					@ 22.5': carbonate-lined joint, cemented unoxidized sandstone			
25					@ 24.5': J: N43W, 60SW; weak joint, iron oxide stained, fine to medium sandstone bedrock			
					@ 28': -- fine to coarse grain sandstone, some carbonate-lined fractures, well cemented @ 28.5': Fr: N2E, 70NW; thin iron oxide staining along fracture, carbonate lining, exits boring at 32 feet			
30					@ 30': too dense to drive a sample			
					@ 33': Fr: N35E, 82N to Vertical: fracture enters boring at 32 feet, exits at 37 feet, iron oxide stained, carbonate cemented, tight, 1/4-inch, wide			
35		4			@ 36': very dense, hard drilling			
					@ 39': unoxidized sandstone zone			
40					Total depth of boring: 40.0 feet No groundwater or seepage encountered Downhole logged by J. Hernandez on 12/11/00 Boring backfilled and tamped with soil cuttings			

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LOG OF BORING KB-3B

PLATE A-5b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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LOG OF BORING KB-3B

PLATE A-5c

Explanation To Logs On Plate A-1

Date Drilled:	12/1/00	Water Depth:	>100 feet
Drilled By:	Tri Valley Drilling	Date Measured:	12/02/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1270 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					BEDROCK - Chatsworth Formation (Kcs) SANDSTONE: yellowish-brown, dry, dense to very dense, fine to medium grained sand, carbonate veins and joints common			
5		1	5 9		@ 5': F: N81E, 75SE; Fault zone contains two 2-inch thick clay layers, many internal carbonate veins, zone pinches and swells to 7 feet depth, exits boring at 15 feet			GS, DS
10		2	9 6/2"		@ 9': B: E-W, 46N - contact with carbonate-lined shear zone and sandstone bedrock, dense, dry, fine to medium grain sandstone, massive @ 10': Fault changes direction to N70E, 82SE, much carbonate, continuous, clay lining has polished surfaces, hard, iron oxide staing on clay surfaces @ 11': cemented sandstone layer @ 12': Fr: N18E, 70SE; carbonate lined fracture, 1/8-inch wide	106	10.0	
15					@ 15': Fault zone (from 5 foot depth) contains trace of roots, clay lining is softer with a wider clay zone. Clay is olive brown, medium stiff, slightly moist, trace carbonate staining, exits boring at this depth @ 16.5': carbonate crystals following shear zone at 17 feet @ 17': Sh: N78 to 86E, 76NW to vertical; thin shear zone, clay lining, carbonate lined and carbonate nodules, clay is slightly moist, clay mixed with light yellowish brown fine sand, roots present in clay shear zone at 18.5 feet, exits boring at 18.5 feet @ 17': J: E-W, 60S; clay-lined joint			

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-4

PLATE A-6a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
		3	6 12		@ 19': Sh: N82 to 85W, 71N to vertical; clay lined shear zone, carbonate nodules in shear zone, polished at 22 feet, exits boring at 23 feet @ 20': Silty Sandstone, some clay interbeds; clay is polished, possible internally sheared			GS, DS
25					@ 24': B: N51W, 72NE; siltstone bed, thin clay bed above @ 26': Sh: N69W, Vertical, enters boring at 25 feet, exits at 30 feet @ 27.5': B: N56W, 43NE, claystone, some carbonate lining and nodules, polished surfaces, stiff			
30		4	12 24		@ 29': shear zone from 25 feet forms two sub-parallel shears, carbonate-lined, iron oxide staining, contains slickensides @ 29': Sh: N89W, 75SE and Sh: N70W, 72SW @ 29.5': Slickensides: N10E, 80SE @ 31': Rip-up clasts @ 31': Silty Sandstone contains silt and clay-filled joints, 1/4-inch thick @ 32': Sh: N55E, 75NW; clay-lined shear			GS, DS
35					@ 33.5': Shear zone, two shears with some internal shearing, clay lined @ 33.5': Sh1: N89W, 85SW, Sh2: N80E, 76SE; -- Internal shear zone: N56W, 65SW @ 35': GB: N62E, 45NW; carbonate lined clay bed, exits boring at 38 feet @ 37': Gypsum crystals along top of clay bed from above (35') @ 38': B N59E, 56NW, clay bed exits boring from 35-foot depth			
40		5	22/3"		@ 39 to 42.5': Much carbonate nodules and crystals present, some internal shearing of clay beds within this zone @ 39': Silty Sandstone as above, very dense, well cemented, yellowish-brown clay bed, polished surface, carbonate lined thin joints -- sample possibly disturbed, upper rings @ 41': B: N72E, 84SE; Internally sheared clay bed.			

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-4

PLATE A-6b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					@ 43.5': B: N59E, 82NW; siltstone bed, well cemented			
45					@ 45': Sh: N60E, 75SE; clay-lined shear with gypsum crystals lining shear, polished surfaces from 45 to 47 feet @ 46': J: N-S, 50E; open voids in cemented siltstone 1/4-inch wide @ 46.5': B: N50E, 70NW; clay bed, polished surface @ 47': GFr: N12W, 47SW; 2-inch thick layer of carbonate; gypsum filled veins and polished surfaces ends.			
					@ 49': Thick carbonate cemented zone, trace gypsum			
50		6	11 19		@ 50': Silty Sandstone, as above, moderately to well-cemented with carbonate, very dense, silt-lined joint fillings @ 51': B: N71E, 50N; Clay layer, olive brown/yellowish-brown, moist, soft to medium stiff, gypsum crystals, exits boring at 54 feet			
					@ 53': Unoxidized sandstone layer encountered, gray clayey silt with fine sand, unoxidized clay, gray, moist			
55								
					@ 57': B: N57E, 75NW; Clay bed, light yellowish-brown, moist, gypsum crystal lining 1/4-inch thick, exits boring at 59 feet @ 58': oxidized sandstone			
60		7	19/6"		@ 60': Silty Sandstone, as above, yellowish-brown, fine to medium sand, trace mica			
					@ 62': J: N47E, 73SE; paper thin, clay lined, iron oxide staining			
65					UNOXIDIZED SANDSTONE @ 65.5': primarily unoxidized silty sandstone, fine grained sand			

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Deer Lake Highland Area
Chatsworth, CA

PLATE A-6c

PROJECT NO. 58-9194-02 C:JLH

LOG OF BORING KB-4

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
70		8	12/3"		@ 70': Silty Sandstone, as above, unoxidized, upper rings disturbed			
					@ 72': J: N-S, 75W; well cemented, unoxidized sandstone, tight @ 72.5': B: N46E, 62NW; clay bed 1/4-inch thick			
75								
					@ 79': B: N46E, 73NW; clay bed, light gray to medium gray, 1/4-inch thick, unoxidized			
80					@ 80': too dense to sample @ 80.5'to 82 feet: weakly cemented uncemented, some clay lined fractures @ 81': Fr: N87W, 58SW; clay lined fracture, paper thin, medium gray, medium stiff, within weakly cemented zone @ 81': J: N86E, 60SE: tight @ 82': Alternating beds of 1 to 2 foot thick weakly cemented sandstone beds to 87 feet			
85								
					@ 88': B: N21W, 67NE; clay bed, 1/4-inch thick			

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Deer Lake Highland Area
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LOG OF BORING KB-4

PLATE A-6d

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
90					@ 90': too dense to sample			
					@ 92.5': B: N54W, 60NE: clay bed, 1/8-inch thick			
95								
100					@ 100': too dense to sample			

Total boring depth: 100.0 feet
No groundwater encountered
No seepage encountered
Boring backfilled and tamped with soil cuttings
Downhole logged by J. Hernandez 12/4/00

KELLY WEIGHTS:
0 - 30': 5952 lbs
30 - 57': 3921 lbs
57 - 86': 2531 lbs
86 - 115': 1407 lbs

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-4

PLATE A-6e

Explanation To Logs On Plate A-1

Date Drilled:	12/12/00	Water Depth:	>50.5 feet
Drilled By:	Tri Valley Drilling	Date Measured:	12/12/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1248 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK - Chatsworth Formation (Kcs) SANDSTONE: yellowish-brown, dry, very dense, moderately to heavy weathering, fine to coarse grained sand.			
					@ 4': Fr1: N63E, 82NW; Fr2: N82W, 77NE; two sets of fractures, continuous from 2.5 feet to 4 feet			
5		1A	12/6"		@ 5': upper sample portion disturbed			
					@ 7': J: N45E, 70SE; iron oxide staining, tight @ 7.5': B1: N70W, 50NE; thin clay bed, 1/2-inch thick offset by a fault, 1-inch offset @ 7.5': F: N32E, 76SE; fault enters boring at 6.5 feet, is terminated into silty clay bed at 7.5 feet @ 7.5': B2: N31W, 33NE: 3-inch thick silty clay bed, exits boring at 9.5 feet, not offset by fault above			
10					@ 9.5': Sandy siltstone, yellowish brown, moderately well cemented, fine sand, very dense @ 10': Sandstone			
					@ 12': B: E-W, 21N; clay bed, 1/8-inch thick, continuous around boring, light yellowish-brown			
					@ 13.5': B: N55W, 27NE; Sandstone bed, clay-lined at base, sandstone is moderately hard, trace iron oxide staining			
15					@ 14': B: N50W, 40NE; clay bed, 1-inch thick, overlies sandstone.			
		1			@ 18': too dense to sample, bulk obtained @ 18': Fr: N28E, Vertical; root-lined fracture with decomposed root material, fracture discontinuous and terminates at joint @ 18': J: N25E, 67SE, tight			

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-5

PLATE A-7a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					@ 18.5': Sandstone: slightly weathered, very dense, thickly bedded, fine to coarse grained sand			
					@ 23': SANDSTONE: same as above, very dense			
					@ 24': trace carbonate staining and iron oxide staining			
25		2			@ 25': too dense to sample, bulk obtained			
					@ 27.5': J: N40W, 30SW; clay bed, 1/16-inch thick, dark brown, carbonate staining @ 28': J: N32E, 74SE; Clay lined, clay is yellowish-brown, stiff to very stiff, moist, iron oxide staining			
30								
					@ 33': fine to medium grained sandstone @ 33.5': B: N68W, 55NE; clay bed, 1/8-inch thick			
35					@ 34.5': B: N26W, 45NE; clay bed, 1/2-inch thick, occasional interbed within sandstone			
40					@ 40': B: N43W, 55NE; Clay bed, 1.5 inches thick, internally sheared, trace iron oxide staining, with fine sand			

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LOG OF BORING KB-5

PLATE A-7b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
45					@ 45': B: N30W, 41NE; scattered unoxidized zones @ 45': bulk sample obtained @ 45.5': Siltstone bed, well-cemented			
50					@ 48': B: N35W, 60NE; Clay bed @ 48.2': Sandstone, fine to coarse grained sand, moderately cemented @ 49': J: N15W, 63NE: tight @ 49.5': clay rip-up clasts @ 50': Sandstone: yellowish-brown, slightly moist, very dense, fine to medium grained, slightly weathered, upper rings disturbed @ 50.5': Fr: N70W, 42NE; fracture lined with silty sand, trace carbonate staining, tight, no offset in clay bed above at 50.2 feet			
55					Total Depth of boring: 56 feet No groundwater or seepage encountered Downhole logged by J. Hernandez on 12/12/00 Boring backfilled and tamped with soil cuttings KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-5

PLATE A-7c

Explanation To Logs On Plate A-1

Date Drilled:	12/12/00	Water Depth:	>80 feet
Drilled By:	Tri Valley Drilling	Date Measured:	12/13/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1286 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests	PID (ppm)
					BEDROCK - Chatsworth Formation (Kcs) SANDSTONE: yellowish-brown, dry, very dense, fine to medium grained sand, highly weathered, some closely spaced joints.				
					@ 3': moderately to slightly weathered				
					@ 4': Fr: N43E, 50SE @ 4.5': B: N5W, 42NE; clay bed, 1 1/2-inches thick				
5		1	8/4"		@ 5': very dense, upper rings disturbed @ 5.5': J: N5E, 68NW; carbonate lined, 1-8-inch wide, trace clay lining				
					@ 7': yellowish-brown				
					@ 8': J1: N55E, 89NW; iron oxide staining, carbonate staining, tight, with a second joint @ 8': J2: N45E, vertical				
		2			@ 8.5': fine to coarse grained sandstone, yellowish-brown, moderately well cemented, thinly bedded				
10		3	8/4"		@ 10': upper rings disturbed, very dense				
					@ 13': J: N13E, 75NW; paper thin clay lining, trace carbonate staining, tight, exits boring at 16 feet				
15					@ 15': J: N52E, 75NW; 1/8-inch wide, iron oxide staining				
					@ 17': J: N40W, 65SW; tight, iron oxide staining				
					@ 18': fine grained SANDSTONE w/silt, light yellowish-brown @ 19': medium to coarse grained SANDSTONE				

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Chatsworth Ridge Estates
Deer Lake Highland Area
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LOG OF BORING KB-6

PLATE A-8a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					@ 20': very dense, moderately to well cemented, unable to drive sampler			
					@ 23': J: N25E, 75NW; tight, trace clay lining, iron oxide staining along joint surfaces			
25								
					@ 26.5': J: N50E, 59NW; tight, trace clay lining			
					@ 28': J: N79W, 85SW; iron oxide staining			
					@ 29': B: N52E, 50NW, clay bed, iron oxide staining			
30					@ 30': very dense, unable to drive sampler			
					@ 31': B: N62E, 44NW; Two clay beds, 1/4-inch thick, iron oxide staining			
					@ 34': J1: N20E, 71NW; Heavy iron oxide staining within joint, tight, moderately cemented @ 34': J2: N80W, 85SW, tight			
35	4	5 20			@ 35': SANDSTONE, moderately to well cemented, very dense, difficult to drive CAL sampler			
					@ 38': F: N80E, 65SE; offset is 4-inches on thin clay bed, tight, continuous, clay-lined @ 38': J: N87E, 75SE, clay-lined, iron oxide staining, tight			
40					@ 40': B: N28W, 36NE; Clay bed			
					@ 41': B: N45W, 31SW; Silty Clay; yellowish-brown, stiff to very stiff, moist, polished surfaces, not sheared. @ 41.5': J: N26W, 65SW			

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Chatsworth Ridge Estates
Deer Lake Highland Area
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LOG OF BORING KB-6

PLATE A-8b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					@ 43.5': B: N30 to 39W, 40 to 47NE; clay bed, olive gray, 1/4-inch thick, iron oxide staining, exits boring at 45.5 feet			
45					@ 45': clay rip-up clasts			
					@ 48.5': J: N60E, 63SE; tight @ 48.5': B: N28W, 47NE; 2-foot thick package of clayey siltstone, polished surfaces, trace carbonate veins			
50					@ 50': very dense, well cemented			
					@ 53': J: N60E, 54NW, tight			
55					@ 55': unoxidized zone, generally increased cementation			
					@ 56.5': J: N30E, 70NW; silica cemented			
					@ 59': highly cemented Siltstone layer, primarily unoxidized			
60	5				UNOXIDIZED SANDSTONE BEDROCK @ 60': SANDSTONE: light gray, fresh, very dense, well-cemented, fine to medium grained sand, unable to drive CAL sampler			
					@ 64': B: N30W, 70NE; clay bed, medium gray, thin, unoxidized			
65								

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LOG OF BORING KB-6

PLATE A-8c

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
70					@ 68': B: N52W, 69NE; Clay bed, medium gray, 1/2-inch thick, iron oxide staining on top and bottom of bed @ 69': F: N75W, 50NE; fault offsets clay bed 4-inches, branches to parallel fault, clay-lined fault zone, 1/4-inch thick, medium gray, stiff to medium stiff, trace carbonate staining, exits boring at 73 feet @ 70': unable to drive CAL sampler, too dense			
75					@ 72': unoxidized SANDSTONE			
80					@80': Unoxidized light gray SANDSTONE, as above, unweathered			

Total depth of boring: 80.0 feet
No groundwater or seepage encountered
Downhole logged by J. Hernandez on 12/13/00
Boring backfilled and tamped with soil cuttings

KELLY WEIGHTS:
0 - 30': 5952 lbs
30 - 57': 3921 lbs
57 - 86': 2531 lbs
86 - 115': 1407 lbs

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LOG OF BORING KB-6

PLATE A-8d

Explanation To Logs On Plate A-1

Date Drilled:	11/21/00	Water Depth:	>45 feet
Drilled By:	Tri Valley Drilling	Date Measured:	11/22/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1297 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests	PID (ppm)
					BEDROCK - Chatsworth Formation (Kcs) SANDSTONE: light yellowish-brown, dry, very dense, cemented outcrops in close proximity @ 1': B: N40W, 30NE; thinly bedded SANDSTONE, light yellowish-brown, fine to medium grained sand, roots in upper 1 foot, highly weathered to 1.5 feet @ 1.4': F: N50E, 76SE: offset approximately 3.5-inches, lined with soil and roots, exits boring at 4 feet @ 1.5': B: N40W, 30NE; Sandstone, thickly bedded, moderately cemented @ 2': B: N15W, 30NE @ 3.5': B: N40E, 40NW; @ 3.5': Fr: N14W, 45SW; fracture 1-inch wide, lined with grayish-brown sand, iron oxide staining, root lined @ 4': B N20E, 41NW @ 4.5': becomes very dense, well cemented @ 5': attempted to drive CAL sample, too dense, kelly bar bouncing @ 5': Fr: N67E, Vertical; approximately 1/2-inch wide with light tan fine sand in fracture, mottled dark brown silt, exits boring at 10.5 feet @ 6': 6-inch thick SANDSTONE layer, extremely cemented @ 7': Fr: N20E, 43SE; tight @ 10': very dense @ 10.5': B: N37W, 28NE; siltstone bed, 3-inches thick: massive sandstone, micaceous, well-cemented @ 12': Sandstone: yellowish-brown, very dense, well-cemented, fine to medium grained				
5	2								
10	1		6/4"			101	6.4		
15									

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-7

PLATE A-9a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					@ 20': too dense to sample			
					@ 22': GB: N82E, 34NW; siltstone layer, well cemented, 2-inches thick @ 22.5': J: N42E, 80NW; Joint enters boring, lined w/sandy clay, 1/2-inch wide, iron oxide staining, clay is stiff, exits boring at 25.5 feet, tight at 23 feet, trace clay lining			
25					@ 25': B: N47W, 23NE; clayey siltstone bed, 1-inch thick, medium gray; thin clay layer above siltstone, clay is yellowish-brown, stiff			
30					@ 30': Sandstone as above, unable to drive sample, too dense			
					@ 33.5': B: N41W, 30NE; Clayey Siltstone, 3-inches thick, cemented, unoxidized, light gray-medium gray, thinly bedded. @ 34.5': J: N35W, 65SW, tight @ 35': B: N47W, 26NE; Alternating siltstone and sandstone beds, 3 to 4-inches thick, highly cemented siltstone			
35					@ 37': from 37' to 41', every 2-feet is intermittent unoxidized sandstone with siltstone, generally siltstone is unoxidized			
40	3				<u>UNOXIDIZED ZONE</u> @ 39': GB: N52W, 20NE; sandy siltstone, medium gray, well cemented, unoxidized @ 39.5': Siltstone, gray to light gray, dense to very dense, some fine sand @ 40': bulk sample obtained, too dense to drive a sample @ 41': B: N42W, 33NE; clay bed, 1-inch thick, medium gray, stiff to very stiff, faces are polished, internally			MAX, DS

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-7

PLATE A-9b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
45					sheared, unoxidized @ 43.5': J: N13W, Vertical; 1/16-inch thick, tight, clay lined, iron oxide staining			

Total depth of boring: 45.0 feet
No groundwater encountered
No seepage encountered
Boring backfilled and tamped with soil cuttings
Downhole logged by J. Hernandez 11/22/00

KELLY WEIGHTS:
0 - 30': 5952 lbs
30 - 57': 3921 lbs
57 - 86': 2531 lbs
86 - 115': 1407 lbs

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PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-7

PLATE A-9c

Explanation To Logs On Plate A-1

Date Drilled:	11/27/00	Water Depth:	>60 feet
Drilled By:	Tri Valley Drilling	Date Measured:	11/28/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1388 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK - Chatsworth Formation (Kcs) SANDSTONE: light yellowish-brown to light brown, dry, very dense, fine to medium sand, trace coarse sand, slightly micaceous, moderately to well cemented			
					@ 4': J: N15W, 75SW; joints common, tight, slighly weathered			
5		1	4/6"		@ 5': very dense, well cemented, no recovery of sample @ 5.5': B: E-W, 12N; Siltstone bed, 4-inches thick			
					@ 7': J: N2W, 71SW; tight, slightly weathered			
					@ 8': Sandstone becomes coarser grained to 10 feet			
10					@ 10': B: N75E, 14N; Siltstone bed, 2-inches, iron oxide staining			
		2	9 11		@ 11': J: N5W, 74N; moderately weathered, tight, 1/4-inch thick, iron oxide staining @ 11': sample good	117	2.6	
					@ 13.5': Sandstone as above, coarse grained sand w/gravel			
15					@ 14': cemented layer - approximately 2-feet thick, very dense @ 15': heavy cementation zone			
					@ 16': Fr: N75E, 68SE; Fracture intersects cemented zone, iron oxide staining throughout fracture, 1/2-inch wide, highly cemented @ 17': Fr: N20W, Vertical; 1-inch thick, infilled with fine sand, 1/8-inch thick carbonate lining in fracture zone, continuous			
					@ 19': B: N35W, 28NE; contact with thin siltstone bed, sandstone channel			

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Chatsworth Ridge Estates
Deer Lake Highland Area
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LOG OF BORING KB-8

PLATE A-10a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					@ 20': too dense to drive sample			
					@ 21': very dense, well cemented			
					@ 22': slightly less cementation			
					@ 24': massive sandstone, coarse sand w/gravel @ 24': Two joints, tight J1: N80E, 56SE J2: N28W, vertical			
25								
					@ 28': Sandstone as above			
					@ 29': J: N45E, 60SE; tight, 1/4-inch wide, clay filling, stiff			
30					@ 30': open joint 1/4-inch wide, occasional root hair fracture zone			
					@ 31': Fr: N5W, 40-45NE; open fracture, carbonate lined, 3-inch wide breccia zone			
					@ 32': Two joints: J1: N53E, 68SE; J2: N3W, 40SW; J2 severely weathered, 2-inches wide, infilled with sand, uncemented, void is 1-inch thick and extends into borehole wall approximately 5-inches, lined with druzy quartz			
35					@ 35': Two joints: J1: N20W, Vertical; J2: N40W, Vertical; joint is continuous around borehole, 1/4-inch wide, not filled, area between joints is 3/4-inch			
		3	4 6		@ 37': Breccia zone	111	3.3	
					@ 38': B: N45E, 56SE; Sandy Clay bed, brown, medium stiff -- joints continuous @ 39': dense to very dense			
40					@ 40': B: N45E, 55SE; clay bed, medium stiff, 2-inches thick, trace carbonate staining @ 40': Sh: N30E, vertical			
					@ 42': J: N23W, 49NE;			

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Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF BORING KB-8

PLATE A-10b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
45					@ 42':Sh: N-S, 60W; shear zone from above at 40-feet, terminates into silica cemented sandy siltstone, numerous iron oxide stained joints @ 44': F: N72W, 42NE; approximately 4-inches of offset of a clay bed at 44 feet @ 44': B: N39E, 70SE; 1 1/2-inch thick clay bed, offset by fault above @ 46': J: N75E, 70NW; clay lined joint, 1/2-inch thick, tight, clay is light yellowish-brown, moist			
50		4			@ 50': J: N50W, 75SW; clay lined joint, exits boring at 55 feet @ 50': bulk sample obtained, too dense to drive sample -- joint is tight			MAX, DS
55					@ 54': Clay bed, 1/4-inch thick			
60					@ 56.5': J1: N55E, 83NW; J2: N28E, 83SE; clay lined joints, internally sheared, stiff to very stiff, cemented @ 57': GB: N75W, 24NE; 7-inch thick gray cherty shale with 4-inch wide clay zone @ 57.5': Siltstone; grayish-brown, dry to sligtly moist, very dense, fine sand, trace of clay lining between thin beds @ 58': Siltstone, well cemented @ 59': Siltstone: color changes to dark grayish-brown. @ 60': too dense to drive sample			
65								

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Chatsworth Ridge Estates
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Chatsworth, CA

LOG OF BORING KB-8

PLATE A-10c

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					Total depth of boring: 66 feet, refusal on cemented layers No groundwater or seepage encountered Downhole logged by J. Hernandez (11/28/00), and K.D. Cook (11/29/00) Boring backfilled and tamped with soil cuttings			
					KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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Chatsworth Ridge Estates
Deer Lake Highland Area
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LOG OF BORING KB-8

PLATE A-10d

Explanation To Logs On Plate A-1

Date Drilled:	11/29/00	Water Depth:	75 feet
Drilled By:	Tri Valley Drilling	Date Measured:	11/30/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1380 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK: Chatsworth Formation (Kcs) SANDSTONE: light yellowish brown, dry, very dense, fine to medium grained sand, slightly micaceous, well cemented, thickly bedded @ 0.5': J: N40W, 65SW; tight @ 2': Two parallel faults, carbonate lined, polished surfaces @ 2': F: N42W, 60NE; carbonate lining common on fault plane, slickensides present (slicks N84E, 72NW), clay lined, clay is mottled color and hard, exits boring at 6 feet			
5		1	6/2.5"		@ 6': very dense, sample has 5 rings, upper ring possibly disturbed @ 6': J: N50W, 50NE; tight	94	3.5	
					@ 8': B: N55E, 25NW; carbonate-lined thin sandstone bed			
10		2	5 9/5"		@ 9.5': F: N45W, 64NE; Fault is tight, carbonate lined, clay lined with slickensides (slicks N80W, 65-70NE), clay is mottled with fine sand, medium stiff, clay is light grayish brown with yellowish brown in fault gouge zone, fault is truncated into clay bed at 11 feet @ 10': very dense, good sample @ 11': B N47W, 62NE; clay bed, below fault gouge, exits boring at 13 feet -- iron oxide staining along joints, fine to medium grained sand	128	5.4	
15					@ 15'; J: N28E, 58NW; clay lined joint -- sandstone as above @ 16': J: N62E, 74SE; clay lined joint with polished surfaces, 1/2-inch thick @ 17.5': B: N12 to 15E, 50 to 54NW; clay bed, medium stiff with cemented sandstone above, carbonate staining along clay bed, exits boring at 19 feet @ 19'; well cemented sandstone			

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LOG OF BORING KB-9

PLATE A-11a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					@ 20': unable to drive CAL sampler			
25					@ 26.5': J: N65E, 70SE; carbonate crystal and staining zone, 2-inches wide, with soft clay, dark brown clayey sand-lined joint and carbonate-lined zone @ 27': void, 1/4-inch thick, lined by			
30					@ 30': unable to drive sampler			
35								
					@ 38': unoxidized intermittent zones begin			
40					@ 40': unable to drive CAL sample			

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Chatsworth Ridge Estates
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LOG OF BORING KB-9

PLATE A-11b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					@ 43': J: N45E, 40NW; carbonate-lined joint, 1/4-inch wide, trace clay lining			
45					**UNOXIDIZED BEDROCK**			
					-- cemented sandstone and siltstone interbeds, trace unoxidized zones			
50					@ 50': unable to drive sample			
55					Sandstone: unoxidized, fine to medium grained sand @ 54': F: N18E, 50SE; offset 1/2-inch, trace clay lining, carbonate lined zone @ 54': B: N50W, 36NE; clay bed offset by fault @ 55': B N62W, 58NE; clayey sand bed, light gray with medium gray clay, 5-inches thick, weakly cemented, clay is polished, very stiff, 1 1/2 inches thick, @ 56': F: N55W, 54NE; 6-inch thick zone of tectonically sheared sand above clay at 56.5 feet @ 56.5': Sh: N72 to 80W, 60 to 68NE; shear zone, tectonically sheared clay bed, exits boring at 62.5 feet			
	3	8 12/2"			Silty Sandstone: medium gray, dry to slightly moist, very dense, fine to medium grained sand, thin siltstone interbeds, 1-inch thick, good sample obtained	120	8.7	
60					@ 58': J: N30E, 45SE; clay-lined joint, carbonate lined, tight @ 58': B: N62W, 47NE; clay bed, 2-inches thick, pinches and swells down to 60 feet			
65					@ 64': B N75W, 55NE; clay bed, 2-inches thick, polished clay surfaces, rip-up clasts common			

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Chatsworth Ridge Estates
Deer Lake Highland Area
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LOG OF BORING KB-9

PLATE A-11c

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
70					@ 66': Two joints: J1: N60W, 86SW; clay-lined joint, iron oxide stained, two sets of joints J2: N40W, 65N; mottled unoxidized with oxidized, clay polished surfaces on top of joint @ 66': Sh: N80W, 63NE; 1/4-inch thick joint, clay lined, iron oxide stained, carbonate lined, slickensides on clay, enters boring @ 66': brecciated sandstone with minor structure in fracture, 1/4-inch wide			
					@ 73': minor seepage in bedrock			
75					@ 75': water encountered			
					Total depth of boring: 75.5 feet Minor seepage encountered at 73 feet Groundwater encountered at 75 feet Boring downhole logged by J. Hernandez (11/30/00) and K.D. Cook (12/1/00) Boring backfilled and tamped with soil cuttings KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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Chatsworth, CA

LOG OF BORING KB-9

PLATE A-11d

Explanation To Logs On Plate A-1

Date Drilled:	11/9/00	Water Depth:	>21 feet
Drilled By:	Big Johnnys Drilling	Date Measured:	11/09/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1388.5 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK: Chatsworth Formation (Kcs) SANDSTONE with Interbedded SILTSTONE: yellowish brown sandstone and olive brown siltstone, dense to very dense, thin bedded to laminar bedded siltstone with thin bedded sandstone, moderately weathered in upper 1 1/2 feet, slightly weathered below @ 1.5': B: N65W, 65NE; siltstone, thin bedded @ 3': J: N20E, 30NW; tight @ 3': B: N70W, 72NE			
5		1	11/6"		@ 5': well cemented siltstone, grayish brown, very dense, upper sample ring disturbed @ 6': B: N70W, 74NE; well-bedded siltstone @ 6': J: N18E, 38NW; tight			
10		2			@ 9': B: N50W, 68NE @ 9': too dense to drive sampler, bulk obtained @ 10': Sandstone; thin bedded, fine grained sand, interbedded with thick to thinly bedded siltstone @ 10': B: N71W, 65NE @ 10': J: N30E, 40NW			MAX, DS
					@ 12.5': B: N72W, 68NE; siltstone bed, 1-inch thick, medium dense to dense, root-lined top and bottom of bed, weakly cemented @ 12.5': J: N20E, 30NW; tight			
15					@ 15': B: N70W, 70NE; Siltstone bed			
					@ 16': B: N68W, 75NE @ 16.5': J: E-W, 45N			

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Chatsworth Ridge Estates
Deer Lake Highland Area
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LOG OF BORING KB-10

PLATE A-12a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					Total depth of boring: 21.5 feet, refusal on hard layer No groundwater or seepage encountered Downhole logged by J. Hernandez on 11/9/00 Boring backfilled and tamped with soil cuttings			
					KELLY WEIGHTS: 0 - 25': 2500 LBS 25 - 45': 1500 LBS 45 - 70': 750 LBS			

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LOG OF BORING KB-10

PLATE A-12b

Explanation To Logs On Plate A-1

Date Drilled:	12/5/00	Water Depth:	>85 feet
Drilled By:	Tri Valley Drilling	Date Measured:	12/06/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1548 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK: Saugus Formation (QTs) Sandstone with gravel: light reddish brown, dry, fine to coarse sand, fine to coarse gravel, sub-rounded gravels, channel cross bedding common			
					@ 3': Fr: N32W, 87SW; root-lined fracture, tight			
5					@ 5.5': Silty sandstone, fine sand, light yellowish brown, dry, moderately cemented			
					@ 6.5': J: N26W, 74SW; joint continuous to 8 feet, root-lined, continuous around boring, tight			
					@ 7': B: N10W, 10SW; sandstone bed, fine to coarse grained sand, fine gravel			
					@ 9.5': J: N5W, vertical			
10		1	6 13		@ 10': dense, thin bedded gravel channel	132	1.1	
15		2	5 9		@ 15': Gravel is iron oxide stained, pervasive throughout this depth, sharp contact with silty clay at 17 feet	128	5.0	
					@ 17': Silty claystone, light grayish brown, medium stiff, some iron oxide staining			
					@ 18': Silty sandstone, light yellowish brown, fine grained sand, weakly cemented			

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LOG OF BORING KB-11

PLATE A-13a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					@ 20': J: N-S, 70E; weak joint, not tight or cemented, fine to medium sandstone bedrock			
					@ 21.5': 6-inch thick gravel channel deposit @ 22': Silty claystone contact with gravel channel above @ 22': C: N80W, 35NE			
					@ 23.5': Sandy gravel, fine to coarse gravel, iron oxide stained			
25								
					@ 27': Clay rip-up clasts			
					@ 29': Gravel contact with clayey silt below. Silt is olive brown, stiff, gravel above is uncemented, has scattered clay rip-up clasts			
30	3	4 5			@ 30': Sh: N57 to 60E, 36 to 40NW; soft clay-lined shear, gray, stiff, moist, 1-inch thick, fat clay, exits boring at 32.3 feet @ 31': J: N9W, 70NE; clay-lined joint	103	18.8	
					@ 33': F: N30W, 60SW; fault offset approximately 4-inches, offsets sandstone bed and a silty claystone bed, iron oxide stained zone, fault is paper-thin, truncated by shear at 31 feet			
35								
					@ 37': layered bands of iron oxide and manganese oxide staining, thin layers to 38 feet			
					@ 39': Silty sandstone bed in contact with gravel channel above			
40	4	5 10			@ 39': Clay rip-up clasts, soft, moist, also 1-foot diameter rip-up clasts @ 40': Fr: N65W, 65N; clay-lined fracture, iron oxide stained, tight	123	7.9	
					@ 41': clayey sand with traces of fine gravel			

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LOG OF BORING KB-11

PLATE A-13b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK: Chatsworth Formation (Kcs) SILTY SANDSTONE:light yellowish brown, slightly moist, fine grained sand,			
45								
					@ 48.5': Fr: N3E, vertical @ 48.5': Fr: N40W, 62SW; truncates fracture above			
50		5	7 13		@ 50': B: N45W, 65SW; thin clay bed within sandstone	127	8.2	
					@ 52.5': B: N42W, 57SW; siliceous sandstone bed			
55								
					@ 56': Sh: N38W, 73SW; shear zone traces to 50 feet, terminates into clay bed at 50 feet @ 57': Fr: N72W, 70SW; fracture zone, two parallel sets, clay lined, moist, medium stiff, light brown color, second set, gray, polished surfaces, fracture traces to 58 feet and is tight @ 58': Sandstone; well cemented, iron oxide staining common			
60		6	17 3		@ 60': very dense, 3-rings recovered in sample	101	4.1	
					@ 61': B: N50W, 54SW; sandstone bed			
65								

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LOG OF BORING KB-11

PLATE A-13c

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					@ 66': J: N60E, 85SE; tight joint			
70		7	25/6"		@ 70': very dense, 2-rings recovered in sample only	103	2.7	
75					@ 75': Fr: E-W, Vertical; 1/4-inch wide, clay lined, light olive gray to white, tight, some iron oxide staining, extends up to 71 feet and exits boring to 83 feet			
80								
85					Total depth of boring: 85 feet No groundwater or seepage encountered Downhole logged by J. Hernandez on 12/6/00 Boring backfilled and tamped with soil cuttings KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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Chatsworth, CA

LOG OF BORING KB-11

PLATE A-13d

Explanation To Logs On Plate A-1

Date Drilled:	12/7/00	Water Depth:	>65 feet
Drilled By:	Tri Valley Drilling	Date Measured:	12/07/00
Drilling Method:	Bucket Auger 24-inch	Elevation:	1534 feet
Logged By:	JLH	Reference Datum:	B/E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
					BEDROCK: Chatsworth Formation (Kcs) Silty Sandstone: light yellowish brown, dry, dense, moderate to severely weathered upper 1 to 2 feet @ 2': Sh: N9W, 72SW; carbonate-lined shear zone, continuous to 11 feet @ 3': B: N62E, 66SE; moderately weathered sandstone @ 4.5': B: N18W, 68SW			
5								
10		1	4 7		@ 10': Sandstone: light yellowish brown, dry, dense, fine sand, trace iron oxide staining, moderately weathered @ 11': Sh: N32W, 68SW; shear from 2 feet, exits boring at 11 feet @ 13.5': Fr: N32W, 80SW; parallel fracture to shear above, tight, weathered fine sandstone	121	3.4	
15					@ 15': very dense sandstone -- Fr: N32W, 80SW; fracture from 13.5 feet			

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LOG OF BORING KB-12

PLATE A-14a

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
		2	4 7		@ 20': iron oxide staining on thin fractures, spaced 1 to 2-inches apart, sand is fine to medium grained	19	4.1	DS
					@ 22': B: N30W, 19SW; Clay bed, iron oxide stained, carbonate-lined, 1/2-iinch thick, very stiff			
25					@ 25': Sh: N40W, 84SW; shear enters boring at 20 feet, two parallel carbonate lined shears with carbonate nodules, 1 1/2-inch thick, root lined, exits boring at 28 feet			
30		3	11 15		@ 30': very dense, moderately to well cemented, thin clay beds, 1/16-inch thick @ 30': J: N30E, 80SE; clay-lined joint, some near-vertical well-healed fractures, spaced 2-feet apart @ 31': B: N56W, 75SW; clay bed, 1/4-inch thick, slightly moist, iron oxide stained @ 32': Sh: N26W, 80NE; thin clay-lined shear, slickensides oriented due west	111	5.2	
35					@ 35': Sh: E-W, 45N; shear zone (Internal tectonic shearing), 2-inches thick, carbonate and sand mixed with clay in zone, well cemented sandstone block in shear zone, shear zone characterized with pinching and swelling clay lining to 40 feet, becomes thin at 42 feet.			
40		4	5 10		@ 40': Silty Sandstone, trace sheared sandstone with light yellowish brown clayey silt, dry @ 41': B: N-S, 55W; contact between clay and sandstone, sandstone is moderately cemented @ 42': Shear from 35 feet contains clay rip-up clasts within parallel set of shears, 1-inch thick shear zone	125	5.4	

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LOG OF BORING KB-12

PLATE A-14b

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests PID (ppm)
45					@ 46': Sh: N25W, 70SW; internal tectonic shear from 35 feet becomes 4-inches thick, clay shear zone is hard @ 47': trace unoxidized sandstone, possible clay bed with polished surfaces, moderately cemented			
50	5	19 20/3"			@ 49':B: N36W, 70SW; claystone bedding internally sheared as above @ 50': B: N35W, vertical @ 50': well cemented sandstone	129	5.1	
					@ 52': B: N42W, 80NE; discontinuous clay bed, 1/4-inch thick, internally sheared			
55					@ 55': B: N28W, 76SW; clay bed, hard, polished surfaces			
60	6	8 25			@ 60': B: N45W, 70SW; clay bed, 6-inches thick, tight, hard, minor iron oxide staining on top and bottom of bed, exits boring at 63 feet	126	9.7	
					@ 63': B: N35W, 70SW; Silty clay bed, 4-inches thick, moist, medium stiff			
65								

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LOG OF BORING KB-12

PLATE A-14c

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	SOIL DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Dry Unit Weight (pcf)	Moisture Content (%)	Additional Tests
					Total depth of boring: 65 feet No groundwater or seepage encountered Downhole logged by J. Hernandez on 12/7/00 Boring backfilled and tamped with soil cuttings			
					KELLY WEIGHTS: 0 - 30': 5952 lbs 30 - 57': 3921 lbs 57 - 86': 2531 lbs 86 - 115': 1407 lbs			

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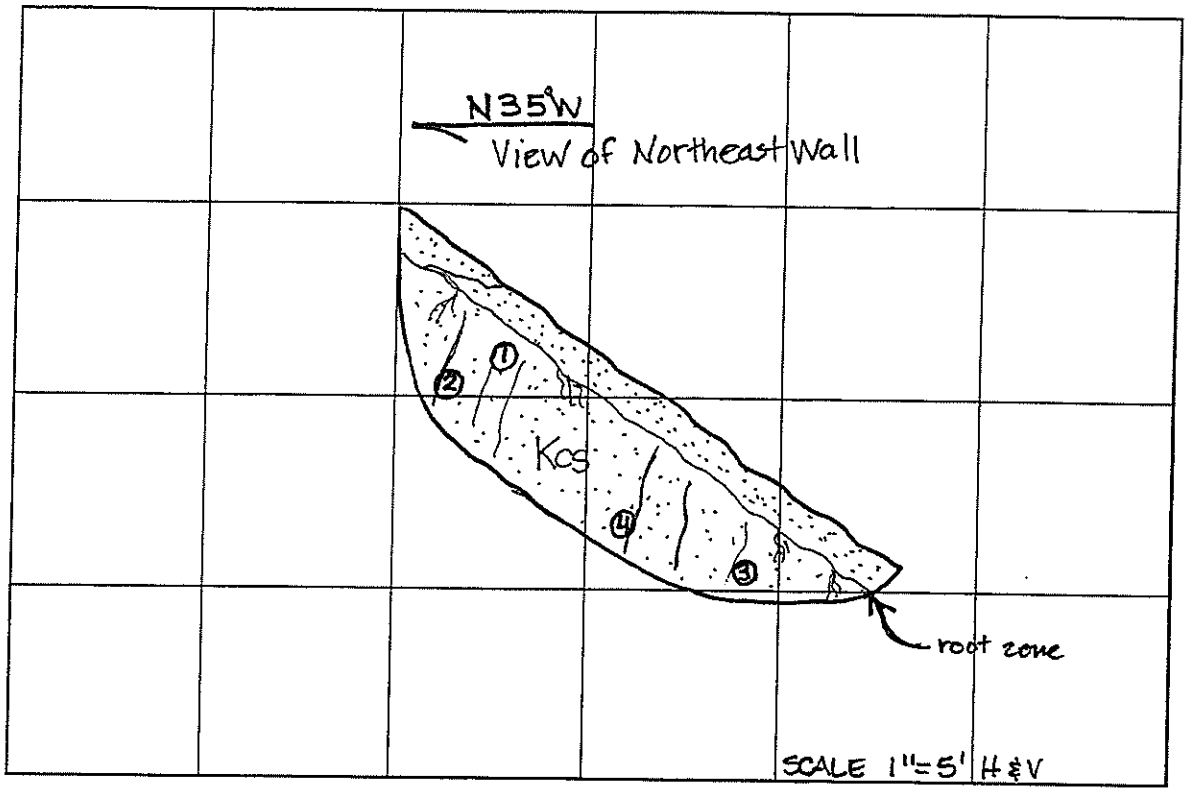
LOG OF BORING KB-12

PLATE A-14d

Explanation To Logs On Plate A-1

Date Excavated: 12/15/00
Logged By : TAH

Reference Elevation : 1190 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**WEATHERED BEDROCK SOIL** @ 0-1':SAND (SP). Light Yellowish-brown, dry, loose to medium dense, fine to medium sand, decomposed bedrock, contains weathered bedrock clasts (sandstone), roots within upper 1 foot, road fill on back of test pit (0-1.2'). **BEDROCK - Chatsworth Formation (Kcs)** @ 1-4.5': SANDSTONE. Yellowish-brown, massive, highly to slightly weathered, oxidized, moderately fractured, moderately strong to very strong, highly weathered from 1-3', slightly weathered @ 4', very strong @4', fine to medium sand, moderately to well cemented 1: J: N19W, 61SW 2: J: N55E, 81SE 3: Fr: N43E, 65NW 4: Fr: N21E, 82NW Total depth of test pit: 4.5 feet Refusal at 4.5 feet No groundwater encountered No raveling or caving Backfilled with native materials			

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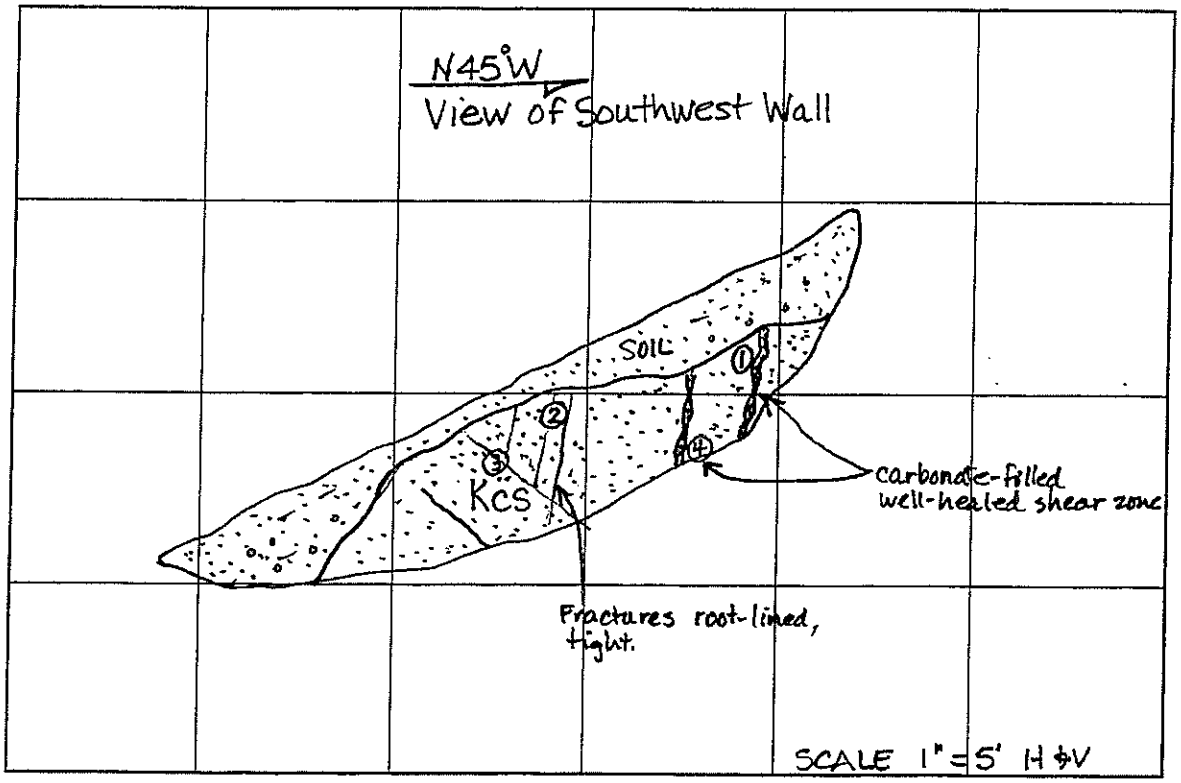
LOG OF TEST PIT KP-1

PLATE A-15

Date Excavated: 12/15/00
Logged By : TAH

Reference Elevation : 1135 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**WEATHERED BEDROCK SOIL WITH COLLUVIUM** GRAVELLY SAND (SP): Yellowish-brown, dry, medium dense to very dense, fine to medium sand with sandstone and granitic sub-rounded to angular clasts (25-30%), variable depth (ranges from 1-3' in thickness), roots extend to soil/bedrock contact. **BEDROCK - Chatsworth Formation (Kcs)** SANDSTONE. Yellowish-brown, massive, highly to slightly weathered, oxidized, moderately fractured, moderately strong to very strong, highly weathered in center of test pit from 1-2', slightly weathered from 3-4', very strong at 4', fine to medium sand, moderately to well cemented. 1: SZ N40E, 80NW, 2: SZ N25E, 80NW 3: Fr N85W, 85NE, 4: SZ N5W, 72SW Total depth of test pit: 4' Refusal at 4' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

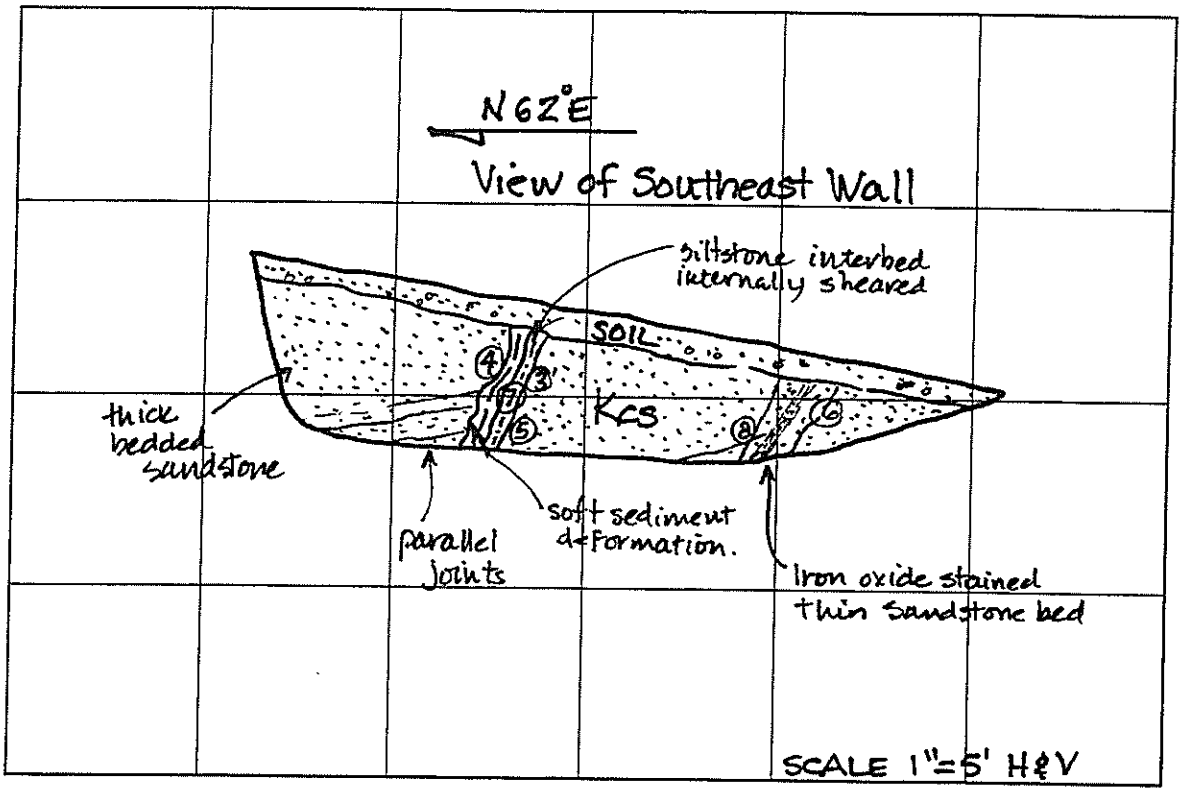
Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-2

PLATE A-16

Date Excavated: 12/11/00
Logged By : TAH

Reference Elevation : 1325 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**SOIL** @ 0-0.5': GRAVELLY SAND (SP). Yellowish-brown, dry, loose to medium dense, decomposed sandstone, fine to medium sand with weathered sandstone clasts, roots extend to 0.5' **BEDROCK - Chatsworth Formation (Kcs)** @ 0.5-4.0': SANDSTONE. Yellowish-brown, thin claystone/siltstone interbeds, blocky, highly to slightly weathered, oxidized, moderately fractured, moderately strong to very strong, highly weathered from 0.5-1.5', slightly weathered from 3-4', very strong at 4', fine to medium sand, moderately to well cemented. 1: J N74W, 71NE, 2: J N20E, 67NW 3: B N54W, 71NE, 4: B N15W, 87SW 5: B N55W, 70NE, 6: J N5E, 15NW 7: B N65W, 63NE, 8: J N72W, 74NE Total depth of test pit: 4' Refusal at 4' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

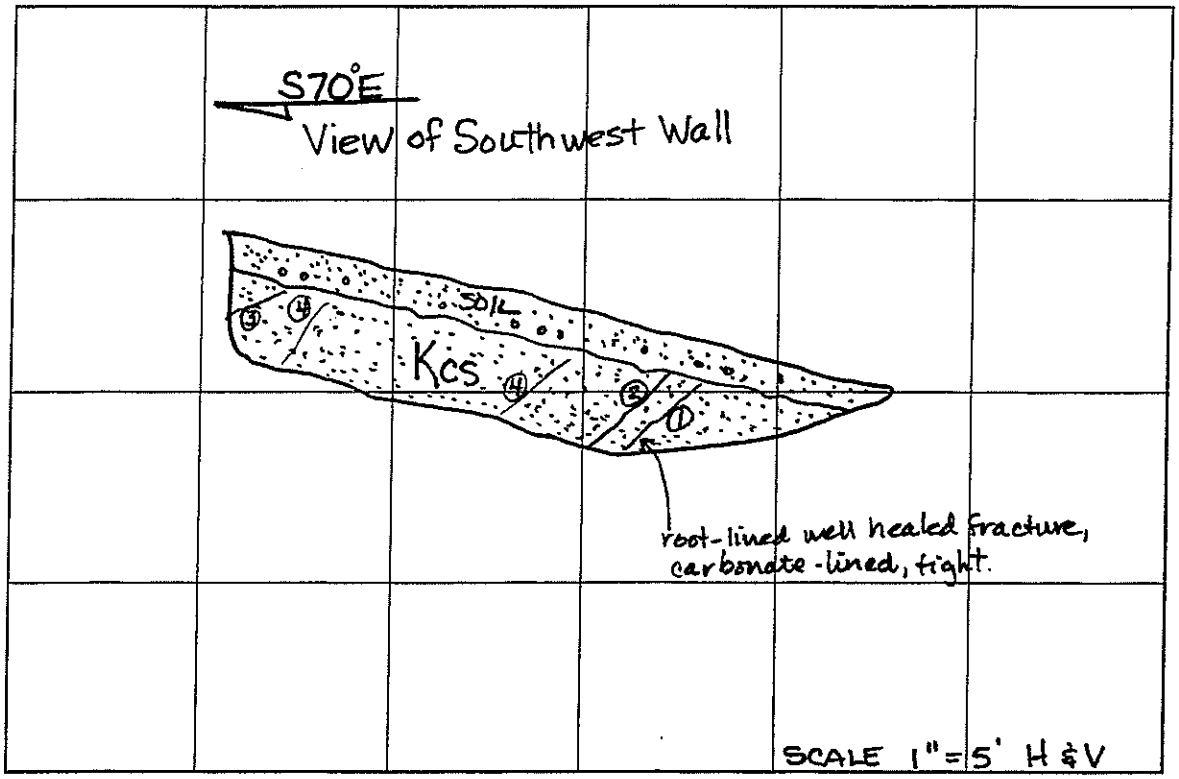
LOG OF TEST PIT KP-5

PLATE

A-17

Date Excavated: 12/13/00
Logged By : TAH

Reference Elevation : 1290 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3					**SOIL** @ 0-1': GRAVELLY SAND (SP). Yellowish-brown, dry, loose, decomposed sandstone, fine to medium sand with weathered sandstone clasts, roots extend to 1' **BEDROCK - Chatsworth Formation (Kcs)** @ 1-3': SANDSTONE. Yellowish-brown, massive, highly to slightly weathered, oxidized, moderately fractured, moderately strong to very strong, highly weathered from 1-2', slightly weathered from 2-3', very strong at 3', fine to medium sand, moderately to well cemented. 1: Fr N43E, 63SE 2: Fr N44E, 64SE 3: J N74E, 64SE 4: J N65W, 26NE Total depth of test pit: 3' Refusal at 3' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

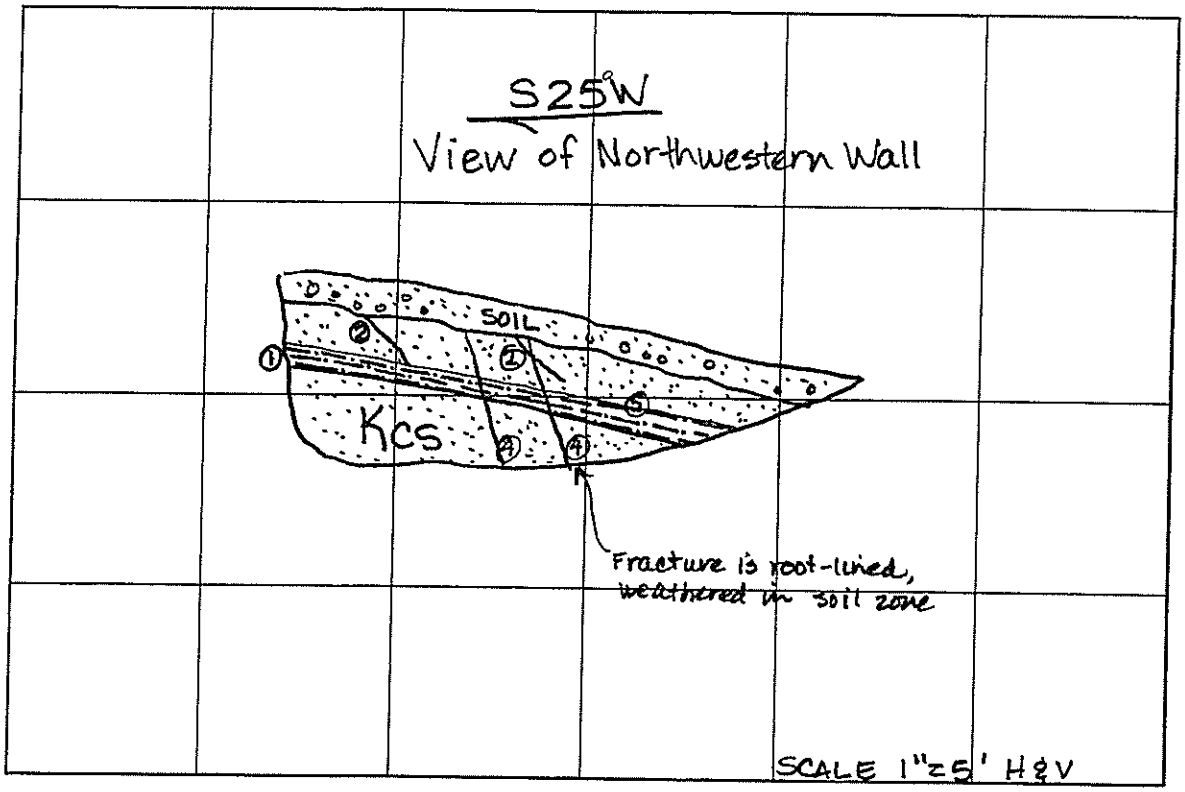
Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-7

PLATE A-18

Date Excavated: 12/14/00
Logged By : JLH

Reference Elevation : 1302 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**SOIL** @ 0-1.5': GRAVELLY SAND (SP). Yellowish-brown, dry, loose to medium dense, decomposed sandstone, fine to medium sand with weathered sandstone clasts, roots extend to 0.7' **BEDROCK - Chatsworth Formation (Kcs)** @ 1.5-4.0': SANDSTONE. Yellowish-brown, thin siltstone interbeds, highly to slightly weathered, oxidized, moderately fractured, moderately strong to very strong, cemented sandstone in lower portion of trench, fine to medium sand, natural slope generally follows bedding, moderately to well cemented. 1: B N70W, 40NE 2: J N22E, 82NW 3: J N20E, 62NW 4: Fr N64E, 82NW 5: B N65W, 45NE Total depth of test pit: 4' Refusal at 4' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

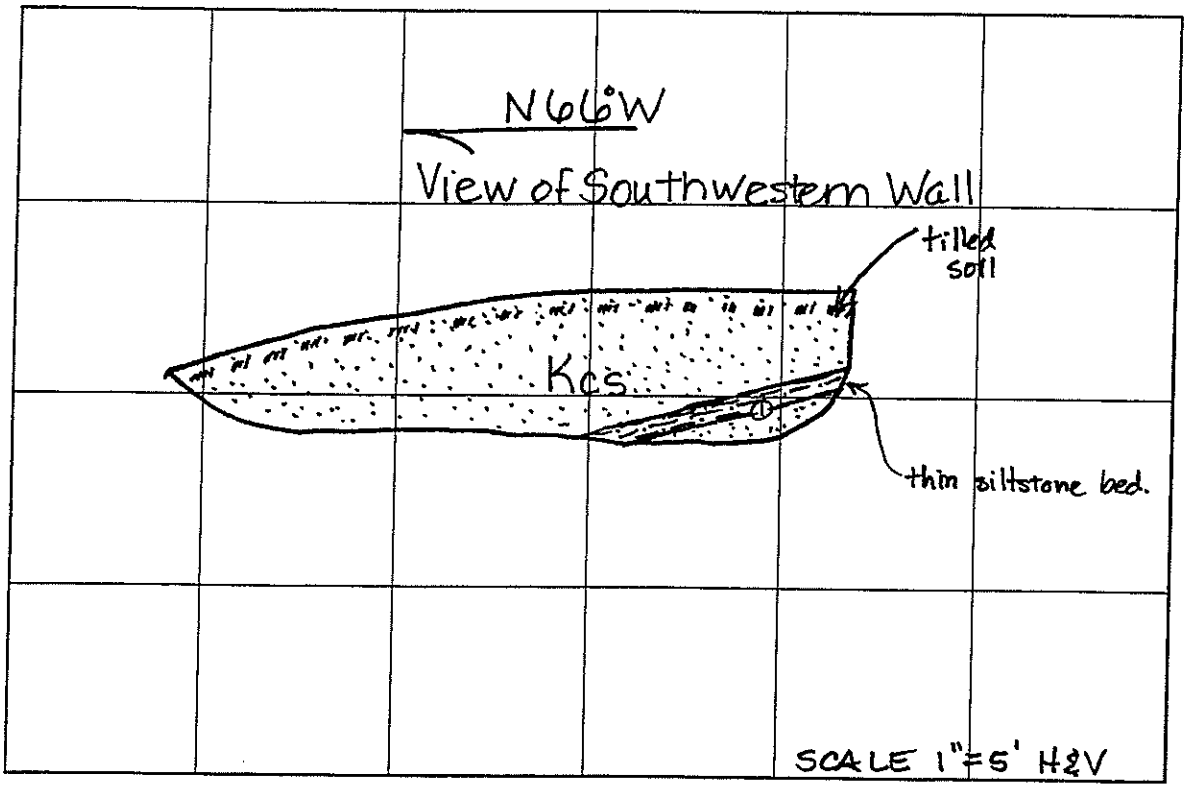
LOG OF TEST PIT KP-8

PLATE

A-19

Date Excavated: 12/14/00
Logged By : JLH

Reference Elevation : 1326 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3					**BEDROCK - Chatsworth Formation (Kcs)** @ 0-3': SANDSTONE. Yellowish-brown, with thin siltstone interbed, highly to slightly weathered, highly weathered and tilled sandstone from 0-0.7', oxidized, moderately strong to very strong, fine to medium sand, moderately to well cemented. 1: B N37W, 42NE Total depth of test pit: 3' Refusal at 3' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

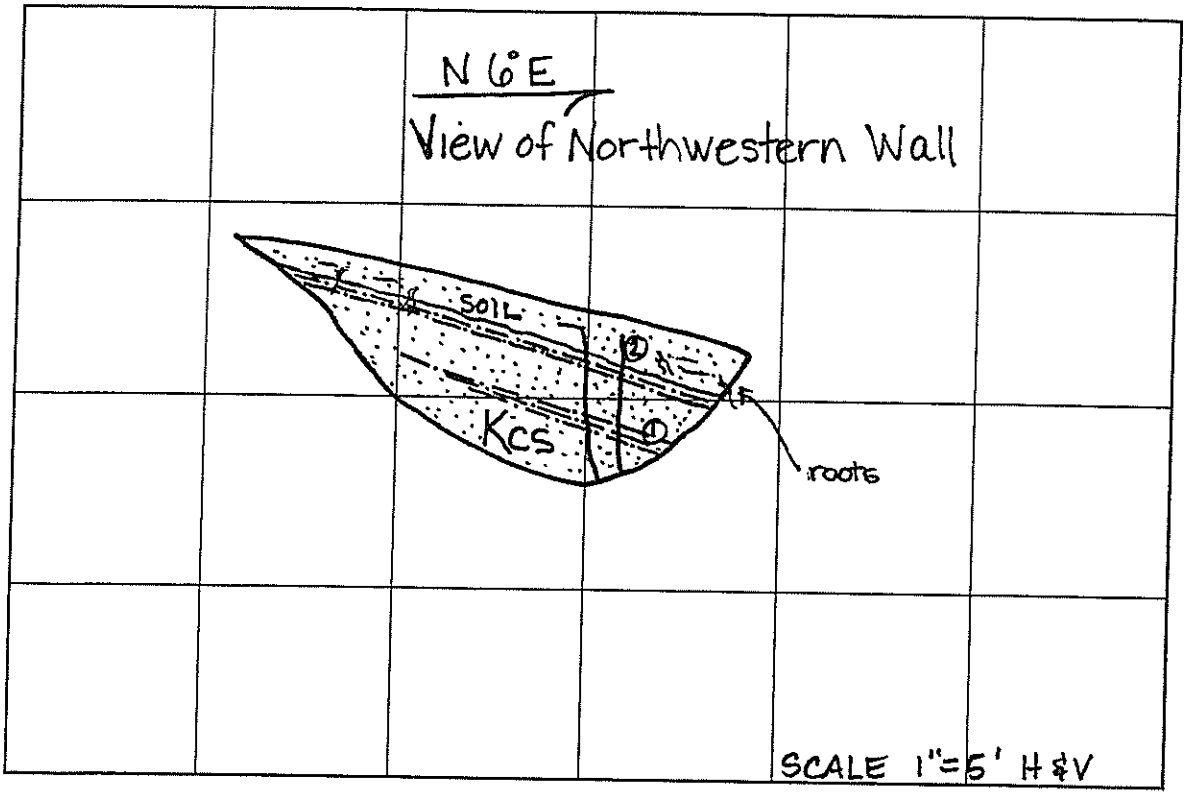
Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-9

PLATE A-20

Date Excavated: 12/14/00
Logged By : JLH

Reference Elevation : 1355 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**SOIL** @ 0-1.5': SAND (SP), yellowish-brown, dry, loose to medium dense, fine to medium sand, contains trace clay, homogeneous, roots to 0.7' **BEDROCK - Chatsworth Formation (Kcs)** @ 1.5-4': SANDSTONE. Light yellowish-brown, with thin siltstone interbeds, moderately to slightly weathered, oxidized, strong to very strong, fine to medium sand, blocky, topography follows bedding orientation, dry to slightly moist, moderately to well cemented 1: B N42W, 18NE 2: J N40E, 85NW Total depth of test pit: 4' Refusal at 4' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

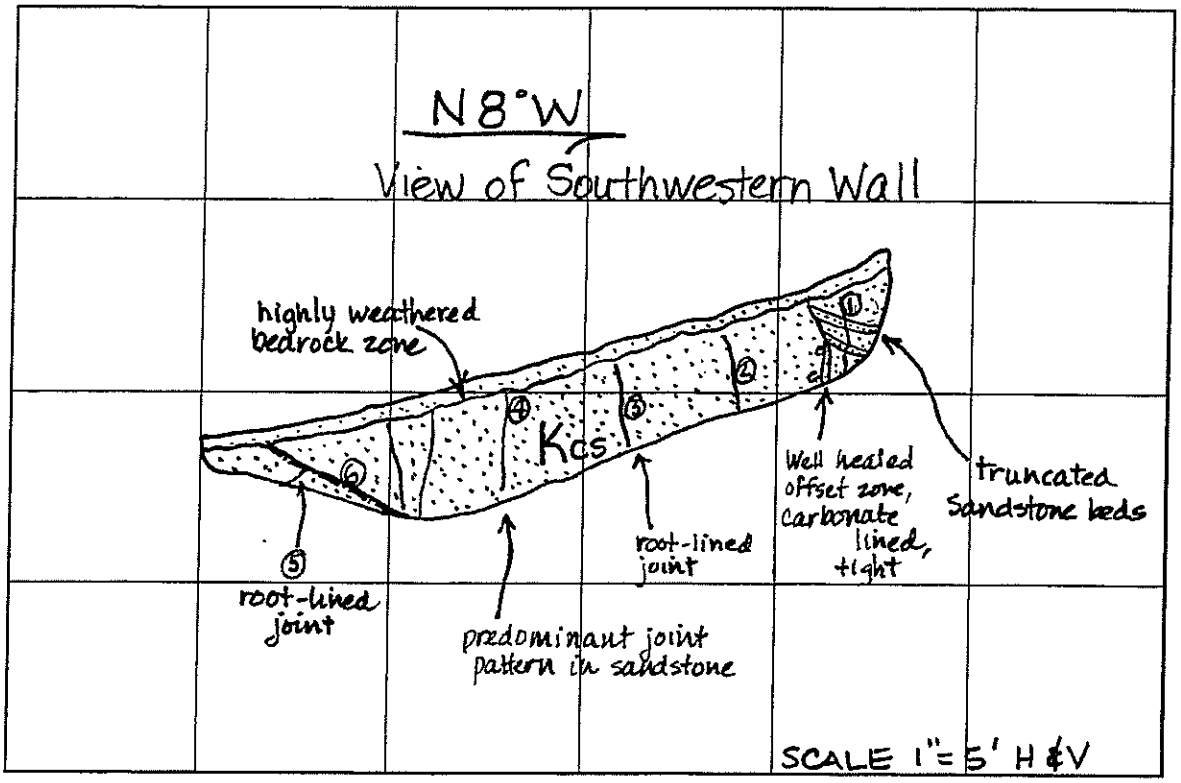
LOG OF TEST PIT KP-10

PLATE

A-21

Date Excavated: 12/11/00
Logged By : JLH

Reference Elevation : 1392 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3					**BEDROCK - Chatsworth Formation (Kcs)** @ 0-3': SANDSTONE. Yellowish-brown, highly to slightly weathered, highly weathered from 0-0.5', moderately strong to very strong, fine to medium sand, roots to 0.5', moderately to well cemented. 1: J N65W, 87SW 2: Fr N65W, 85NE 3: Fr N72W, 80NE 4: J N10E, 38SE 5: J N38E, 78SE 6: B N20E, 15NW Total depth of test pit: 3' Refusal at 3' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

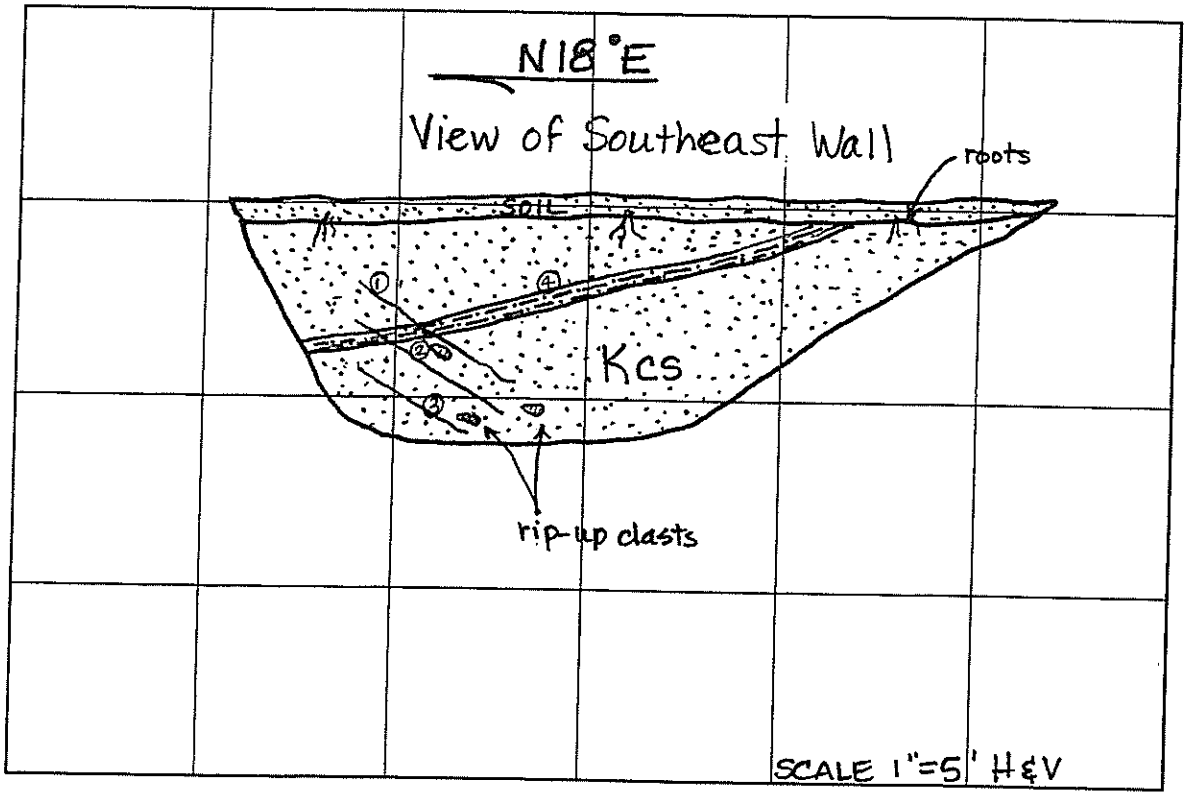
Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-14

PLATE A-22

Date Excavated: 12/8/00
Logged By : TAH

Reference Elevation : 1385 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4 5 6					**SOIL** @ 0-0.5': SAND (SP), yellowish-brown, dry, loose to medium dense, fine to medium sand, homogeneous, roots to 0.5' **BEDROCK - Chatsworth Formation (Kcs)** @ 0.5-6': SANDSTONE. Yellowish-brown, with thin claystone interbed, moderately to slightly weathered, blocky, massive, oxidized, strong to very strong, fine to medium sand, moderately to well cemented 1: J N-S, 55W 2: J N-S, 58W 3: J N5E, 55NW 4: B N10W, 25NE Total depth of test pit: 6' Refusal at 6' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

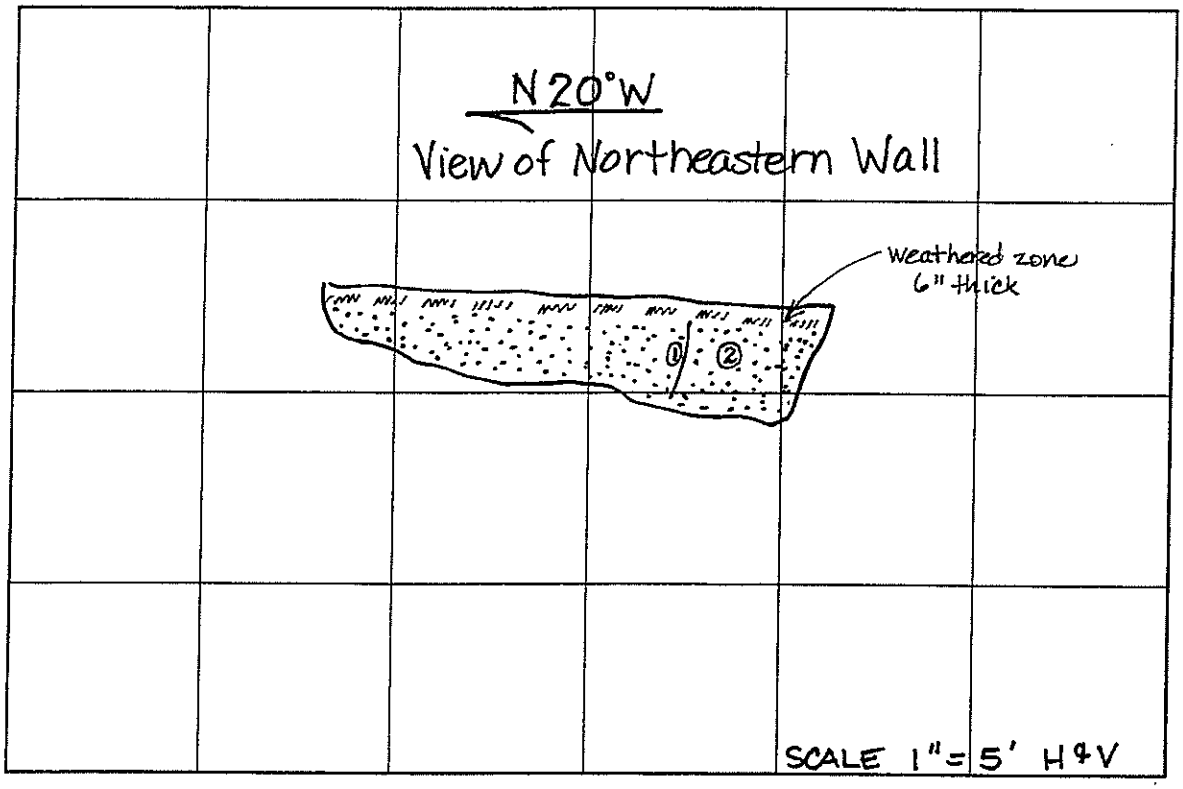
LOG OF TEST PIT KP-15

PLATE

A-23

Date Excavated: 12/8/00
Logged By : TAH

Reference Elevation : 1422 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3					**BEDROCK - Chatsworth Formation (Kcs)** @ 0-3': SANDSTONE. Yellowish-brown, highly to slightly weathered, highly weathered from 0-0.5', moderately strong to very strong, fine to medium sand, roots to 0.5', moderately to well cemented. 1: J N75W, 85SW 2: GB N30E, 32SE Total depth of test pit: 3' Refusal at 3' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

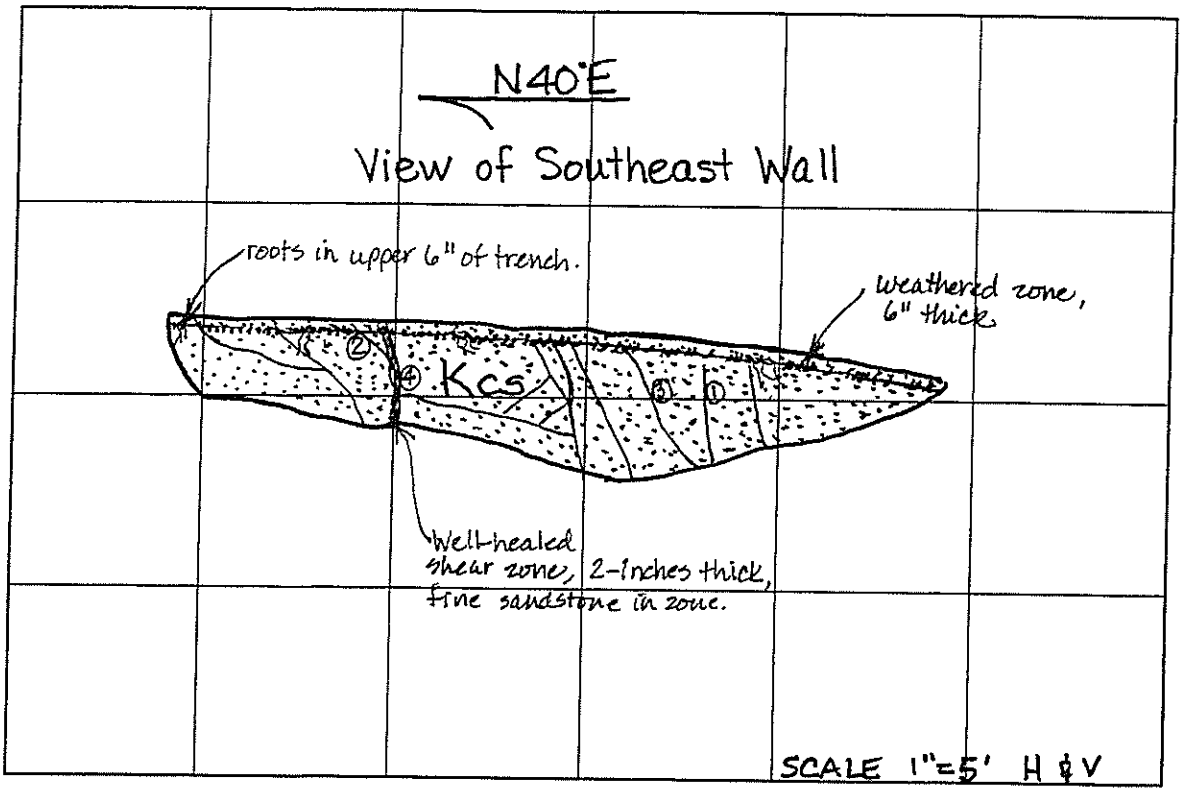
Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-16

PLATE A-24

Date Excavated: 12/5/00
Logged By : TAH

Reference Elevation : 1428 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**BEDROCK - Chatsworth Formation (Kcs)** @ 0-4': SANDSTONE. Yellowish-brown, highly to slightly weathered, highly weathered from 0-0.5', moderately to highly fractured, moderately strong to very strong, fine to medium sand, blocky, roots to 0.5', moderately to well cemented. 1: J N6W, 65SW 2: Fr N76E, 76NW 3: Fr N70W, 64NE 4: SZ N75W, 70NE Total depth of test pit: 4' Refusal at 4' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

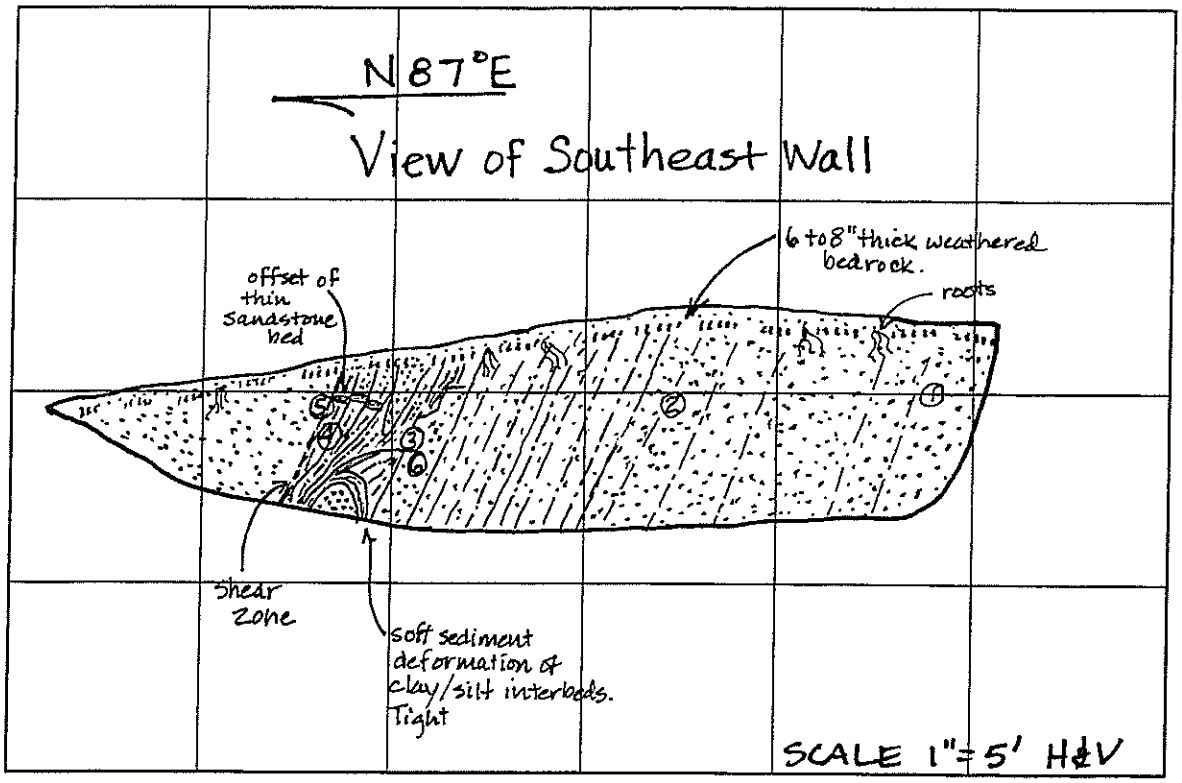
LOG OF TEST PIT KP-17

PLATE

A-25

Date Excavated: 12/5/00
Logged By : TAH

Reference Elevation : 1523 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4 5					**BEDROCK - Chatsworth Formation (Kcs)** @ 0-5': SILTY SANDSTONE. Thick siltstone and massive sandstone interbeds, Yellowish-brown, highly to slightly weathered, highly weathered to decomposed surface zone from 0-0.7', thinly bedded, slightly fractured, moderately strong to strong, very fine to medium sand with silt, blocky, roots to 0.7', moderately cemented. 1: B N32W, 67NE 2: B N41W, 72NE 3: Sh N23E, 69NW 4: B N37W, 63NE (sheared) 5: SZ N35W, 55NE 6: J N76E, 45SW Total depth of test pit: 5' No refusal encountered No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

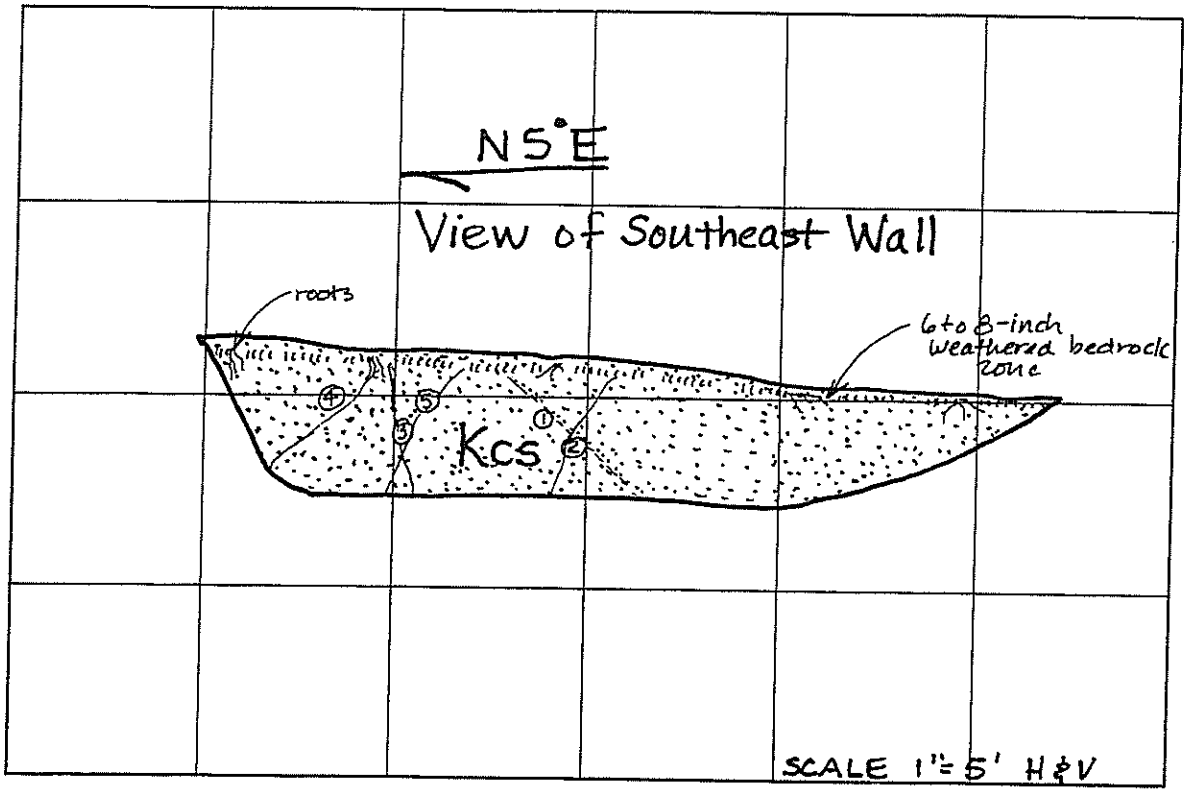
LOG OF TEST PIT KP-19

PLATE

A-26

Date Excavated: 12/6/00
Logged By : TAH

Reference Elevation : 1464 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**BEDROCK - Chatsworth Formation (Kcs)** @ 0-4': SANDSTONE. Yellowish-brown, highly to slightly weathered, highly weathered to decomposed surface zone from 0-0.7', massive, moderately jointed, moderately strong to very strong, fine to medium sand, roots to 0.7', moderately to well cemented. 1: B N2E, 25SE 2: J N10E, 72NW 3: J N89W, 86SW 4: J N20E, 66NW 5: J N31E, 58NW Total depth of test pit: 4' Refusal encountered at 4' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

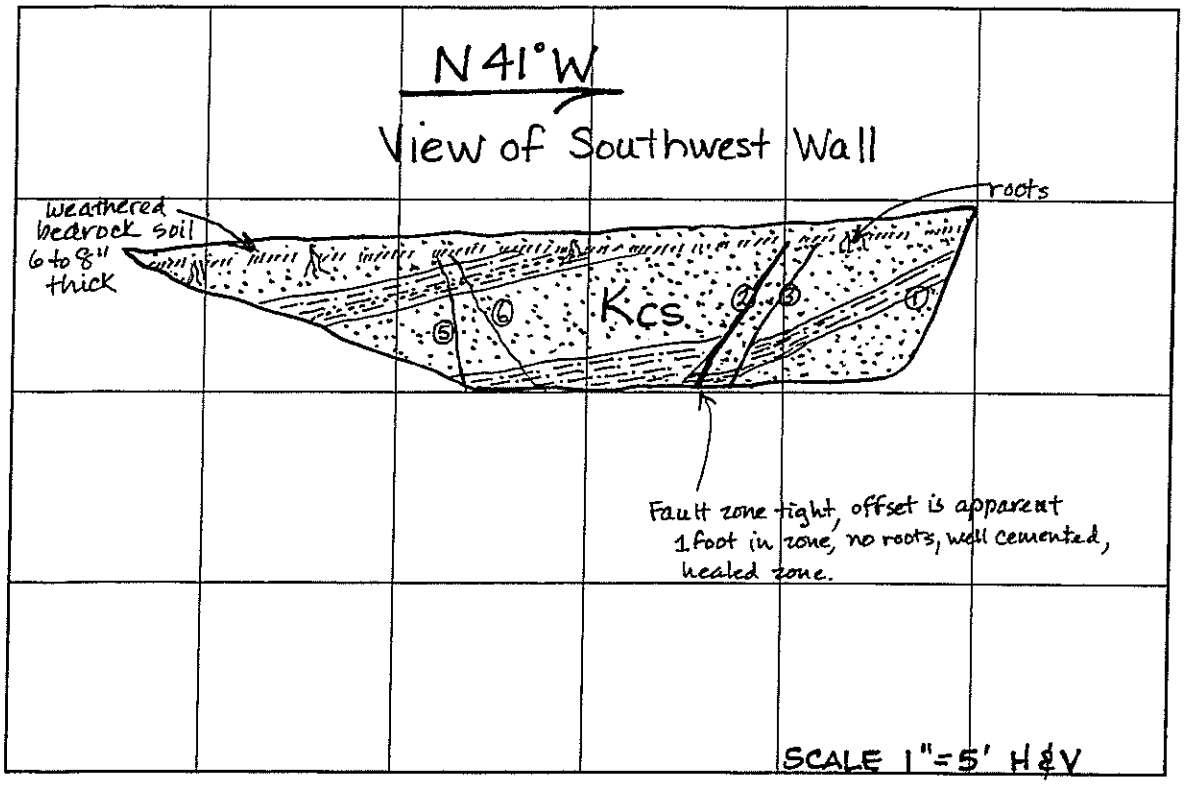
LOG OF TEST PIT KP-21

PLATE

A-27

Date Excavated: 12/6/00
Logged By : TAH

Reference Elevation : 1464 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**SOIL** @ 0-0.8': SAND (SP): yellowish-brown, dry, loose to medium dense, fine to medium sand, roots to 0.8'. **BEDROCK - Chatsworth Formation (Kcs)** @ 0.8-4.5': SANDSTONE. Thinly bedded siltstone and silty sandstone interbeds, yellowish-brown, moderately to slightly weathered, massive, moderately jointed, moderately strong to very strong, fine to medium sand, moderately to well cemented. 1: B N22E, 32SE 2: F N88W, 69SW 3: F N58W, 57SW 4: B N9W, 28NE 5: J N71W, 80NE 6: J N36E, 66NW Total depth of test pit: 4.5' Refusal encountered at 4.5' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

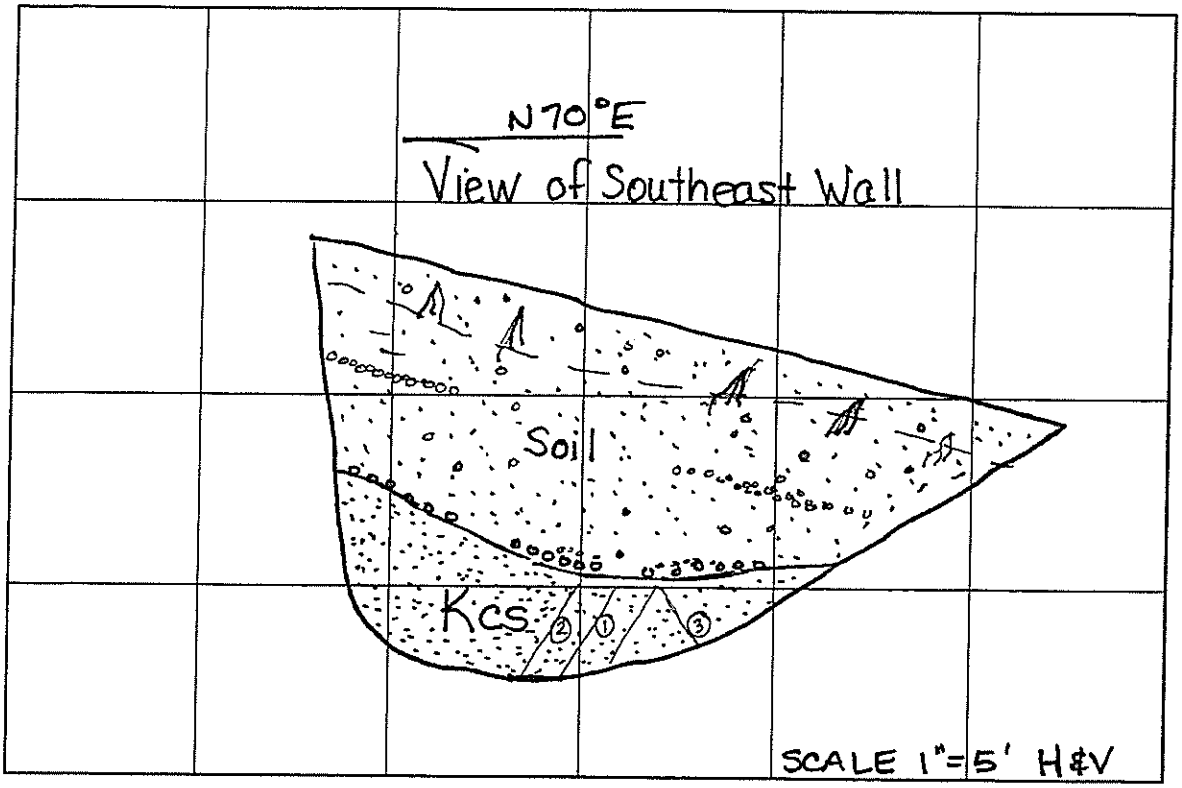
Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-22

PLATE A-28

Date Excavated: 12/11/00
Logged By : TAH

Reference Elevation : 1450 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4 5 6 7 8 9 10					**SOIL - WITH COLLUVIUM** @ 0-5 to 7: GRAVELLY SAND (SW): yellowish-brown, dry, medium dense to very dense (weakly cemented below 5'), well-graded sand, well-graded gravel interbeds, contains abundant weathered angular sandstone clasts, roots to 1', gravel bed at colluvium/bedrock contact. **BEDROCK - Chatsworth Formation (Kcs)** @ 5 to 7 to 10': SANDSTONE. Light yellowish-brown, moderately to slightly weathered moderately weathered to 8', massive, moderately jointed, moderately strong to very strong, fine to medium sand, moderately to well cemented. 1: J N29E, 88NW 2: J N24E, 83NW 3: J N60E, 64SE Total depth of test pit: 10' Refusal encountered at 10' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

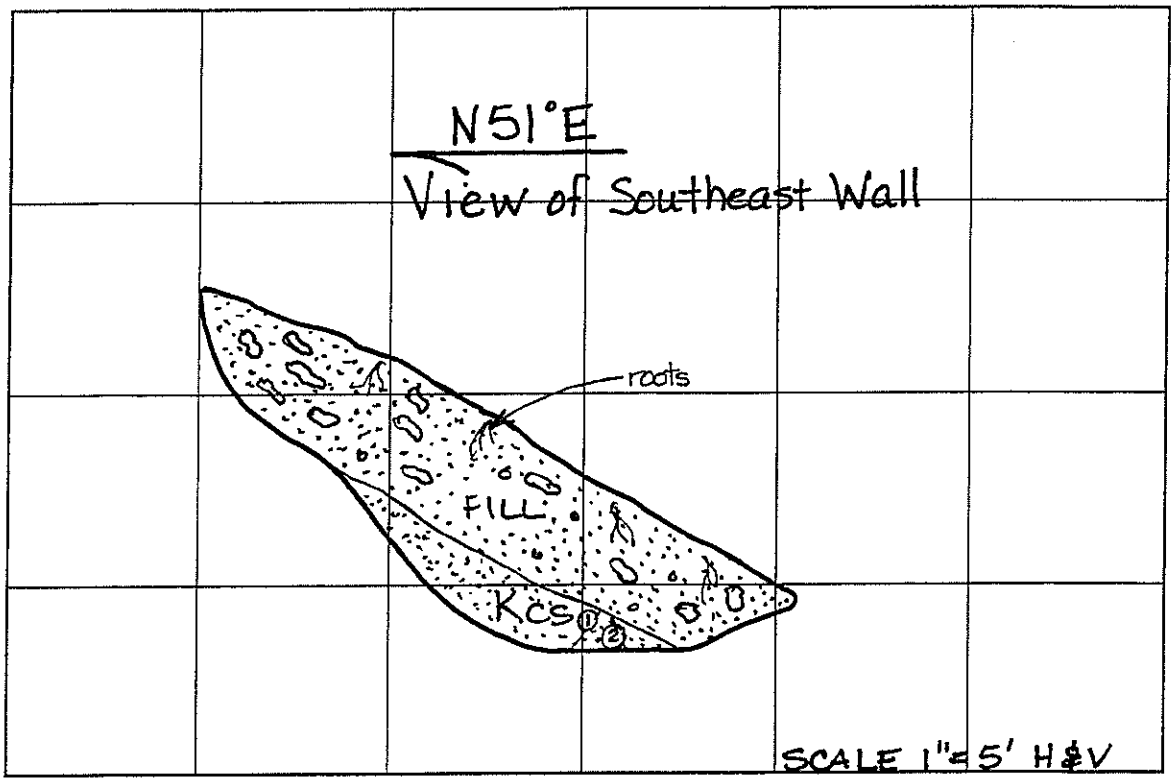
LOG OF TEST PIT KP-23

PLATE

A-29

Date Excavated: 12/8/00
Logged By : TAH

Reference Elevation : 1470 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4 5					**FILL** @ 0-3.1': ROAD FILL: GRAVELLY SAND (SP): yellowish-brown/light tannish-brown, dry, medium dense to dense, fine to medium sand, well-graded angular sandstone gravel (40%) with cobbles, roots to 0.8', contains some oxidized metallic debris at fill/bedrock contact. **BEDROCK - Chatsworth Formation (Kcs)** @ 3.1-5.5': SANDSTONE. Light tannish-brown, yellowish-brown, moderately to slightly weathered, moderately weathered to 4', massive, blocky, moderately jointed, moderately strong to very strong, oxidized, fine to medium sand, moderately to well cemented. 1: J N48E, 69NW 2: J N65W, 17SW Total depth of test pit: 5.5' Refusal encountered at 5.5' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

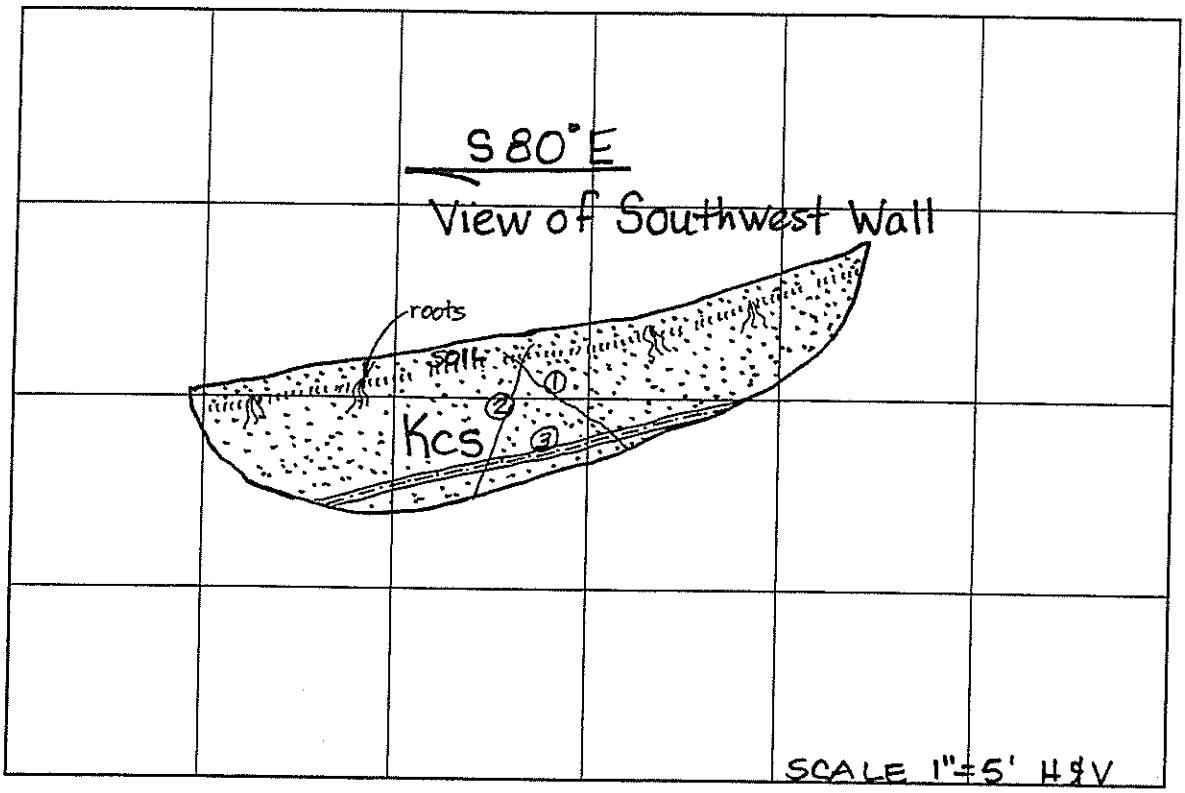
Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-24

PLATE A-30

Date Excavated: 12/8/00
Logged By : TAH

Reference Elevation : 1388 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**SOIL** @ 0-0.8': SAND (SP): yellowish-brown, dry, loose to medium dense, fine to medium sand, roots to 0.8'. **BEDROCK - Chatsworth Formation (Kcs)** @ 0.8-4.5': SANDSTONE. Thinly bedded siltstone interbed, yellowish-brown, moderately to slightly weathered, massive, blocky, moderately jointed, moderately strong to very strong, fine to medium sand, moderately to well cemented. 1: J N74E, 58NW 2: J N14W, 64SW 3: B N60E, 18SE Total depth of test pit: 4.5' Refusal encountered at 4.5' No groundwater encountered No raveling or caving Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

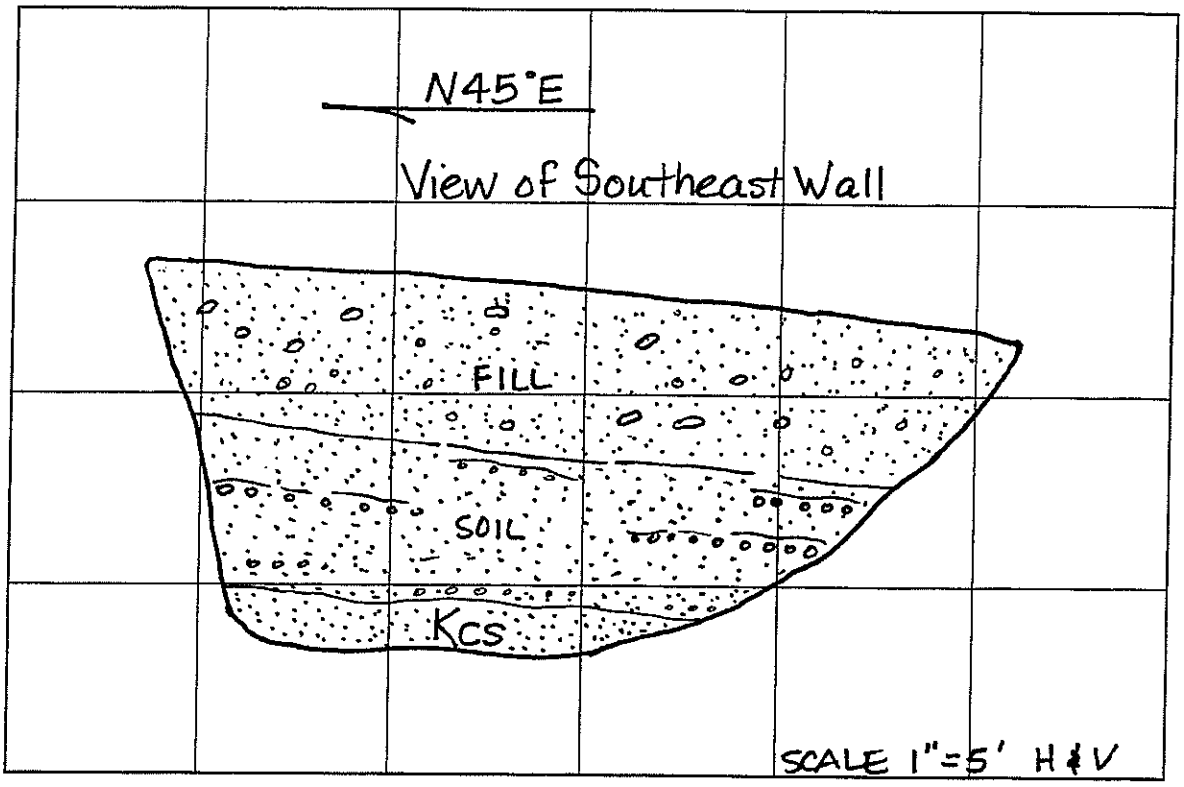
LOG OF TEST PIT KP-25

PLATE

A-31

Date Excavated: 12/8/00
Logged By : TAH

Reference Elevation : 1479 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4 5 6 7 8 9 10					**FILL** @ 0-4': GRAVELLY SAND (SP): yellowish-brown, dry, medium dense, fine to medium sand (predominantly fine, sand), well-graded angular to sub-angular sandstone clasts (40-45%) roots to 0.7', contains some oxidized metallic debris and tire fragments. **SOIL** @ 4-8': COLLUVIUM: SAND (SP), yellowish-brown, dry, medium dense to dense, fine to medium sand, well graded rounded to sub-rounded granitic gravels (15-20%), stratified, contains well-graded gravel (GW) interbeds/lenses less than 4-inches thick **BEDROCK - Chatsworth Formation (Kcs)** @ 8-10': SANDSTONE. Yellowish-brown, moderately to slightly weathered, massive, blocky, moderately strong to very strong, oxidized, fine to medium sand, moderately cemented. Total depth of test pit: 10' No refusal encountered No groundwater encountered Ravelling in gravels Backfilled with native materials			

KLEINFELDER

PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

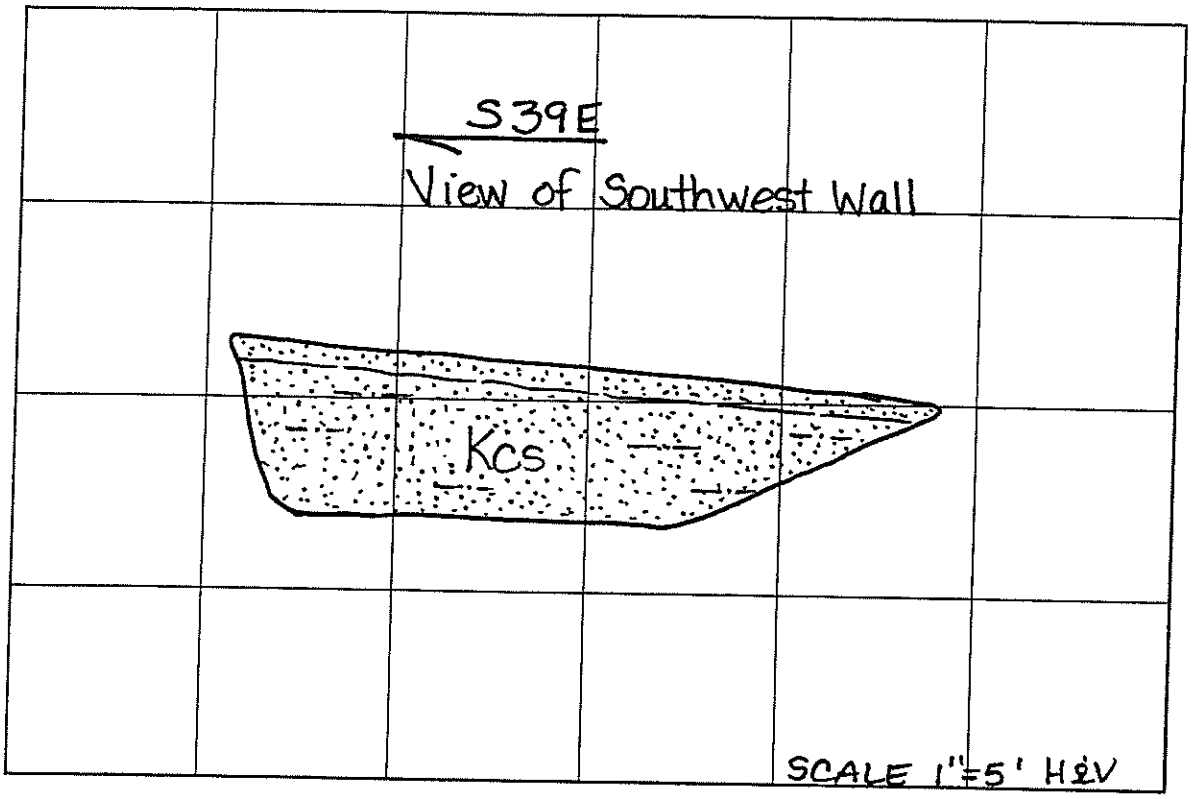
LOG OF TEST PIT KP-28

PLATE

A-32

Date Excavated: 12/6/00
Logged By : TAH

Reference Elevation : 1404 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**SOIL** @ 0-1': SAND (SP): Yellowish-brown, dry, loose to medium dense, fine to medium sand, decomposed sandstone layer, roots to 1'. **BEDROCK - Chatsworth Formation (Kcs)** @ 1-4.5': SILTY SANDSTONE. Yellowish-brown, highly to slightly weathered, highly weathered from 1-2', massive, moderately strong to very strong, very fine to medium sand with silt, moderately to well cemented. Total depth of test pit: 4.5' Refusal encountered at 4.5' No groundwater encountered No raveling or caving Backfilled with native materials			

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PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

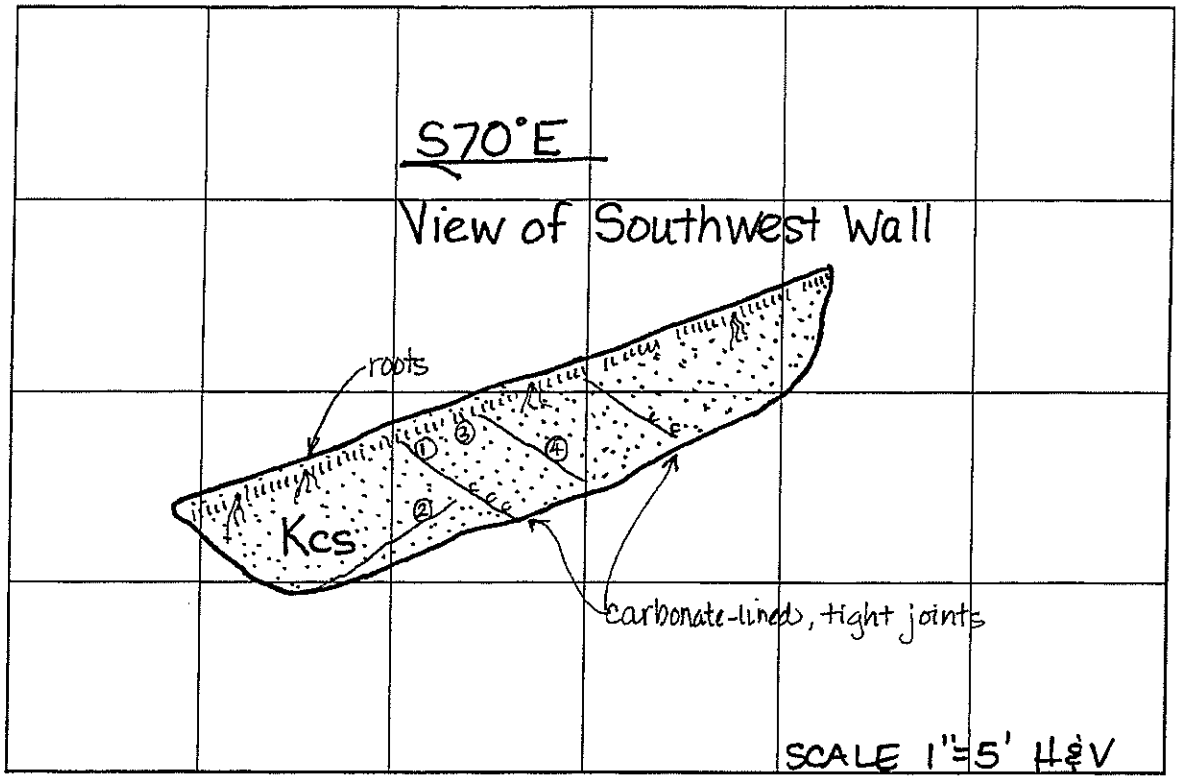
LOG OF TEST PIT KP-29

PLATE

A-33

Date Excavated: 12/11/00
Logged By : TAH

Reference Elevation : 1485 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3					**SOIL** @ 0-0.5': SAND (SP): Yellowish-brown, dry, loose to medium dense, fine to medium sand, decomposed sandstone layer, roots to 0.5'. **BEDROCK - Chatsworth Formation (Kcs)** @ 0.5-3.5': SANDSTONE. Yellowish-brown, highly to slightly weathered, highly weathered from 0.5-1.0', massive, blocky, moderately jointed, moderately strong to very strong, fine to medium sand, moderately to well cemented. 1: J N33W, 89NE 2: J N55W, 50SW 3: J N56E, 70SE 4: J N32W, 30SW Total depth of test pit: 3.5' Refusal encountered at 3.5' No groundwater encountered No raveling or caving Backfilled with native materials			

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PROJECT NO. 58-9194-02 C:JLH

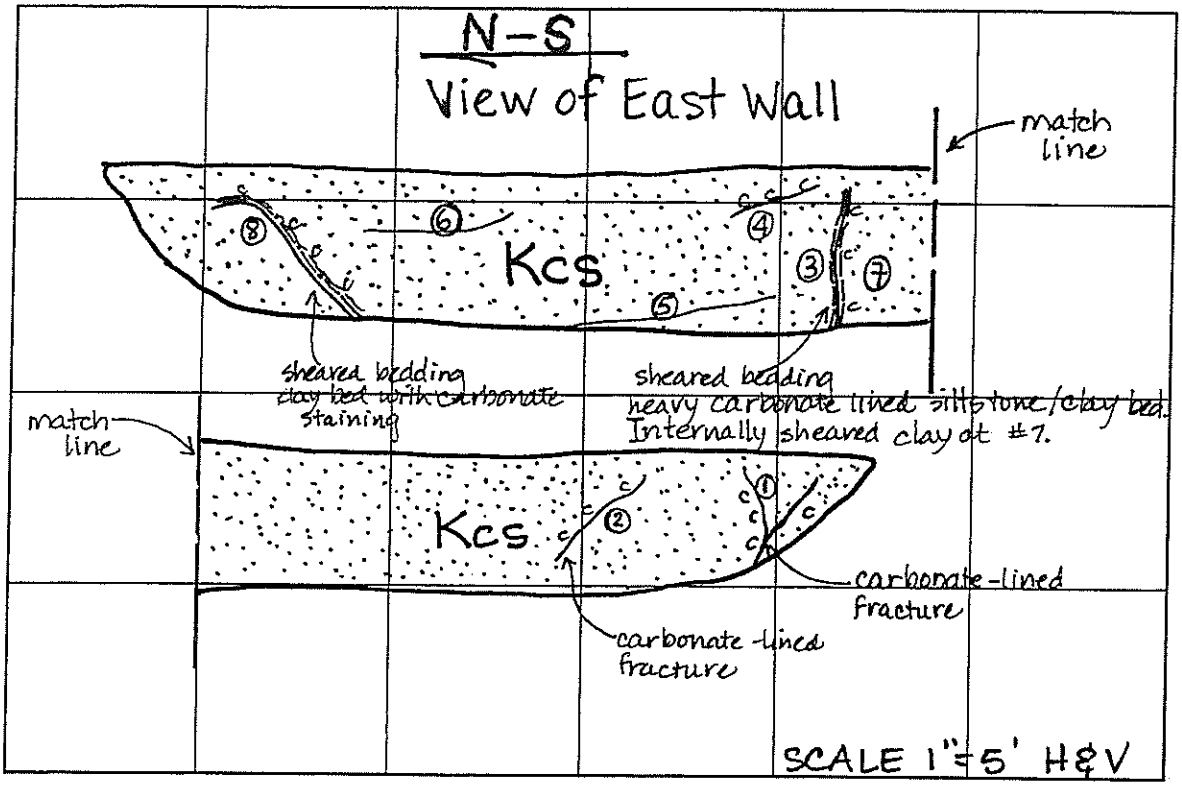
Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-30

PLATE A-34

Date Excavated: 12/13/00
Logged By : JLH

Reference Elevation : 1446 feet
Datum : B/E Engineers Survey 2000



Depth (feet)	Sample	Sample No.	Blow Count	Graphic Log	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	Dry Density (pcf)	Moisture Content (%)	Additional Tests
1 2 3 4					**BEDROCK - Chatsworth Formation (Kcs)** @ 0-4': SANDSTONE. Yellowish-brown, highly to slightly weathered, highly weathered 0-1', massive, moderately jointed, moderately strong to strong, fine to medium sand, moderately cemented. 1: Fr N85E, 65SE 2: Fr N65E, 65NW 3: Sh N35-50E, 65-85NW 4: J N10E, 65NW 5: J N-S, 38W 6: J N10W, 47SW 7: B N-S, 76W 8: Sh N47E, 65SE Total depth of test pit: 4' No refusal encountered No groundwater encountered No raveling or caving Backfilled with native materials			

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PROJECT NO. 58-9194-02 C:JLH

Chatsworth Ridge Estates
Deer Lake Highland Area
Chatsworth, CA

LOG OF TEST PIT KP-31

PLATE

A-35

Date Drilled:	5/9/01	Water Depth:	>117.7 feet
Drilled By:	Jet Drilling	Date Measured:	5/9/01
Drilling Method:	Core HQ Bit 3.75 in.	Elevation:	1454.0 feet
Logged By:	TAH, JLH	Reference Datum:	B+E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		1	96		**BEDROCK - Chatsworth Formation (Kcs):**		0	CDR = 13/5
					SILTY SANDSTONE: yellowish-brown, highly weathered, unfractured, very soft to moderately soft (breaks readily by hand), uncemented to slightly cemented (silica and iron oxidation cementation), thickly bedded, some iron oxidation stains, fine to medium sand, roots in upper 1.5 feet			
-1450-								
5			100		-- @ 5.5 feet: bedding		0	CDR = 8/3.5
					-- @ 7.2 feet: cemented weathered joint			
					-- @ 7.7 feet: bedding			
-1445-					-- @ 8.5 feet: increased cementation (slightly cemented), moderately fractured (as joints, bedding, and fractures)			CDR = 10/5

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36a

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		1 2	68		-- @ 10.4 feet: joint, weatered, open, tight, no filling -- @ 10.65 feet: joint, weathered, open, tight, no filling -- @ 10.8 feet: joint, weathered, open, tight, no filling -- @ 10.9 feet: joint, weathered, open, tight, no filling -- @ 11.2 feet: many uncemented broken joints/pieces extending to 11.8 feet. -- @ 12.1 feet: joint, weathered, open, tight, no filling -- @ 12.3 feet: joint, weathered, open, tight, no filling -- @ 12.55 feet: joint, weathered, open, tight, no filling -- @ 12.8 feet: joint, weathered, open, tight, no filling -- @ 12.9 feet: joint, weathered, open, tight, no filling -- @ 13.0 feet: joint, weathered, open, tight, no filling -- @ 13.2 feet: joint, weathered, open, tight, no filling		0	CDR = 11/5
-1440-		2	90		-- @ 14.4 feet: joint, open, tight, no filling -- @ 14.6 feet: joint, open, tight, no filling -- @ 14.7 feet: joint, open, tight, no filling -- @ 15 feet: shattered, heavily weathered joint zone extending to 15.7 feet -- @ 16.5 feet: joint, open, tight, no filling -- @ 17.3 feet: fracture, root-lined, 3/16 inch wide, sand filled, soft -- @ 17.8 feet: joint, open, tight, no filling		0	CDR = 10/5
15								
-1435-		2 3	90		-- @ 19.7 feet: joint, open, tight, no filling -- @ 20 feet: joint, open, tight, no filling -- @ 20.6 feet: joint, open, tight, no filling -- @ 21 feet: uncemented zone, soft. Shear		64	
20								

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36b

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 21.9 feet: bedding -- @ 22 feet: shear, clay-lined. Increased cementation from 22 to 23.5 feet (moderately cemented) -- @ 22.5 feet: joint, iron-oxidation stains along joint surfaces			
-1430-								CDR = 11/5
25								
		3	54		-- @ 25.8 feet: crushed core (from end of wash-out zone of core run, 23.5 to 25.8 feet), extends to 26 feet. -- @ 26 feet: joint, open, tight, clay lined -- @ 26.2 feet: joint, open, tight, clay lined -- @ 26.5 feet: GRAVEL zone with coarse sand, extends to 27 feet, well cemented -- @ 26.9 feet: joint, open, tight, clay lined -- @ 27.2 feet: joint, open, tight, clay lined -- @ 27.6 feet: joint, open, tight, clay lined -- @ 27.7 feet: joint, open, tight, clay lined -- @ 28 feet: joint, open, tight, clay-lined, polished, very brittle zone to 28.5 feet.		32	
-1425-		3 4	94		-- @ 28.5 feet: joint, open, tight, clay lined. Generally increased cementation (moderately well cemented). -- @ 29 feet: joint, open, tight, no filling -- @ 29.2 feet: joint, open, tight, no filling -- @ 29.5 feet: joint, open, tight, no filling -- @ 29.6 feet: joint, open, tight, no filling -- @ 29.7 feet: joint, open, tight, no filling -- @ 29.8 feet: joint, open, tight, no filling -- @ 30 feet: uncemented to 30.6 feet. Joint, open, tight, clay lined -- @ 30.75 feet: joint, tight, no filling		38	CDR = 13/5
30								
					-- @ 31.8 feet: joint, tight, no filling -- @ 31.9 feet: joint, tight, no filling			
					-- @ 32.6 feet: medium stiff sheared clay bed -- @ 32.65 feet: joint, tight, no filling -- @ 32.85 feet: joint, tight, no filling			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

PLATE A-36c

PROJECT NO. 58-9194-02/002 C:JHN

LOG OF BORING C-1

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		4	100		-- @ 33 feet: joint, tight, no filling -- @ 33.15 feet: joint, tight, no filling -- @ 33.35 feet: joint, tight, no filling		84	CDR = 8/5
-1420-					-- @ 34.1 feet: bedding, open, tight			
35					-- @ 34.9 feet: bedding, open, tight			
					-- @ 35.6 feet: bedding, open, tight. Joint, open, tight, no filling -- @ 35.9 feet: bedding, open, tight			
					-- @ 36.5 feet: sheared clay -- @ 36.6 feet: bedding, open, tight -- @ 36.7 feet: bedding, open, tight			
					-- @ 37.5 feet: bedding, open, tight			
					-- @ 37.85 feet: bedding, open, tight			
					-- @ 38.2 feet: joint, open, tight, no filling			
		5	100		-- @ 38.5 feet: weakly to uncemented, breaks readily by hand		0	CDR = 10/5
-1415-					-- @ 38.7 feet: joint, open, tight, no filling -- @ 38.8 feet: joint, open, tight, no filling -- @ 38.9 feet: joint, open, tight, clay lined, polished surfaces			
40					-- @ 40 feet: joint, open, tight, clay lined, polished surfaces			
								CDR = 8/5
-1410-								
			84		-- @ 44.4 feet: joint, open, tight, no filling		72	

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36d

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
45					-- @ 44.6 feet: fracture, heavy, extends to 44.8 feet -- @ 45 feet: joint, open, tight, clay lined. Below 45 feet, sandstone is fine to coarse grained, intermittent cementation. -- @ 45.8 feet: joint, open, tight, clay lined, polished surfaces -- @ 46.5 feet: shear, open, clay-lined, clay is soft to medium stiff, polished clay surfaces. Intersection with joint.			
-1405-		6	92		-- @ 48.5 feet: sandstone becomes weakly cemented to uncemented, core sample breaks readily.		0	CDR = 9/5
50					-- @ 49.4 feet: bedding, open, tight, clay-lined, paper-thin -- @ 49.7 feet: bedding, open, tight, clay-lined, paper-thin -- @ 49.8 feet: joint, open, tight, no filling -- @ 50.1 feet: joint, open, tight, no filling			
					-- @ 52.3 feet: bedding, open, tight, clay-lined, paper-thin -- @ 52.6 feet: bedding, open, tight, clay-lined, paper-thin -- @ 52.8 feet: joint, open, tight, no filling -- @ 53.1 feet: CLAY at tip of sample shoe			
-1400-			92		-- @ 53.5 feet: sandstone becomes generally coarser in texture, moderately to well-cemented -- @ 54 feet: bedding, open, clay-lined		0	CDR = 11/5
55					-- @ 55.3 feet: bedding, open, tight			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36e

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 56.2 feet: joint, open, tight, no filling -- @ 56.5 feet: joint, open, tight, no filling			
					-- @ 57.2 feet: bedding, open, tight, clay-lined			
-1395-		7	100		-- @ 58.5 feet: sandstone is fine to coarse grained with trace fine grained sandstone, well-cemented, still breaks readily by hand -- @ 58.9 feet: bedding, open, tight		10	CDR = 13/5
60					-- @ 60.1 feet: bedding, open, tight. Joint, open, tight, no filling -- @ 60.5 feet: bedding, open, tight -- @ 60.6 feet: joint, open, tight, no filling -- @ 60.9 feet: joint, open, tight, no filling -- @ 61.1 feet: joint, open, tight, no filling -- @ 61.3 feet: bedding, open, tight			
					-- @ 62 feet: joint, open, tight, no filling			
					-- @ 63 feet: joint, open, tight, clay-lined, polished surfaces. Sandstone becomes harder			
-1390-		7 8	100		-- @ 63.5 feet: sandstone is fine to coarse grained, highly cemented with some uncemented zones, mechanical breakage		90	CDR = 11/5
					-- @ 64.5 feet: joint, open, tight, no filling, iron oxidation staining along joint surfaces			
65					-- @ 65 feet: joint, open, tight, no filling, iron oxidation staining along joint surfaces -- @ 65.5 feet: bedding, open, tight			
					-- @ 66 feet: bedding, open, tight, clay-lined			
					-- @ 67.5 feet: joint, open, wide, no filling			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36f

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 68 feet: joint, open, tight, no filling -- @ 68.2 feet: joint, open, tight, no filling			
		8	80				38	CDR = 13/5
-1385-								
70					-- @ 69.6 feet: joint, open, tight, no filling. Conjugate joint, 62.5 degree dip angle, open, tight, clay-lined, polished surfaces. -- @ 70.2 feet: joint, open, tight, no filling			
					-- @ 70.8 feet: joint, open, tight, no filling -- @ 71 feet: joint, open, tight, no filling -- @ 71.3 feet: joint, open, tight, no filling -- @ 71.5 feet: joint, open, tight, no filling -- @ 71.6 feet: joint, open, tight, no filling -- @ 71.9 feet: becomes soft (loose), drilling engine bogged down			
					-- @ 73.5 feet: sandstone is very well cemented, moderate to moderately hard, silica cement			CDR = 20/5
-1380-								
		9	84		-- @ 74.4 feet: joint, open, tight, no filling		60	
75					-- @ 75.1 feet: joint, open, tight, no filling -- @ 75.4 feet; joint, open, tight, no filling			
					-- @ 76.1 feet: joint, open, tight, no filling			
					-- @ 76.6 feet: joint, open, tight, no filling. Conjugate joint, 43.8 degrees, open, tight, no filling.			
					-- @ 77.3 feet: fault, open, gouge, poorly healed			
			100		-- @ 78.2 feet: joint, open, tight, no filling -- @ 78.3 feet: joint, open, tight, no filling, conjugate joint: open, clay-lined, polished surfaces. Sandstone highly fractured to 78.5 feet		0	CDR = 10/3.3
-1375-					-- @ 78.5 feet: Sandstone is poorly cemented,			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36g

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
80					internally sheared joints, brittle (breaks readily by hand). Joint, open, tight, clay-lined, polished surfaces. -- @ 79.1 feet: joint, open, tight, clay-lined, polished surfaces -- @ 79.3 feet: joint, open, tight, clay-lined, polished surfaces -- @ 79.5 feet: joint, open, tight, clay-lined, polished surfaces -- @ 79.9 feet: joint, open, tight, clay-lined, polished surfaces -- @ 80.3 feet: joint, open, tight, clay-lined, polished surfaces			
		9 10	100		-- @ 80.6 feet: joint, open, tight, no filling -- @ 81.7 feet: sandstone becomes moderately well cemented, soft to moderately soft, fractures readily by hand. -- @ 81.9 feet: joint, open, tight, no filling -- @ 82.1 feet: joint, open, tight, no filling. Conjugate joint: open, tight, clay-lined, polished surfaces -- @ 82.5 feet: joint, open, tight, clay-lined, polished surfaces		20	CDR = 8/1.9
-1370-					-- @ 82.7 feet: joint, open, tight, no filling -- @ 83.1 feet: joint. Conjugate joint, 62.5 degree dip angle, both joints open, tight, no filling. -- @ 83.4 feet: joint, open, tight, clay-lined, polished surfaces			CDR = 16/5
85					-- @ 83.7 feet: sandstone becomes medium to coarse grained, weakly cemented			
		10	62		-- @ 85.6 feet: joint, open, tight, no filling -- @ 85.7 feet: joint, open, tight, no filling -- @ 85.9 feet: joint, open, tight, no filling -- @ 86.1 feet: joint, open, tight, no filling -- @ 86.3 feet: joint, open, tight, clay-lined, polished surfaces -- @ 86.5 feet: joint, open, tight, clay-lined, polished surfaces -- @ 86.6 feet: joint, open, tight, clay-lined, polished surfaces -- @ 86.9 feet: joint, open, tight, clay-lined, polished surfaces -- @ 87 feet: joint, open, tight, no filling -- @ 87.3 feet: joint, open, tight, clay-lined, polished surfaces		0	
-1365-					-- @ 87.5 feet: joint, open, tight, clay-lined, polished surfaces -- @ 87.6 feet: joint, open, tight, clay-lined, polished surfaces			CDR = 16/5
90					-- @ 87.7 feet: sandstone becomes moderately cemented, highly fractured, brittle -- @ 87.9 feet: joint, open, tight, no filling -- @ 88.4 feet: joint, open, tight, no filling			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36h

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
			60		-- @ 90.7 feet: color changes to medium gray, unoxidized, unweathered, highly fractured, soft -- @ 91 feet: joint, open, tight, no filling -- @ 91.4 feet: joint, open, tight, calcium carbonate filling. Shear, open, clay-lined, calcium carbonate filling, polished surfaces -- @ 91.6 feet: joint, open, tight, no filling -- @ 91.7 feet: sandstone becomes moderate. Joint, open, tight, no filling -- @ 91.9 feet: joint, open, tight, calcium carbonate filling -- @ 92.2 feet: sandstone becomes soft. Joint, open, tight, no filling -- @ 92.4 feet: joint, open, tight, no filling		28	
-1360-					-- @ 92.5 feet: joint, open, tight, no filling -- @ 93.1 feet: joint, open, tight, no filling. Uncemented sand zone, extends to 93.6 feet -- @ 93.6 feet: joint, open, tight, no filling			CDR = 23/5
95		10 11	74		-- @ 94.5 feet: lost 370 gallons drilling fluid to formation -- @ 95 feet: uncemented sand zone, extends to 95.6 feet -- @ 95.6 feet: joint, open, tight, no filling -- @ 95.8 feet: sandstone is hightly fractured to 96.8 feet, brittle, soft. Joint, open, tight, no filling -- @ 96.3 feet: weakly cemented to 96.8 feet, brittle, soft -- @ 96.8 feet: uncemented sand zone, extends to 97.2 feet, very soft -- @ 97.2 feet: becomes weakly cemented, extends to 98.7 feet, brittle, soft. Joint, open, tight, no filling		0	
-1355-		11	100		-- @ 98.7 feet: sandstone is highly fractured to 99 feet, moderate, medium grained. Joint, open, tight, no filling -- @ 98.9 feet: joint, open, tight, no filling -- @ 99.2 feet: joint, open, tight, no filling. Conjugate joint, 62.5 degree dip angle, open, tight, no filling		17	CDR = 12/2
100			100		-- @ 99.4 feet: sheared bedding, open, tight, clay-lined, polished -- @ 99.5 feet: lost 370 gallons drilling fluid to formation. Sheared bedding, open, tight, clay-lined, polished surfaces -- @ 100 feet: joint, open, tight, clay-lined, polished surfaces -- @ 100.2 feet: joint, open, tight, no filling -- @ 100.4 feet: contact with thin SILTSTONE interbed, extends to 100.6 feet. Sheared bedding, open, tight, clay-lined, polished surfaces. -- @ 100.6 feet: becomes sandstone again, fine grained		26	CDR = 18/2.8

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36i

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 100.7 feet: joint, open, tight, no filling -- @ 101 feet: joint, open, tight, no filling -- @ 101.2 feet: joint, open, tight, no filling -- @ 101.4 feet: joint, open, tight, no filling -- @ 101.6 feet: joint, open, tight, no filling			
					-- @ 101.9 feet: bedding, contact with thin SILTSTONE interbed, extends to 102.2 feet, internally sheared			CDR = 23/5
-1350-		11 12	90		-- @ 102.2 feet: becomes sandstone again -- @ 102.4 feet: joint, open, tight, no filling		16	
105					-- @ 102.5 feet: bedding, CLAY bed, extends to 103.1 feet, olive-gray, medium stiff			
					-- @ 103.1 feet: bedding, SILTSTONE interbed contact, extends to 104 feet			
					-- @ 104 feet: lost 160 gallons drilling fluid to formation, SILTY SANDSTONE, color changes to light yellowish-brown, slightly weathered, moderate, moderately well cemented, fine grained -- @ 104.3 feet: joint, open, tight, no filling -- @ 104.7 feet: becomes moderately weathered, yellowish-brown. Joint, open, tight, no filling -- @ 105.1 feet: joint, open, tight, no filling -- @ 105.2 feet: joint, open, tight, no filling -- @ 105.4 feet: joint, open, 1/8 inch wide, sand lined -- @ 105.9 feet: joint, open, tight, no filling -- @ 106 feet: joint, open, tight, no filling -- @ 106.2 feet: joint, open, tight, no filling -- @ 106.4 feet: joint, open, tight, no filling			
		12	100		-- @ 106.6 feet: joint, open, tight, clay-lined, polished surfaces		16	CDR = 24/3.1
-1345-					-- @ 106.8 feet: joint, open, tight, no filling -- @ 106.9 feet: joint, closed, tight, well healed -- @ 107.1 feet: joint, open, tight, clay-lined, polished surfaces			
110					-- @ 107.4 feet: joint, open, tight, no filling -- @ 107.7 feet: joint, open, tight, no filling -- @ 108.5 feet: joint, open, tight, no filling -- @ 109 feet: lost 240 gallons drilling fluid to formation. Sandstone is highly fractured, poorly cemented, brittle -- @ 109.3 feet: fracture, open, no filling -- @ 109.6 feet: joint, open, tight, no filling -- @ 109.8 feet: joint, open, tight, no filling			CDR = 7/1.9
			84		-- @ 110.3 feet: joint, open, tight, no filling -- @ 110.6 feet: joint, open, tight, no filling -- @ 110.9 feet: fracture, open, no filling -- @ 111 feet: lost 100 gallons drilling fluid to formation		0	
					-- @ 111.1 feet: joint, open, tight, no filling -- @ 111.4 feet: joint, open, tight, no filling -- @ 111.5 feet: joint, open, tight, no filling			
		12 13	100		-- @ 111.6 feet: lost 520 gallons drillig fluid to formation		17	CDR = 13/4.2

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36j

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1340-					-- @ 111.9 feet: joint, open, tight, no filling. Sandstone is moderately well cemented, fine to medium grained -- @ 112.2 feet: joint, open, tight, clay-lined, soft -- @ 112.3 feet: joint, open, tight, clay-lined -- @ 112.4 feet: joint, open, tight, clay-lined -- @ 112.6 feet: joint, open, tight, no filling -- @ 112.8 feet: joint, open, tight, no filling -- @ 113.1 feet: joint, open, tight, no filling. Sandstone is uncemented, very soft -- @ 113.7 feet: joint, closed, tight, well-healed -- @ 113.8 feet: joint, open, tight, no filling -- @ 113.9 feet: joint, open, tight, clay-lined, polished surfaces -- @ 114.1 feet: joint, open, tight, no filling. Conjugate joint, open, tight, clay-lined, soft, polished surfaces -- @ 114.4 feet: joint, open, tight, no filling -- @ 114.5 feet: joint, tight. Start shear zone, clay-lined, polished -- @ 114.6 feet: shear, clay-lined, polished surfaces -- @ 114.7 feet: shear, clay-lined, polished surfaces -- @ 114.8 feet: shear, clay-lined, polished surfaces -- @ 115 feet: shear, clay-lined, polished surfaces -- @ 115.2 feet: joint, open, tight, no filling -- @ 115.4 feet: joint, open, tight, calcium carbonate-lined, end shear zone, open, tight, polished surfaces -- @ 115.5 feet: color changes to medium gray, unoxidized -- @ 115.7 feet: joint, closed, tight, calcium carbonate filled, well-healed -- @ 116.2 feet: color changes back to yellowish-brown, slightly weathered -- @ 116.4 feet: shear, open, tight, clay-lined, polished surfaces -- @ 116.7 feet: joint, open, tight, no filling -- @ 117 feet: joint, open, tight, no filling -- @ 117.1 feet: joint, open, tight, no filling -- @ 117.2 feet: joint, open, tight, no filling -- @ 117.5 feet: joint, open, tight, no filling -- @ 117.7 feet: lost 1,110 gallons fluid to formation Total depth = 117.7 feet Abandoned coring due to excessive drilling fluid loss Relocated coring 37 feet N80W (to coring C-1A) No groundwater encountered Backfilled with CETCO Volclay High Solids Grout and Portland Cement, and capped with soil Note: Core sample diameter: 2.5 inches. Coring completed using wire-line method.			
115								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1

PLATE A-36k

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					Drilling Fluids Used: <u></=100 gallons fluid loss:</u> Normal conditions; water and CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer and/or CETCO Super Pac Drilling Fluid Enhancer polymer. <u>100 - 500 gallons fluid loss:</u> Minor fluid loss conditions; water, CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer or CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, and/or CETCO high solids Volclay grout. <u>500 - 2000 gallons fluid loss:</u> Major fluid loss conditions; water, CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, CETCO high solids Volclay grout, cellophane chips, wood chips/sawdust, Forta Drag Net Fiber (or CETCO Macro-Fill polymer).			

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LOG OF BORING C-1

PLATE A-361

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Date Drilled:	5/14/01	Water Depth:	>274 feet
Drilled By:	Jet Drilling	Date Measured:	5/14/01
Drilling Method:	Mud Rotary/Core HQ 3.75 in.	Elevation:	1453.0 feet
Logged By:	A. Harding	Reference Datum:	B+E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ surface: using mud rotary drilling method (4 inch diameter tri-cone bit with lean mixture water and CETCO Volclay grout), to 83.5 feet Captured cuttings with US Standard #100 Sieve and logged. **BEDROCK - Chatsworth Formation (Kcs):** **SILTY SANDSTONE**: yellowish-brown, fine to medium sand with silt. Cuttings coming up only as fine to medium sand with silt, no rock chips to log			15/3.5
-1450-								
5								
-1445-								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37a

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1440-					-- @ 13.5 feet: cuttings coming up only as as yellowish-brown fine to medium sand, no rock chips to log, roots to 13.5 feet -- @ 14 feet: added CETCO Insta-Vis Plus drilling fluid enhancer polymer to drilling fluid mixture			9/5
15								
-1435-					-- @ 18.5 feet: no roots below 13.5 feet, no change in material or cutting retrieval size			7/5
20								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37b

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1430-					-- @ 23.5 feet: no change			9/5
25								
-1425-					-- @ 28.5 feet: no change			9/5
30								
-1420-								

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Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37c

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 33.5 feet: no change			8/5
35								
-1415-								8/5
					-- @ 38.5 feet: no change			
40								
-1410-								6/5
					-- @ 43.5 feet: no change			

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Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37d

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
45								
-1405-								8/5
					-- @ 48.5 feet: no change			
50								
-1400-								10/5
					-- @ 53.5 feet: sand cuttings become generally more coarse grained; however, higher content of biotite, muscovite, quartz, mafics (coring through granitic gravel/cobbles suspended in sandstone?), drilled smoothly		
55								

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Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37e

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1395-					-- @ 58.5 feet: lower content of granitic minerals			10/5
60								
-1390-					-- @ 63.5 feet, yellowish-brown/gray, fine to medium sand -- @ 64 feet: color changes to medium gray, fine to medium grained			12/5
65								

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Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37f

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1385-								9/5
					-- @ 68.5 feet: medium gray, no change			
70								
-1380-								12/5
					-- @ 73.5 feet: medium gray/yellowish-brown, otherwise, no change			
75								
-1375-					-- @ 78 feet: drilling rate increased			9/5
					-- @ 78.5 feet: color is yellowish-brown, otherwise, no change			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37g

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
80								
-1370-								4/1
		1	50		-- @ 83.5 feet: switched to HQ Core Bit. See summary for fluids used. Silty Sandstone, gray, unweathered, unoxidized, moderately fractured, moderate, moderately well cemented, silica cement, fine to medium grained, thinly to thickly bedded, graded		0	24/5
			100		-- @ 84 feet: joint, tight, clay-lined, polished surfaces. Lost 50 gallons drilling fluid to formation.		40	
85					-- @ 84.2 feet: joint, 55.2 degree dip -- @ 84.5 feet: sandstone becomes hard, very well cemented, pebbly, solid core to 86.5 feet			
					-- @ 86.5 feet: uncemented, highly fractured, sheared zone, 1 foot thick, very soft. Shear: tight, clay-lined, polished surfaces -- @ 86.6 feet: shear, tight, clay-lined, polished surfaces. joint, tight -- @ 86.8 feet: shear, tight, clay-lined, polished surfaces			
-1365-					-- @ 87 feet: joint, tight -- @ 87.2 feet: shear, tight, clay-lined, polished surfaces -- @ 87.5 feet: moderately cemented, highly fractured, soft			
					-- @ 87.6 feet: joint, tight -- @ 87.7 feet: joint, tight -- @ 88 feet: joint, tight			14/2.5
			100		-- @ 88.2 feet: joint, tight -- @ 88.4 feet: joint, tight -- @ 88.6 feet: joint, tight		68	
90					-- @ 88.9 feet: joint, tight -- @ 89.1 feet: joint, tight -- @ 89.2 feet: joint, tight -- @ 89.4 feet: joint, tight -- @ 89.5 feet: sandstone is hard, well cemented. joint,			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
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Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37h

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					tight -- @ 89.6 feet: joint, 1/8 inch wide, calcium carbonate filled, well healed -- @ 89.8 feet: bedding, tight -- @ 89.9 feet: joint, tight			
		2	100		-- @ 92 feet: lost 250 gallons drilling fluids to formation. shear, tight, clay-lined, polished surfaces -- @ 92.2 feet: shear, 25.6 degree dip, 1/16 inch wide, polished		20	14/2.5
-1360-					-- @ 92.3 feet: joint, 67.4 degree dip, 1/8 inch wide			
					-- @ 93.5 feet: lost 250 gallons drilling fluid to formation -- @ 93.8 feet: joint, tight -- @ 93.9 feet: joint, tight -- @ 94.3 feet: bedding, tight			
								15/5
95			94		-- @ 94.8 feet: joint, 25.6 degree dip -- @ 94.9 feet: joint, tight, sand filled -- @ 95 feet: joint, tight, sand filled -- @ 95.4 feet: joint, tight -- @ 95.5 feet: joint, tight, sand-lined -- @ 95.7 feet: joint, tight		43	
					-- @ 96.3 feet: highly fractured zone to 98.8 feet. Joint, tight -- @ 96.6 feet: joint, tight. thin siltstone bed 0.2 feet thick -- @ 96.7 feet: joint, tight			
-1355-					-- @ 96.9 feet: joint, tight -- @ 97 feet: joint, tight -- @ 97.2 feet: joint, tight -- @ 97.4 feet: joint, 1/8 inch wide -- @ 97.6 feet: joint, 1/8 inch wide -- @ 98 feet: lost 366 gallons drilling fluid to formation. Joint, tight -- @ 98.2 feet: joint, 1/8 inch wide -- @ 98.7 feet: joint, tight			
		3	100		-- @ 99.5 feet: lost 525 gallons drilling fluid to formation		0	3/.7
100					-- @ 99.6 feet: joint, 1/8 inch wide			
			100		-- @ 100.1 feet: joint, 1/8 inch wide -- @ 100.2 feet: sandstone is hightly fractured. joint, tight. Conjugate joint, 1/8 inch wide -- @ 100.7 feet: joint, 78.2 degree dip, 1/16 inch wide		0	18/4.3
					-- @ 101.7 feet: joint, 67.4 degree dip, tight, sand lined			
					-- @ 102.2 feet: joint, tight, clay-filled, well-healed			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37i

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 102.4 feet: joint, tight			
-1350-					-- @ 102.9 feet: SHALE, 0.2 feet thick. Highly fractured to 103.3 feet -- @ 103.1 feet: coarse sandstone bed, 0.2 feet thick. Joint, 77 degree dip, 1/8 inch wide			
			100		-- @ 104.1 feet: thin SILTSTONE bed, 0.4 feet thick. Joint, tight -- @ 104.3 feet: joint, tight -- @ 104.4 feet: highly fractured to 104.5 feet		0	20/2.6
105					-- @ 104.6 feet: joint, 55.2 degrees, tight -- @ 104.8 feet: joint, 67.4 degrees, 1/8 inch wide, sand filled -- @ 105.2 feet: joint, 1/16 inch wide			
		3 4	100		-- @ 105.9 feet: SHALE bed, 0.8 feet thick, gray, unoxidized, thinly bedded, very soft, brittle, internally sheared -- @ 106.5 feet: joint, tight, clay-filled, polished surfaces -- @ 106.7 feet: thin SILTSTONE bed, 0.1 feet thick -- @ 106.8 feet: thick SHALE bed (3.3 feet thick), thinly bedded, gray, unoxidized, very soft to moderate, very weakly cemented (to 107.5 feet) to moderately well cemented, silica cement		0	22/2.4
-1345-					-- @ 108.6 feet: calcium carbonate stringers extending to 109.1 feet (67.4 degree dip). Sheared bedding, tight, clay-lined, polished			
		4	100				38	29/5
110					-- @ 110.1 feet: SILTY SANDSTONE, olive-gray, slightly weathered, moderately fractured, moderately soft, fine to medium grained, thinly to thickly bedded, graded, moderately to very well cemented, silica cement -- @ 110.9 feet: joint, tight, joints oxidized to 111.8 feet -- @ 111 feet: joint, tight -- @ 111.5 feet: joint, tight -- @ 111.6 feet: joint, tight -- @ 111.7 feet: joint, tight -- @ 111.8 feet: joint, tight, sand lined -- @ 112 feet: joint, tight. Bedding, tight -- @ 112.6 feet: joint, open, 1/16 inch wide, sand lined			
-1340-					-- @ 113 feet: bedding, tight -- @ 113.1 feet: joint, tight, sand filled -- @ 113.2 feet: bedding, tight -- @ 113.3 feet: bedding, tight			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37j

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 114 feet: bedding, tight			
		4	96		-- @ 114.5 feet: becomes yellowish-brown, moderately to highly weathered, highly fractured, very soft		10	16/5
115		5			-- @ 114.7 feet: joint 25.6 degree dip -- @ 114.8 feet: joint, tight			
					-- @ 115.5 feet: joint, tight, joints highly oxidized to 115.7 feet -- @ 115.6 feet: joint, tight -- @ 115.7 feet: joint, tight			
					-- @ 116.6 feet: joint, tight, clay/sand-lined -- @ 116.7 feet: joint, tight, sand filled			
-1335-					-- @ 117.9 feet: joint, tight -- @ 118 feet: becomes gray, unweathered, unoxidized, hard			
		5	100		-- @ 118.5 feet: becomes medium to coarse grained SANDSTONE, gray/ yellowish-brown (yellowish-brown at 119.5 feet), unweathered to moderately weathered (moderately weathered at 119.5 feet), soft, weakly cemented -- @ 119 feet: joint, tight, highly oxidized faces. Conjugage joint, tight, highly oxidized faces to 119.2 feet -- @ 119.2 feet: joint, tight		38	20/5
120					-- @ 120 feet: SILTY SANDSTONE, yellowish-brown/gray, highly weathered, to unweathered (unoxidized), fine to medium grained. Joint, piece missing -- @ 120.9 feet: joint, tight -- @ 121.1 feet: joint, sand filled -- @ 121.5 feet: color changes to gray -- @ 121.7 feet: becomes yellowish-brown again 5 -- @ 180.2 feet: top of core; well cemented sandstone, -- @ 122.3 feet: color changes to gray hard, silicon oxide cement			
-1330-					-- @ 122.8 feet: color changes to yellowish-brown			
					-- @ 123.3 feet: joint, tight -- @ 123.5 feet: joint, tight, sand filled			
					-- @ 124.1 feet: joint, 1/8 inch wide sand filled			20/5
		5 6	100		-- @ 124.5 feet: Becomes moderate to hard, very well cemented.		72	
125								

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37k

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 125.5 feet: joint, tight, sand filled, cemented, well-healed			
					-- @ 126.9 feet: joint, tight, sand filled -- @ 127 feet: joint, tight, sand filled -- @ 127.1 feet: joint, tight, sand filled -- @ 127.2 feet: joint, 1/16 inch wide -- @ 127.5 feet: joint, tight -- @ 127.9 feet: joint, tight, clay and sand filled			
-1325-					-- @ 128.4 feet: joint, tight, sand filled			
					-- @ 129 feet: joint, tight, clay and sand filled			26/5
		6	100		-- @ 129.5 feet: gray, unweathered, moderately soft, very well cemented, trace small gravel in silty sandstone matrix (bottom, graded portion of silty sandstone bed).		72	
130					-- @ 130.4 feet: becomes moderate. joint, tight			
					-- @ 131.4 feet: joint			
					-- @ 131.8 feet: becomes fine to medium grained silty sandstone -- @ 132 feet: joint, tight, sand filled -- @ 132.2 feet: joint, tight -- @ 132.6 feet: becomes moderate, moderately well cemented. joint, tight, sand filled. Fracture, 67.4 degree dip, tight, sand filled			
-1320-					-- @ 133 feet: sheared bedding, tight, clay-filled, polished surfaces -- @ 133.2 feet: joint, tight, sand filled, cemented, well-healed			
					-- @ 133.6 feet: joint, tight			20/5
		7	100		-- @ 133.7 feet: becomes highly fractured. Joint, tight -- @ 134.2 feet: joint, tight -- @ 134.5 feet: joint, 43.8 degree dip -- @ 134.7 feet: joint, tight, some clay lining		45	
135					-- @ 135.2 feet: joint, 1/8 inch wide -- @ 135.5 feet: joint, tight -- @ 135.7 feet: joint, 1/16 inch wide -- @ 135.8 feet: joint, tight			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-371

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1315-					-- @ 137.4 feet: bedding, tight -- @ 137.7 feet: joint, tight -- @ 138.2 feet: joint, 1/8 inch wide, calcium carbonate lining -- @ 138.7 feet: joint, tight, sand filled -- @ 138.9 feet: joint, tight. Conjugate joint, tight -- @ 139 feet: Becomes moderately cemented, brittle			12/5
140					-- @ 139.5 feet: lost 1,268 gallons drilling fluid to formation			
			80		-- @ 140.7 feet: highly fractured, moderately soft -- @ 140.8 feet: joint, 1/16 inch wide, sand lined -- @ 140.9 feet: joint, tight. Joint, 1/8 inch wide -- @ 141 feet: joint, 1/16 inch wide, sand lined -- @ 141.1 feet: 2 joints, 1/16 and 1/8 inch wide, sand lined -- @ 141.2 feet: joint, tight -- @ 141.4 feet: joint, 1/16 inch wide -- @ 141.6 feet: 2 conjugate joints, 1/16 and 1/8 inch wide		20	
-1310-					-- @ 141.7 feet: 2 conjugate joints, 1/16 inch wide -- @ 141.9 feet: joint, tight -- @ 142 feet: joint, tight -- @ 142.2 feet: 2 conjugate joints, tight-1/16 inch wide, sand lined -- @ 142.3 feet: 2 conjugate joints 1/16 and 1/8 inch wide			8/5
145					-- @ 142.6 feet: joint, tight, sand lined -- @ 143 feet: joint, 1/16 inch wide -- @ 143.3 feet: Core shattered to 143.6 feet. Joint, 1/8 inch wide			
		8	82		-- @ 144 feet: joint, 1/8 inch wide -- @ 144.1 feet: joint, 1/4 inch wide -- @ 144.4 feet: joint, 1/8 inch wide -- @ 144.5 feet: lost 816 gallons drilling fluid to formation		10	
-1305-					-- @ 145.7 feet: Core shattered to 146.5 feet. Joint, 1/16 inch wide -- @ 146 feet: joint, 1/16 inch wide -- @ 146.2 feet: joint, 1/16 inch wide -- @ 146.3 feet: joint, 1/8 inch wide -- @ 146.5 feet: joint, 1/16 inch wide, sand filled -- @ 146.6 feet: joint, tight, sand filled -- @ 146.7 feet: joint, 1/8 inch wide -- @ 146.8 feet: joint, tight, clay and sand lined -- @ 147.1 feet: sandstone is moderately well cemented, brittle. Joint, 3/16 inch wide			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37m

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 147.5 feet: joint, 1/16 inch wide, sand filled -- @ 147.6 feet: joint, tight, clay filled -- @ 147.7 feet: joint, 79.3 degree dip, clay lined, polished surfaces			9/5
			100		-- @ 148.4 feet: joint, tight -- @ 148.8 feet: joint, tight, clay and sand lined -- @ 148.9 feet: joint, 1/16 inch wide -- @ 149.3 feet: joint, 1/16 inch wide -- @ 149.5 feet: sandstone becomes moderate to moderately hard, very well cemented, slightly to moderately fractured -- @ 149.7 feet: joint, 1.8 inch wide		43	
150								
					-- @ 151.6 feet: joint, open, 1/16 inch wide, no filling -- @ 151.8 feet: joint, open, 1/16 inch wide, no filling			
					-- @ 152.2 feet: joint, open, 1/16 inch, no filling. Conjugage joint, 62.5 degree dip, 1/16 inch wide, no filling -- @ 152.7 feet: joint, open, 1/16 inch wide, no filling. Conjugate joint, 55.2 degree dip, 1/16 inch wide, no filling -- @ 153 feet: sandstone is highly fractured. Fracture, 62.5 degree dip, open, no filling -- @ 153.2 feet: joint, open, 1/8 inch wide, no filling. Fracture, open, tight, no filling			
-1300-								
		9	100		-- @ 153.6 feet: joint, open, 1/8 inch wide, no filling. Conjugate joint, 62.5 degree dip, 1/8 inch wide, no filling -- @ 153.9 feet: fracture, open, 1/16 inch wide, no filling -- @ 154 feet: joint, open, 1/16 inch wide, no filling -- @ 154.1 feet: joint, open, 1/16 inch wide, no filling -- @ 154.3 feet: joint, 43.8 degree dip, bottom of recovered core -- @ 154.5 feet: lost 2,928 gallons fluid to formation. Sandstone weakly cemented, soft to moderate. Joint, open, 1/16 inch, no filling -- @ 154.9 feet: joint, open, tight, no filling -- @ 155.2 feet: joint, open, tight, no filling. Conjugate joint, 62.5 degree dip, open, 1/8 inch wide, no filing -- @ 155.5 feet: joint, open, 1/8 inch wide, sand lined -- @ 155.6 feet: uncemented zone extending to 156.2 feet. Joint, open, tight, no filling		19	16/3.4
155								
-1295-					-- @ 156.2 feet: joint, open, tight, sand lined -- @ 156.4 feet: joint, open, tight, clay-lined, polished surfaces			15/1.6
		9 10	63		-- @ 156.5 feet: lost 366 gallons drilling fluid to formation -- @ 156.7 feet: joint, open, tight, no filling -- @ 157 feet: joint, open, tight, sand lined -- @ 157.1 feet: joint, open, tight, sand lined -- @ 157.2 feet: joint, open, tight, clay lined, polished surfaces -- @ 157.9 feet: lost 366 gallons drilling fluid to		0	
		9 10						16/4.5
160								

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37n

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		9 10	58		formation. Joint, open, tight, no filling -- @ 158.5 feet: sandstone is highly fractured to 159.5 feet. Joint (top of recovered core sample) -- @ 159.6 feet: joint (top of recovered core sample) -- @ 160.1 feet: joint, open, tight, no filling -- @ 160.2 feet: joint, open, 1/4 inch, no filling -- @ 160.5 feet: lost 1,730 gallons drilling fluids to formation -- @ 160.6 feet: joint, open, tight, no filling -- @ 160.7 feet: joint, open, tight, no filling -- @ 160.8 feet: joint, open, 1/16 inch wide, sand lined -- @ 160.9 feet: joint, joint, 1/8 to 1/4 inch wide, no filling		23	
-1290-					-- @ 161.6 feet: sandstone is moderate, highly fractured. Joint, open, 5/16 inch wide, some sand lining -- @ 161.9 feet: joint, open, 1/4 inch, some sand lining. Conjugate joint, open, 1/8 inch wide, no filling -- @ 162 feet: joint, open, 7/16 inch wide, sand filled -- @ 162.1 feet: joint, open, 1/16 inch wide, no filling -- @ 162.2 feet: joint, open, 1/4 inch wide, sand lining -- @ 162.4 feet: joint, open, 1/2 inch wide, no filling			23/4
165		9 10	91		-- @ 162.7 feet: highly fractured. Joint, open, 1/2 inch wide, no filling -- @ 163 feet: joint, open, 1/16 inch wide, no filling -- @ 163.2 feet: joint, 75.4 degree dip, 1/8 inch wide, no filling -- @ 163.3 feet: joint, open, 1/8 inch wide, no filling -- @ 163.4 feet: joint, open, tight, no filling -- @ 163.5 feet: joint, open, 1/8 inch wide, no filling -- @ 163.7 feet: joint, open, 1/16 inch wide, no filling -- @ 163.8 feet: joint, open, 1/8 inch wide, no filling -- @ 164 feet: joint, open, 1/2 inch wide, no filling -- @ 164.9 feet: pulverized to 165.3 feet -- @ 165.3 feet: joint (at end of pulverized section) -- @ 165.8 feet: sandstone is moderate, moderately fractured, moderately well cemented		29	
-1285-					-- @ 166 feet: joint, open, tight, no filling -- @ 166.2 feet: joint, open, tight to 3/8 inch wide, no filling -- @ 166.3 feet: joint, open, 1/8 inch wide, no filling -- @ 166.4 feet: joint, 1/4 inch. Sandstone is highly fractured -- @ 166.5 feet: joint, 1/4 inch, no filling. Lost 732 gallons fluids -- @ 166.6 feet: joint, open, 1/8 inch wide, no filling			6/1 28/4
170		11	70		-- @ 166.7 feet: sandstone becomes weakly cemented -- @ 167.1 feet: sandstone becomes uncemented to very weakly cemented -- @ 168 feet: Sandstone is weakly cemented. Lost 500 gallons drilling fluids to formation -- @ 168.4 feet: Sandstone becomes hard, very well cemented. Shear at contact with very well cemented sandstone, open, clay-lined, polished surfaces -- @ 170.2 feet: joint (top of recovered core sample)		15	

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37o

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 171 feet: joint, open, tight, no filling -- @ 171.2 feet: joint, open, 1/8 inch wide, sand filled. Sandstone becomes uncemented, very soft, internally sheared -- @ 172.3 feet: joint, open, tight, sand filled -- @ 172.9 feet: 2 conjugate joints (end of recovered core sample)			
-1280-			80		-- @ 173.2 feet: joint, top of core -- @ 173.5 feet: joint, open, 1/8 inch wide, no filling		42	6/1
								24/5
175			86		-- @ 174.9 feet: joint, closed, tight, sand filled, well healed -- @ 175.4 feet: joint, open, 1/8inch wide, no filling -- @ 175.8 feet: Joint, open 1/8 inch wide, no filling; conjugate joint, open, 3/16 inch wide, no filling; becomes highly fractured -- @ 176.0 feet: joint, open, tight, no filling -- @ 176.1 feet: joint, open, tight, no filling -- @ 176.2 feet: joint open, tight, no filling -- @ 176.4 feet: fractured, open, tight, no filling -- @ 176.8 feet: joint, open, 3/16 inch wide, no filling -- @ 177.0 feet: joint, open, tight, no filling -- @ 177.2 feet: joint, open, 1/8 inch wide, no filling; conjugate joint, open, 3/16 inch wide, no filling; becomes highly fractured		41	
-1275-					-- @ 177.5 feet: joint, open, 3/16 inch wide, no filling -- @ 177.6 feet: joint, open, 1/4 inch wide, no filling -- @ 177.8 feet: joint, open, tight, no filling -- @ 177.9 feet: joint, open, tight, sand filled -- @ 178.0 feet: joint, open, tight, no filling -- @ 178.1 feet: joint, open, 1/4 inch wide, no filling -- @ 178.2 feet: becomes highly fractured -- @ 178.3 feet: joint, open, 3/16 inch wide, no filling			24/5
180	11 12		76		-- @ 178.4 feet: joint, open, 1/8 inch wide, no filling -- @ 178.6 feet: joint, open, 3/16 inch wide, no filling end of core -- @ 180.5 feet: Silty Sandstone becomes moderate to highly fractured, soft to moderate. 2 conjugate joints, 3/16 and 1/8 inch wide, sand filled. -- @ 180.7 feet: joint, 1/8 inch wide, sand filled -- @ 181 feet: joint, 3/16 inch wide, sand filled -- @ 181.8 feet: joint, 1/16 inch wide, sand filled -- @ 182.0 feet: joint, 1/16 inch wide, sand filled -- @ 182.2 feet: joint, 1/8 inch wide -- @ 182.3 feet: joint, 1/8 inch wide, sand filled -- @ 182.4 feet: joint, 1/16 inch wide, sand filled		0	
-1270-					-- @ 182.7 feet: joint, 3/16 inch wide, sand filled			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37p

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 183.5 feet: joint, 1/8 inch wide, sand filled -- @ 183.7 feet: joint, 1/8 inch wide			29/5
185		12	80				40	
					-- @ 185.6 feet: joint, 3/16 inch wide. conjugate joint, 73.4 degree dip, 3/16 inch wide, sand filled -- @ 185.8 feet: joint, 1/8 inch wide -- @ 186.1 feet: joint, 1/8 inch wide, sand filled -- @ 186.3 feet: joint, 3/16 inch wide, sand filled -- @ 186.5 feet: 2 conjugate joints, 1/16 inch wide -- @ 186.8 feet: joint, 1/8 inch wide -- @ 187.1 feet: joint, 1/8 inch wide, sand filled -- @ 187.2 feet: joint, tight, sand filled -- @ 187.3 feet: joint, 1/16 inch wide, sand filled -- @ 187.4 feet: joint, 1/16 inch wide, sand filled			
-1265-					-- @ 187.5 feet: joint, 1/8 inch wide, sand filled -- @ 187.8 feet: joint, 1/16 inch wide -- @ 188.0 feet: joint, 1/4 inch wide, sand filled -- @ 188.3 feet: joint, 1/16 inch wide -- @ 188.4 feet: joint, 1/8 inch wide			
		12 13	96		-- @ 188.6 feet: joint, 1/8 inch wide -- @ 188.7 feet: joint, 1/8 inch wide -- @ 189.0 feet: Silty Sandstone becomes very well cemented. joint, 43.8 degree dip		41	27/5
190					-- @ 189.3 feet: joint, tight, sand filled -- @ 189.4 feet: joint, tight, sand filled -- @ 189.5 feet: joint, tight, sand filled; joint, tight clay lined. shear, tight, polished surfaces -- @ 189.6 feet: joint, tight, sand filled -- @ 189.7 feet: joint, tight, sand filled -- @ 190.5 feet: joint, tight, sand filled, well healed -- @ 190.8 feet: joint, tight, sand filled, well healed -- @ 191.0 feet: joint, 1/8 inch wide -- @ 191.5 feet: joint, 1/8 inch wide, sand filled -- @ 191.6 feet: Bedding, tight -- @ 191.8 feet: joint, tight, silt and calcium carbonate filled, well healed. conjugate joint, 55.2 degree dip, tight, calcium carbonate filled, well headed			
-1260-					-- @ 192.0 feet: Silty Sandstone becomes poorly cemented to uncemented. joint, 1/8 inch wide, sand filled -- @ 192.4 feet: joint, 1/8 inch, sand filled -- @ 192.5 feet: sheared bedding, 3/8 inch wide, sand/calcium carbonate filled, moderately to well healed, polished surfaces -- @ 192.8 feet: joint, tight, sand filled -- @ 193.3 feet: joint, calcium carbonate filled, well			
		13	100				46	23/5

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37q

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
195					healed -- @ 193.4 feet: joint, calcium carbonate filled, well healed -- @ 194 feet: becomes moderately well cemented -- @ 194.7 feet: becomes slightly cemented -- @ 195.3 feet: joint, sand filled -- @ 195.5 feet: joint, 1/16 inch wide, sand filled -- @ 195.9 feet: joint, sand lined -- @ 196.1 feet: joint, 1/16 inch wide, sand filled -- @ 196.6 feet: becomes very well cemented -- @ 196.7 feet: joint, sand filled; conjugate joint, sand filled			
-1255-					-- @ 197 feet: joint, 1/16 inch wide, sand filled -- @ 197.2 feet: joint, 1/8 inch wide, sand filled -- @ 197.4 feet: joint, tight, sand filled -- @ 197.6 feet: joint, 1/8 inch wide, sand filled -- @ 197.7 feet: joint, 1/8 inch wide, sand lined -- @ 198.4 feet: joint, 1/8 inch wide -- @ 198.5 sandstone becomes poorly cemented -- @ 198.6 feet: joint, 1/16 inch wide			
		13 14	96		-- @ 198.7 feet: joint, 1/16 inch wide -- @ 199.2 feet: joint, 43.8 degree dip, tight -- @ 199.5 feet: joint, 1/4 inch wide, sand filled		35	22/5
200					-- @ 199.9 feet: joint, open, 1/4 inch wide			
					-- @ 200.9 feet: joint, 1/16 inch wide -- @ 201.2 feet: joint, 1/16 inch wide, sand filled -- @ 201.3 feet: joint, 1/8 inch wide, sand filled -- @ 201.5 feet: joint, tight, sand filled -- @ 201.7 feet: joint, 1/8 inch wide, sand lined -- @ 202.1 feet: joint, 1/8 inch wide, sand filled -- @ 202.3 feet: joint, 3/16 inch wide, sand filled -- @ 202.5 feet: Silty Sandstone becomes moderately well cemented, joint, 1/8 inch wide, sand filled			
-1250-					-- @ 202.9 feet: joint, tight, calcium carbonate filled, well healed -- @ 203 feet: joint, 1/8 inch wide, sand filled -- @ 203.1 feet: joint, 1/16 inch wide, sand lined -- @ 203.2 feet: joint, 1/16 inch wide -- @ 203.3 feet: joint, 1/8 inch wide, sand filled -- @ 203.4 feet: joint, 1/16 inch wide, sand filled -- @ 203.5 feet: joint, 1/8 inch wide -- @ 203.6 feet: joint, 1/8 inch wide, sand filled			23/5
205		14	80		-- @ 203.8 feet: joint, 1/16 inch wide -- @ 205 feet: Sandstone becomes well cemented, hard -- @ 205.5 feet: joint, 1/8 inch wide, sand lined -- @ 206.1 feet: joint, tight		33	

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37r

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 206.3 feet: becomes moderate, moderately well cemented -- @ 206.4 feet: joint, tight -- @ 206.5 feet: joint, tight, sand filled -- @ 206.6 feet: joint, tight -- @ 206.9 feet: becomes soft, poorly cemented. shear, 1/8 inch wide, clay lined/sand filled, polished surfaces, poorly healed			
-1245-					-- @ 207 feet: joint, 1/16-1/8 inch wide, sand filled -- @ 207.2 feet: joint, 1/8 inch wide, sand filled -- @ 207.3 feet: joint, 1/8 inch wide, sand filled -- @ 207.6 feet: joint, tight. Joint, 55.2 degree dip, 1/8 inch wide			21/4
					-- @ 207.8 feet: joint, 1/8 inch wide, sand filled -- @ 208.3 feet: joint, 1/16 inch wide, sand filled -- @ 209 feet: lost 1,582 gallons drilling fluids to formation			
210								
			18				0	
-1240-		15	100		-- @ 213 feet: Silty Sandstone becomes moderately well cemented, graded. joint, 1/16 inch wide, sand/clay filled		0	3/1
					-- @ 213.1 feet: shear, 1/16 inch wide, clay filled, calcium carbonate lined, moderately well healed, polished surfaces			17/5
			92				16	
215					-- @ 214.6 feet: bedding, tight -- @ 214.7 feet: joint, 1/8 inch wide, no filling/sand filled -- @ 215 feet: bedding, tight -- @ 215.4 feet: Silty Sandstone becomes pebbly, graded -- @ 215.9 feet: bedding, tight -- @ 216 feet: joint, 1/16 inch wide, sand filled -- @ 216.1 feet: joint, 1/16-1/8 inch wide, sand filled/lined -- @ 216.3 feet: Silty Sandstone becomes highly fractured. Shear, 1/16 inch wide, clay, polished surfaces -- @ 216.4 feet: joint, 1/16 inch wide -- @ 216.5 feet: joint, 1/16 inch wide, sand filled -- @ 216.7 feet: sheared bedding, 1/8 inch wide, sand			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37s

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1235-					filled/clay lined, polished surfaces -- @ 216.9 feet: joint, 1/16 inch wide, sand filled -- @ 217 feet: becomes moderately cemented -- @ 217.2 feet: joint, tight, sand filled -- @ 217.3 feet: joint, 1/16-1/8 inch wide, sand lined -- @ 217.7 feet: becomes highly fractured due to shear extending to 218.4 feet. bedding, tight -- @ 217.8 feet: joint, 1/16 inch wide, sand filled -- @ 218 feet: shear, 1/16 inch wide, clay, polished surfaces			24/5
220								
		15 16	66		-- @ 221 feet: joint, 1/16 inch wide -- @ 221.1 feet: joint, 1/8 inch wide. Joint, 1/16-1/8 inch wide -- @ 221.3 feet: joint, 1/16 inch wide -- @ 221.4 feet: SHALE, dark gray/charcoal -- @ 221.7 feet: joint, 1/8 inch wide -- @ 222.2 feet: joint, 1/16 inch wide to tight -- @ 222.3 feet: joint, tight -- @ 222.4 feet: sheared bedding, 1/4 inch wide, polished surfaces -- @ 222.6 feet: sheared bedding, 1/8 inch wide, polished surfaces. sheared bedding, 1/8 inch wide -- @ 223.1 feet: sheared bedding, 1/8 inch wide, clay lined, polished surfaces		13	
-1230-								
		16	96		-- @ 223.8 feet: SILTY SANDSTONE, moderately fractured, moderate to moderately hard, moderately well cemented -- @ 224.2 feet: joint, 43.8 degree dip -- @ 224.4 feet: joint, sand lined -- @ 224.6 feet: joint, 1/16 inch wide, sand filled -- @ 224.9 feet: joint, 1/16 inch wide, sand filled -- @ 225.3 feet: joint, 1/16 inch wide, sand filled -- @ 225.8 feet: joint, 1/16 inch wide, sand filled -- @ 226.2 feet: joint, 1/16 inch wide, sand filled -- @ 226.8 feet: joint, 1/8 inch wide, sand filled/lined -- @ 227.1 feet: joint, 1/16 inch wide, sand filled -- @ 227.2 feet: joint, 1/16 inch wide, sand filled -- @ 227.5 feet: joint, 1/8 inch wide, sand filled -- @ 227.7 feet: joint, 1/8 inch wide, sand filled -- @ 227.9 feet: joint, 1/16 inch wide, sand filled -- @ 228.1 feet: joint, 1/16 inch wide, sand filled -- @ 228.3 feet: joint, 1/16 inch wide, sand filled -- @ 228.5 feet: joint, 1/16 inch wide, sand filled -- @ 228.6 feet: joint, 1/16 inch wide, sand filled -- @ 228.7 feet: joint, 1/16 inch wide		49	17/5
225								
-1225-								17/2

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37t

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
			85		-- @ 229.5 feet: joint, 1/8 inch wide, sand filled		20	
230					-- @ 230.2 feet: joint, 1/8 inch wide, sand filled -- @ 230.4 feet: joint, 1/8 inch wide, sand filled -- @ 230.7 feet: joint, 1/16 inch wide			
		16 17	97				52	15/3
					-- @ 232 feet: joint, 1/16 inch wide, sand/clay lined -- @ 232.4 feet: joint, 55.2 degree dip, 1/8 inch wide, sand lined			
-1220-					-- @ 232.6 feet: joint, 1/16 inch wide, 1/16 inch wide, tight			
		17	100		-- @ 234.1 feet: joint, 55.2 degree dip		15	17/5
235					-- @ 234.7 feet: joint, 1/16 inch wide, tight			
					-- @ 235.3 feet: shear, 1/16 inch wide, clay lined, polished surfaces -- @ 235.5 feet: Silty Sandstone becomes uncemented -- @ 235.9 feet: joint, tight, sand filled			
					-- @ 236.4 feet: Silty Sandstone becomes poorly cemented			
-1215-					-- @ 237.5 feet: joint, tight, sand filled -- @ 237.6 feet: shear, clay lined, polished surfaces -- @ 237.8 feet: joint, tight, sand filled -- @ 237.9 feet: joint, 1/16 inch wide, sand filled -- @ 238.2 feet: joint, 1/16 inch wide, sand filled -- @ 238.3 feet: joint, tight			
		17 18	100		-- @ 239.1 feet: joint, 1/16 inch wide, sand filled -- @ 239.3 feet: shear, clay lined, polished surfaces		14	18/5
240					-- @ 239.6 feet: joint, tight, sand filled -- @ 239.8 feet: joint, tight, sand filled -- @ 240 feet: joint, closed, clay lined, minor polishing -- @ 240.1 feet: Silty Sandstone becomes soft, weakly cemented -- @ 240.3 feet: becomes soft, poorly cemented			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37u

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 241.1 feet: bedding, tight			
					-- @ 241.9 feet: bedding, tight -- @ 242.2 feet: shear, tight, clay lined, polished surfaces			
-1210-					-- @ 242.8 feet: Silty Sandstone becomes soft to moderately soft, weakly to moderately cemented -- @ 243.2 feet: shear, clay lined, polished surfaces -- @ 243.5 feet: shear, clay lined, polished surfaces			
		18	94		-- @ 244 feet: becomes soft to very soft, weakly cemented		0	26/5
245					-- @ 244.6 feet: shear, 1/8 inch wide, clay filled, polished surfaces -- @ 244.8 feet: shear: 1/4 inch wide, clay-lined, polished surfaces. Shear, 77 degree dip, 1/4 inch, clay filled, poorly healed, deformed			
					-- @ 246.3 feet: shear, 3/16 inch wide, sand/gypsum filled and clay lined, polished surfaces -- @ 246.4 feet: shear, 3/16 inch wide, gypsum filled/clay-lined, polished surfaces -- @ 246.9 feet: joint, 1/16 inch wide, sand filled -- @ 247.1 feet: joint, tight, sand filled			
-1205-					-- @ 248.1 feet: shear, 77 degree dip, 1/16 inch wide, clay-lined polished surfaces -- @ 248.3 feet: gained 10 gallons of drilling fluid -- @ 248.4 feet: fracture, 1/16 inch wide, related to shear @ 248 feet			
		18 19	100		-- @ 249 feet: Silty Sandstone becomes brittle, internally sheared. Shear, 80.2 degree dip, 1/16 inch wide, clay-lined polished surfaces		7	23/5
250					-- @ 249.2 feet: fracture, 1/16 inch wide, related to shear at 249 feet -- @ 250.2 feet: shear, clay lined, polished surfaces -- @ 250.6 feet: joint, 1/16-1/8 inch wide, sand filled			
					-- @ 251.1 feet: shear, 67.4 degree dip, 1/16 inch wide, clay lined, polished surfaces -- @ 251.4 feet: fracture, 25.6 degree dip, 1/16 inch wide, related to shear at 251.5 feet -- @ 251.5 feet: shear, 1/16 inch wide, clay lined, polished surfaces			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37v

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1200-					-- @ 252.4 feet: shear, 55.2 degree dip, 1/16 inch wide, clay lined, polished surfaces. fracture, 25.6 degree dip 1/16 inch wide, related to shear -- @ 252.7 feet: joint, 78.2 degree dip, 1/8 inch wide. fracture, 25.6 degree dip, 1/16 inch wide, related to shear at 252.4 feet			
		19	100		-- @ 253 feet: lost 50 gallons of drilling fluid to formation -- @ 253.7 feet: joint, 1/16 inch wide -- @ 254 feet: Silty Sandstone becomes moderately soft, moderately cemented. Shear, 62.5 degree dip, 1/16 inch wide, clay lined, polished surfaces		23	7/1.8
255					-- @ 254.5 feet: shear, 43.8 degree dip, 1/16 inch wide, clay-lined, polished surfaces -- @ 254.7 feet: shear, 25.6 degree dip, 1/16 inch wide, clay-lined polished surfaces -- @ 255: two conjugate shears, 43.8 degree dip, 1/8 inch wide, gypsum filled/clay lined, polished surfaces, moderately well-healed		23	13/3.2
			100		-- @ 255.4 feet: joint, 1/16 inch wide -- @ 255.6 feet: joint, 1/16 inch wide -- @ 255.8 feet: becomes highly fractured. joint, 70.9 degree dip, 1/8 inch wide -- @ 256.3 feet: joint, 86.4 degree dip, 1/8 inch wide -- @ 256.4 feet: joint, 1/16 inch wide, sand lined			
-1195-					-- @ 256.5 feet: joint, 67.4 degree dip, 1/16 inch wide, sand lined -- @ 256.9 feet: shear, 55.2 degree dip, 1/8 inch wide, clay-lined, polished surfaces -- @ 257.3 feet: shear, 43.8 degree dip, 1/16 inch wide, clay filled, polished surfaces			33/5
		19 20	94		-- @ 257.5 feet: joint, 55.2 degree dip, 1/8 inch wide -- @ 257.6 feet: joint, 25.6 degree dip, 1/16 inch wide. Joint, 43.8 degree dip, 1/16 inch wide		14	
260					-- @ 258.1 feet: shear, 55.2 degree dip, 1/16 inch wide, clay-lined, polished surfaces -- @ 259-264 feet, lost 1098 gallons drilling fluids to formation -- @ 259.3 feet: SILTY SAND lens, gray, wet, medium dense, fine to medium sand, 0.6 feet thick -- @ 259.9 feet: SILTY SANDSTONE, highly fractured, moderately soft, moderately well cemented -- @ 260.3 feet: shear, 55.2 degree dip, closed, clay-lined, polished surfaces -- @ 260.7 feet: shear, 55.2 degree dip, 1/16 inch wide, clay-lined, polished surfaces -- @ 261 feet: joint, 78.2 degree dip, 1/8 inch wide -- @ 262 feet: joint, 55.2 degree dip, 1/16 inch wide			
-1190-					-- @ 262.2 feet: joint, 67.4 degree dip, 1/8 inch wide -- @ 262.5 feet: becomes very brittle, joint, 80.9 degree dip, 1/8 inch wide. Joint, 62.5 degree dip, 1/16-1/8 inch wide -- @ 263.1 feet: joint, 43.8 degree dip, tight -- @ 263.4 feet: joint, 62.5 degree dip, 1/16 inch wide			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37w

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		20	100		-- @ 264.3 feet: joint, 55.2 degree dip, 1/8 inch wide -- @ 264.4 feet: joint, 70.9 degree dip, 1/8 inch wide		18	20/5
265					-- @ 265.2 feet: joint, 43.8 degree dip, 1/16 inch wide			
					-- @ 266.1 feet: Becomes soft to very soft, weakly cemented -- @ 266.3 feet: sheared bedding, 62.5 degree dip, 1/8 inch wide, sand and gypsum filled/clay lined, polished surfaces -- @ 266.6 feet: shear, 43.8 degree dip, tight, polished surfaces -- @ 266.9 feet: joint, 43.8 degree dip, tight, sand filled			
-1185-					-- @ 267.3 feet: joint, 43.8 degree dip, tight, sand lined -- @ 267.4 feet: joint, 62.5 degree dip, tight, sand lined -- @ 268.3 feet: joint, 62.5 degree dip, 1/16 inch wide. Shear, 73.4 degree dip, 1/16-1/8 inch wide, sand filled/clay lined; some gypsum development, polished surfaces			
		21	100		-- @ 269 feet: shear, 55.2 degree dip, 1/16-1/8 inch wide, clay filled, polished surfaces		15	29/5
270					-- @ 269.5 feet: shear zone, extends to 270.3 feet, all shears poorly healed, closed, polished surfaces. shear, 62.5 degree dip, 1/2 inch wide, clay/silt filled, deformed beds -- @ 269.6 feet: shear, 25.6 degree dip, 1/16 inch wide, clay lined -- @ 269.8 feet: shear, 43.8 degree dip, 1/4-1/2 inch wide, clay/silt filled, deformed beds -- @ 270 feet: shear, 25.6 degree dip, 1/4-1/2 inch wide, clay/silt filled -- @ 270.1 feet: shear, 1/4 inch wide, clay/silt filled, deformed beds. Shear, 25.6 degree dip, clay filled -- @ 270.2 feet: shear, 25.6 degree dip, 1/8 inch wide, clay filled -- @ 270.8 feet: joint, 25.6 degree dip, 1/16 inch wide			
-1180-					-- @ 271 feet: bedding, 25.6 degree dip -- @ 271.3 feet: joint, 62.5 degree dip, 1/16-1/8 inch wide -- @ 271.5 feet: bedding, 25.6 degree dip -- @ 271.6 feet: joint, 79.3 degree dip, 1/16-1/8 inch wide -- @ 271.8 feet: bedding, 25.6 degree dip -- @ 272.5 feet: bedding, 25.6 degree dip -- @ 272.9 feet: joint, 62.5 degree dip, 1/16-1/8 inch wide. Bedding, 25.6 degree dip -- @ 273.2 feet: joint, 43.8 degree dip, tight			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-1A

PLATE A-37x

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					Total depth = 274 feet No groundwater encountered Backfilled with mixture of Portland cement, CETCO Super Gel-X extra high yield Na-bentonite powder, and CETCO high solids Volclay grout (5-274 feet bgs) and capped with soil (0-5 feet bgs) Note: Core sample diameter: 2.5 inches. Coring completed using wire line method			
					Drilling Fluids Used: <u></=100 gallons fluid loss:</u> Normal conditions; water and CETCO Insta-Vis Plus drilling fluid enhancer polymer or CETCO Super Pac drilling fluid enhancer polymer. <u>100 - 500 gallons fluid loss:</u> Minor fluid loss conditions; water, CETCO Insta-Vis Plus drilling fluid enhancer polymer or CETCO Super Pac drilling fluid enhancer polymer, CETCO Super Gel-X extra high yield Na-bentonite powder, and/or CETCO high solids Volclay grout. <u>500 - 2000 gallons fluid loss:</u> Major fluid loss conditions; water, CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, CETCO high solids Volclay grout, cellophane chips, wood chips/sawdust, Forta Drag Net Fiber (or CETCO Macro-Fill polymer). <u>>2,000 gallons fluid loss:</u> Severe fluid loss conditions; pulled rod/core pipe (entire depth or fluid loss zone) and filled coring cavity with mixtures consisting of plaster-of-paris and Portland Cement (very severe loss conditions), Portland Cement and CETCO high solids Volclay grout, or Volclay grout and CETCO Super Gel-X extra high yield Na-bentonite powder (severe loss conditions)			

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LOG OF BORING C-1A

PLATE A-37y

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Date Drilled:	5/1/01	Water Depth:	>203.5 feet
Drilled By:	Jet Drilling	Date Measured:	5/1/01
Drilling Method:	Core HQ Bit 3.75 in.	Elevation:	1435 feet
Logged By:	TAH, JLH	Reference Datum:	B+E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1435-					**BEDROCK - Chatsworth Formation (Kcs)** SILTY SANDSTONE, yellowish brown, extremely to highly weathered, moderately fractured, very soft to moderately soft (friable), fine to medium grained, very weakly cemented			CDR = 9/4.5
-1430-5								CDR = 6/5
		1	68		-- @ 6 feet: recovery starts, joint surfaces prominently oxidized		0	
					-- @ 8.7 feet: sample pulverized, possible sand layer extending to 9.8 feet			
-1425-					-- @ 9.8 feet: becomes silty sandstone again			CDR = 7/5

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LOG OF BORING C-2

PLATE A-38a

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1425			74				0	
					-- @ 10.3 feet: joint, 25.6 degree dip, open, tight			
					-- @ 11.4 feet: joint, 25.6 degree dip, open, tight			
					-- @ 12.1 feet: joint, 43.8 degree dip, open, tight -- @ 12.3 feet: becomes extremely weathered, soft (dense), pebbly, very weakly cemented, SAND WITH GRAVEL in texture			
								CDR = 9/5
-142015								
		2	60				46	
					-- @ 16.2 feet: becomes moderately weathered, moderately hard, medium to coarse grained, moderately well cemented			
			92				40	CDR = 8/5
-141520					-- @ 19.9 feet: fracture, open, tight			
					-- @ 20.5 feet: fracture, open, tight -- @ 20.6 feet: joint, horizontal dip, open, tight			
					-- @ 20.9 feet: possible sand lense, medium sand			
					-- @ 21.3 feet: becomes moderately to highly			

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LOG OF BORING C-2

PLATE A-38b

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					weathered, soft, weakly to moderately cemented, medium grained -- @ 21.6 feet: joint, 38.7 degree dip, open, tight -- @ 21.9 feet: joint, 25.6 degree dip, open, tight -- @ 22 feet: joint, 63.4 degree dip, open, tight -- @ 22.6 feet: joint, 38.7 degree dip, open, tight -- @ 22.8 feet: joint, 65.6 degree dip, open, tight			
		3	100		-- @ 23.4 feet: joint, 25.6 degree dip, open, tight -- @ 23.8 feet: joint, 21.8 degree dip, open, tight		0	CDR = 10/5.2
-141025					-- @ 24.8 feet: sand lens, 2-inches thick, fine to medium sand -- @ 25.3 feet: joint, 21.8 degree dip, open, tight -- @ 25.7 feet: joint, 31.0 degree dip, open, tight -- @ 26.2 feet: joint, 21.8 degree dip, open, tight -- @ 26.6 feet: uncemented zone, 0.3 feet thick -- @ 26.7 feet: joint, 50.2 degree dip, open, tight -- @ 27.5 feet: joint, 45 degree dip, open, tight			
			92		-- @ 28.6 feet: joint, 60.9 degree dip, open, tight		0	CDR = 10/4.8
					-- @ 28.9 feet: sand lens, 0.4 feet thick, fine to medium sand			
-140530					-- @ 29.3 feet: back into silty sandstone, extremely weathered, highly fractured, soft to very soft. joint, 58.0 degree dip, open, tight -- @ 28.9 feet: weakly cemented to uncemented zone extending to 30.5 feet -- @ 30.2 feet: joint, 50.2 degree dip, open, tight -- @ 30.5 feet: joint, 50.2 degree dip, open, tight			
					-- @ 31 feet: sand lens, 0.5 feet thick, fine to medium sand			
					-- @ 31.5 feet: back into silty sandstone, extremely to highly weathered, highly fractured, soft to very soft. joint, 58 degree dip, open, tight -- @ 32.2 feet: joint, 54.5 degree dip, open, tight -- @ 32.8 feet: joint, 58 degree dip, open, tight			

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LOG OF BORING C-2

PLATE A-38c

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		4	96		-- @ 33.3 feet: joint, 45 degree dip, open, tight -- @ 34 feet: joint, 58 degree dip, open, tight		20	CDR = 10/5
-140035					-- @ 35.2 feet: joint, 58 degree dip, open, tight -- @ 36.7 feet: joint, 58 degree dip, open, tight -- @ 38 feet: joint, 58 degree dip, open, tight			CDR = 8/5
			92		-- @ 38.9 feet: joint, 50.2 degree dip, open, tight -- @ 39.1 feet: joint, 21.8 degree dip, open, tight -- @ 39.2 feet: joint, 54.5 degree dip, open, tight		42	
-139540					-- @ 39.8 feet: joint, 63.4 degree dip, open, tight -- @ 40 feet: joint, 58 degree dip, open, tight -- @ 40.3 feet: joint, 54.5 degree dip, open, tight -- @ 40.6 feet: joint, 60.9 degree dip -- @ 41 feet: highly to moderately weathered, moderately fractured becomes hard, moderately cemented, silica oxide and iron oxide cemented, fine grained, oxidized. -- @ 41.5 feet: joint, 31 degree dip, open, tight -- @ 42.3 feet: joint, 26.6 degree dip, open, tight			
		5	100		-- @ 43.7 feet: joint, 50.2 degree dip, open, tight		50	CDR = 9/5.3

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LOG OF BORING C-2

PLATE

A-38d

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-139045					-- @ 44.6 feet: becomes weakly cemented -- @ 44.8 feet: becomes moderately to slightly weathered, moderately soft to moderate, well cemented			
					-- @ 46 feet: becomes extremely weathered, soft (very dense), very weakly cemented, approximates SAND WITH SILT in texture, fine to medium grained. -- @ 46.3 feet: moderately weathered, moderately soft, well cemented -- @ 46.8 feet: color change to light gray, unweathered to very slightly weathered			
		5 6	100		-- @ 48.3 feet: color changes to yellowish-brown, moderately weathered to slightly weathered, moderate, very well cemented		31	CDR = 11/4.7
-138550					-- @ 49.9 feet: joint, 38.7 degree dip, open, tight			
					-- @ 50.5 feet: joint, 38.7 degree dip, open, tight -- @ 50.8 feet: becomes moderately to highly fractured, medium to coarse grained, well cemented -- @ 51.3 feet: joint, 31 degree dip, open, tight			
					-- @ 52.2 feet: joint, 38.7 degree dip, open, tight -- @ 52.4 feet: joint, 54.5 degree dip. Conjugate joint, 63.4 degree dip, both open, tight -- @ 52.5 feet: becomes fine to medium grained			
		6	100		-- @ 53.6 feet: becomes moderately fractured, fine to medium grained with trace small pebbles (graded), well-cemented -- @ 54.3 feet: joint, 38.7 degree, open, tight		68	CDR = 10/5
-138055					-- @ 55.6 feet: bedding, 45 degree dip, tight			

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LOG OF BORING C-2

PLATE A-38e

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 56.5 feet: bedding, 45 degree dip, tight -- @ 56.9 feet: fracture, 21.8 degree dip, open, tight -- @ 57.2 feet: joint, 11.3 degree dip, open, tight, clay lined -- @ 57.5 feet: joint, 50.2 degree dip, open, tight			
		6 7	100		-- @ 58.7 feet: possible fault zone, brecciated, polished surfaces, prominent striae, multiple clay-filled/lined shears, poorly healed, very soft, deformed beds, extends to 60.2 feet -- @ 58.8 feet: joint, open, tight		20	CDR = 17/5
-137560					-- @ 60.2 feet: Shear zone, extending to 62.5 feet, multiple clay-lined/filled shears, no breccia noted -- @ 60.9 feet: shear, 31 degree dip, clay-lined, polished surfaces -- @ 61 feet: drilling rate decreases, driller states very soft zone encountered, fines plugging up coring bit -- @ 61.1 feet: shear, 31 degree dip, clay-lined, polished surfaces -- @ 61.5 feet: shear, 31 degree dip, clay-lined, polished surfaces -- @ 61.9 feet: shear, 31 degree dip, clay-lined, polished surfaces -- @ 62.2 feet: shear, 45 degree dip, clay-lined, polished surfaces -- @ 62.5 feet: drilling rate increases again, driller states bedrock becomes harder and is not plugging coring bit			CDR = 14/5
-137065		7	78		-- @ 64.7 feet: becomes highly fractured, very soft, multiple shear zone, extending to 67 feet -- @ 64.9 feet: joint, 38.7 degree dip, open, tight -- @ 65.5 feet: shear, 50.2 degree dip, clay-lined, polished surfaces -- @ 65.7 feet: shear, 50.2 degree dip, clay-lined, polished surfaces -- @ 66.1 feet: shear, 54.5 degree dip, clay-lined, polished surfaces -- @ 66.5 feet: shear, 58 degree dip, clay-lined, polished surfaces -- @ 66.9 feet: joint, 60.9 degree dip, open, tight -- @ 67.3 feet: joint, 50.2 degree dip, open, tight		23	

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LOG OF BORING C-2

PLATE A-38f

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 67.6 feet: becomes highly weathered, moderately soft, medium grained, moderately well to well cemented, joint, 74.5 degree dip, open, tight			CDR = 12/5
		7 8	94		-- @ 68.8 feet: becomes highly to moderately weathered, moderately soft (very dense) to moderate. joint, 45 degree dip, open, tight -- @ 69 feet: joint, 50.2 degree dip, open, tight -- @ 69.3 feet: joint, 63.4 degree dip, open, tight		27	
-136570					-- @ 70.2 feet: joint, 38.7 degree dip, open, tight -- @ 70.3 feet: joint, 63.4 degree dip, open, tight. bedding, 38.7 degree dip, tight -- @ 70.6 feet: bedding, 50.2 degree dip, tight -- @ 70.8 feet: joint, 58 degree dip, open, tight -- @ 71.1 feet: bedding, 38.7 degree dip, tight -- @ 71.3 feet: bedding, 38.7 degree dip, tight -- @ 71.4 feet: sand lens, dense, fine to medium sand, 0.9 feet thick			
		8	100		-- @ 72.3 feet: becomes silty sandstone again, highly to moderately weathered, moderately soft (very dense) to moderate. -- @ 72.8 feet: joint, 63.4 degree dip, open, tight -- @ 73.5 feet: becomes moderately weathered, moderately fractured, moderate to moderately hard, predominately medium grained -- @ 73.6 feet: joint, 60.9 degree dip, open, tight, clay-lined -- @ 74.1 feet: bedding, 58 degree dip, tight -- @ 74.3 feet: bedding, 54.5 degree dip, tight -- @ 74.8 feet: joint, 60.9 degree dip, open, tight, clay-lined -- @ 75 feet: bedding, 50.2 degree dip, tight. joint, 72.6 degree dip, open, tight, clay-lined -- @ 75.5 feet: bedding, 54.5 degree dip, tight -- @ 75.6 feet: bedding, 50.2 degree dip, tight -- @ 76.4 feet: joint, 54.5 degree dip, open, tight, clay-lined -- @ 76.8 feet: joint, 67.4 degree dip, open, tight, clay-lined		30	CDR = 9/5
-136075					-- @ 77.8 feet: fracture, 38.7 degree dip, open, tight -- @ 78 feet: bedding, 31 degree dip, tight			
		8 9	100				21	CDR = 8/5

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Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38g

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-135580					-- @ 79.2 feet: bedding, 21.8 degree dip, tight -- @ 79.3 feet: joint, 50.2 degree dip, open, tight -- @ 79.4 feet: joint, 45 degree dip, open, tight -- @ 79.6 feet: bedding, 38.7 degree dip, tight -- @ 80.1 feet: joint, 45 degree dip, open, tight. bedding, 31 degree dip, tight -- @ 80.3 feet: bedding, 45 degree dip -- @ 80.6 feet: bedding, 45 degree dip, tight -- @ 81 feet: becomes moderately to highly weathered, highly fractured, thinly bedded. joint, 21.8 degree dip, clay-lined -- @ 81.1 feet: bedding, 31 degree dip, tight -- @ 81.2 feet: bedding 38.7 degree dip, tight -- @ 81.5 feet: uncemented zone extending to 82.3 feet, very soft (dense), approximates sand lens, fine to medium sand, internally sheared -- @ 81.9 feet: shear, 58 degree dip, clay-lined, polished surfaces -- @ 82.3 feet: joint, 21.5 degree dip, open, tight -- @ 82.5 feet: joint, 70.3 degree dip, open, clay-lined -- @ 83 feet: SAND lens, dense, fine to medium sand, 0.2 feet thick -- @ 83.2 feet: back into silty sandstone			
		9	100				55	CDR = 11/5
-135085					-- @ 84.8 feet: joint, 69 degree dip, open, tight -- @ 85.8 feet: becomes highly weathered, brittle -- @ 86.1 feet: joint, 65.6 degree dip, open, tight -- @ 87.3 feet: joint, 54.5 degree dip, open, tight -- @ 87.6 feet: bedding, 38.7 degree dip, tight -- @ 87.8 feet: color changes to gray, very slightly weathered, moderately hard, faint iron oxidation stains. joint, 50.2 degree dip, open, tight -- @ 88.4 feet: joint, 38.7 degree dip, open, tight -- @ 88.6 feet: joint, 35 degree dip, closed, calcium carbonate filled -- @ 89.5 feet: color changes to yellowish brown, highly to moderately weathered -- @ 89.7 feet: joint, 42 degree dip, open, clay-lined/filled -- @ 90 feet: becomes extremely weathered, very soft, brittle, extends. to 91.2 feet			
		9 10	100				50	CDR = 12/5
-134590								

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Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38h

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 90.9 feet: joint, 67.4 degree dip, open, clay-lined			
					-- @ 92.9 feet: color changes to medium gray, moderately hard, medium grained. joint, 69 degree dip, calcium carbonate filled.			
					-- @ 93.5 feet: SAND lens, 0.6 feet thick			CDR = 13/5
		10	88		-- @ 94.1 feet: SILTY SANDSTONE, becomes moderately hard to hard, moderately fractured		44	
-134095					-- @ 95.1 feet: bedding, 21.8 degree dip, tight			
					-- @ 97 feet: bedding, 38.7 degree dip, tight -- @ 97.2 feet: fracture, 50.2 degree dip, open, tight -- @ 97.3 feet: bedding, 38.7 degree dip, tight -- @ 97.5 feet: three thin silty sandstone bedding planes between 97.5 and 97.7 feet -- @ 98 feet: becomes highly fractured			
		10 11	94		-- @ 98.4 feet: sheared bedding, 38.7 degree dip, clay-lined, polished surfaces -- @ 98.5 feet: color becomes yellowish-brown, moderately to highly weathered, very soft, brittle -- @ 98.8 feet: joint, 74.5 degree dip, open, 1/16-1/8 inch wide		8	CDR = 12/5
-133500					-- @ 99.9 feet: joint, 67.3 degree dip, open, tight -- @ 100 feet: pulverized section, extends to 100.1 feet -- @ 100.3 feet: joint, 55 degree dip, open, tight			
					-- @ 100.7 feet: joint, 63.4 degree dip, open, tight -- @ 100.8 feet: joint, 63.4 degree dip, open, tight -- @ 100.9 feet: joint, 61 degree dip, open, tight -- @ 101 feet: color becomes medium gray, slightly weathered, soft, highly oxidized along joint and bedding plane surfaces. Bedding, 26.6 degree dip, tight -- @ 101.1 feet: becomes moderately fractured -- @ 101.6 feet: joint, 65.6 degree dip, open, tight			

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Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38i

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 102.1 feet: bedding, 38.7 degree dip, tight -- @ 102.2 feet: bedding, 38.7 degree dip, tight -- @ 102.5 feet: joint, 26.6 degree dip, open, tight -- @ 102.6 feet: joint, 38.7 degree dip, open, tight -- @ 103.2 feet: bedding, 38.7 degree dip, tight -- @ 103.5 feet: pulverized section, extending to 105.3 feet			CDR = 10/5
-133005		11	56				17	
					-- @ 106.1 feet: becomes highly fractured/pulverized, extending to 108 feet -- @ 107.1 feet: joint, 45 degree dip, open, tight -- @ 107.6 feet: joint, 45 degree dip, open, tight			CDR = 12/5
-132510			56		-- @ 109.4 feet: silty sandstone becomes moderately to highly fractured, moderately soft to moderate. Joint, 54.5 degree dip, open, tight -- @ 110.3 feet: joint, 38.7 degree dip, clay-lined, polished surfaces -- @ 110.5 feet: joint, 38.7 degree dip, tight, calcium carbonate lined. Conjugate joint, 50.1 degree dip, open, tight -- @ 110.8 feet: joint, 58 degree dip, open, tight. Conjugate joint, 58 degree dip, open, tight -- @ 111.9 feet: joint, 38.7 degree dip, open, tight -- @ 112.1 feet: joint, 11.3 degree dip, open, tight		40	
					-- @ 113.2 feet: joint, 45 degree dip, open, tight -- @ 113.6 feet: no recovery to 117.3 feet; core did not snap off into barrel.			CDR = 14/5.1

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LOG OF BORING C-2

PLATE A-38j

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-132015								
		12	26		-- @ 117.4 feet: silty sandstone becomes unweathered, well cemented, fine to medium grained. Joint, clay-lined -- @ 117.7 feet: possible wash-out zone to 117.9 feet (sand lens?) -- @ 117.9 feet: joint, open, tight		25	
			22		-- @ 118.6 feet: joint at end of recovered core		0	CDR = 16/4.9
-131520								
					-- @ 122 feet: lost 366 gallons drilling fluids to formation			
			0		-- @ 123.5 feet: only one 0.3 foot piece recovered from 123.5 to 128.5 feet		0	CDR = 14/5
-131025					-- @ 125 feet: becomes soft, possible sand lens?			

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LOG OF BORING C-2

PLATE A-38k

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
								CDR = 16/5
		13	94		-- @ 128.8 feet: SILTY SANDSTONE, gray, unweathered, moderately soft to moderate, fine to medium grained, well-cemented -- @ 128.9 feet: joint, 26.6 degree dip, open, tight -- @ 129.2 feet: bedding, 38.7 degree dip, tight -- @ 129.4 feet: joint, 42 degree dip, open, tight -- @ 129.6 feet: joint, 21.8 degree dip, open, tight -- @ 129.8 feet: bedding, 21.8 degree dip, tight -- @ 129.9 feet: fracture, 35 degree dip, open, tight -- @ 130.75 feet: fracture, 26.6 degree dip, open, tight -- @ 130.1 feet: joint, 45 degree dip, open, tight, clay-lined -- @ 130.7 feet: bedding, 38.7 degree dip, tight -- @ 131 feet: joint, 45 degree dip, open, tight, clay-lined -- @ 131.8 feet: joint, 45 degree dip, open, tight -- @ 132 feet: fracture, 70 degree dip, open, tight -- @ 132.2 feet: joint, 58 degree dip, open, tight		59	
-130530								
					-- @ 133 feet: becomes pebbly sandstone; bottom graded portion of silty sandstone bed, fine to medium gravel, very well-cemented			CDR = 11/3
					-- @ 133.5 feet: no recovery to 134.3 feet; possible gravel lens			
			73		-- @ 133.5 feet: GRAVEL lens		25	
-130035					-- @ 133.7 feet: SAND lens, extends to 135.3 feet, fine to medium sand, uncemented			
					-- @ 135.3 feet: becomes SILTY SANDSTONE again, poorly cemented			
			100		-- @ 136.3 feet: silty sandstone becomes slightly cemented, highly frctured -- @ 136.8 feet: joint, 31 degree dip, open, tight		35	CDR = 9/2

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-2

PLATE

A-381

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 136.9 feet: joint, 47.7 degree dip, open, tight -- @ 137 feet: joint, 54.5 degree dip, open, tight -- @ 137.7 feet: bedding, 38.7 degree dip, tight. Joint, 54.5 degree dip, open, tight -- @ 137.9 feet: joint, 45 degree dip, open, tight			
		14	100		-- @ 138.5 feet: silty sandstone becomes slightly to moderately cemented, brittle -- @ 138.8 feet: joint, 38.7 degree dip, open, tight -- @ 139.1 feet: joint, 45 degree dip, open, tight -- @ 139.4 feet: joint, 31 degree dip, open, tight -- @ 139.7 feet: joint, 31 degree dip, open, tight -- @ 139.9 feet: fracture, 21.8 degree dip, open, tight		41	CDR = 11/5
-129540								
					-- @ 141.4 feet: joint, 21.8 degree dip, open, tight -- @ 141.8 feet: joint, 63.4 degree dip, open, tight. Conjugate joint, 67.4 degree dip, open, tight -- @ 142.2 feet: joint, 21.8 degree dip, open, tight -- @ 142.3 feet: pulverized zone, extending to 142.5 feet -- @ 143 feet: becomes weakly cemented. Joint, 26.6 degree dip, open, tight			
		14 15	100		-- @ 143.5 feet: becomes moderately well cemented. Joint, 38.7 degree dip, open, tight -- @ 143.8 feet: bedding, 38.7 degree dip, tight -- @ 144.3 feet: bedding, 31 degree dip, tight -- @ 144.5 feet: bedding, 38.7 degree dip, tight		56	CDR = 14/5
-129045								
					-- @ 145.2 feet: joint, 50.2 degree dip, open, tight -- @ 145.6 feet: joint, 65.6 degree dip, open, tight -- @ 146.1 feet: bedding, 31 degree dip, tight -- @ 146.3 feet: bedding, 31 degree dip, tight -- @ 146.8 feet: joint, 45 degree dip, open, tight -- @ 147 feet: becomes slightly to poorly cemented, brittle. Joint, 74.5 degree dip, open, tight -- @ 147.2 feet: joint, 70.3 degree dip, open, tight -- @ 147.5 feet: joint, 58 degree dip, open, tight			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38m

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		15	100		-- @ 148.5 feet: silty sandstone becomes moderately well cemented -- @ 148.8 feet: joint, 67.4 degree dip, open, tight, clay-lined -- @ 149 feet: joint, 26.6 degree dip, open, tight, clay-lined		53	CDR = 14/5
-128550					-- @ 149.9 feet: joint, 31 degree dip, open, tight, clay-lined			
					-- @ 150.9 feet: joint, 31 degree dip, open, tight, clay-lined -- @ 151.2 feet: joint, 31 degree dip, open, tight, clay-lined -- @ 151.6 feet: fracture, horizontal, closed, well-healed -- @ 151.7 feet: joint, 38.7 degree dip, open, tight, clay-lined -- @ 152 feet: joint, 31 degree dip, open, tight, clay-lined -- @ 152.2 feet: joint, 31 degree dip, open, tight, clay-lined			
		15 16	100		-- @ 152.3 feet: joint, 21.8 degree dip, open, tight, clay-lined. Conjugate joint, 21.8 degree dip, open, tight, clay-lined -- @ 152.4 feet: joint, 45 degree dip, open, tight, clay-lined -- @ 152.5 feet: joint, 45 degree dip, open, tight, clay-lined		58	CDR ≐ 17/5
-128055					-- @ 152.7 feet: joint, 54.5 degree dip, open, tight, clay-lined -- @ 152.9 feet: joint, 50.2 degree dip, open, tight, clay-lined -- @ 153.1 feet: joint, 45 degree dip, open, tight, clay-lined -- @ 153.5 feet: silty sandstone becomes weakly cemented -- @ 154.3 feet: becomes moderately well cemented. Joint, 50.2 degree dip, open, tight -- @ 155.3 feet: joint, 65.6 degree dip, open, tight -- @ 155.7 feet: joint, 38.7 degree dip, open, tight -- @ 155.8 feet: joint, 50.2 degree dip, open, tight -- @ 156.6 feet: joint, 38.7 degree dip, open, tight -- @ 156.9 feet: joint, 54.5 degree dip, open, tight -- @ 157.3 feet: becomes poorly cemented			
		16	100		-- @ 157.5 feet: joint, horizontal, clay-lined, polished surfaces -- @ 157.6 feet: joint, horizontal, clay-lined, polished surfaces -- @ 157.8 feet: joint, horizontal, clay-lined, polished surfaces		73	CDR = 15/5
-127560					-- @ 158.3 feet: joint, horizontal, clay-lined, polished surfaces			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38n

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 158.5 feet: becomes well-cemented, moderate to moderately hard -- @ 158.8 feet: shear, 45 degree dip, clay-lined, polished surfaces. Joint, 50.2 degree dip, closed, tight, well-healed -- @ 159.7 feet: joint, 54.5 degree dip, open, tight -- @ 160.8 feet: joint, 45 degree dip, open, tight -- @ 161 feet: shear, 45 degree dip, clay-lined, polished surfaces -- @ 161.2 feet: joint, 38.7 degree dip, open, tight. Conjugate joint, 47.7 degree dip, open, tight -- @ 162.1 feet: joint, 31 degree dip, open, tight -- @ 162.3 feet: joint, 56.3 degree dip, open, tight -- @ 162.5 feet: shear, 67.4 degree dip, clay-lined, polished surfaces -- @ 162.8 feet: joint, 58 degree dip, open, tight -- @ 163.5 feet: very poorly cemented zone, extends to 164.1 feet			CDR = 17/4.5
		17	87		-- @ 163.6 feet: joint, 77.2 degree dip, open, sand filled -- @ 164.1 feet: becomes moderately well cemented -- @ 164.3 feet: shear, 63.4 degree dip, clay-lined, polished surfaces		17	
-127065					-- @ 164.4 feet: becomes highly fractured, very soft, weakly cemented. Shear, 54.5 degree dip, clay-lined, polished surfaces -- @ 164.9 feet: joint, 31 degree dip, open, tight -- @ 165 feet: shear, 38.7 degree dip, clay-lined, polished surfaces -- @ 165.8 feet: shear, 58 degree dip, clay-lined, polished surfaces -- @ 166.1 feet: shear, 50.2 degree dip, clay-lined, polished surfaces -- @ 166.3 feet: becomes well cemented -- @ 166.7 feet: sheare, 54.5 degree dip, clay-lined, polished surfaces -- @ 167 feet: shear, 45 degree dip, clay-lined, polished surfaces			
			100		-- @ 167.1 feet: joint, 71.6 degree dip, open, tight -- @ 167.4 feet: becomes highly fractured, very soft, weakly cemented		56	CDR = 25/5.3
					-- @ 168 feet: SILTSTONE interbed, gray, unweathered, highly fractured, moderately hard, thinly bedded, internally sheared, brittle. Sheared bedding, 38.7 degree dip, clay-lined, polished surfaces -- @ 168.5 feet: sheared bedding, 38.7 degree dip, clay-lined, polished surfaces			
-126570					-- @ 168.6 feet: shear, 21.8 degree dip, clay-lined, polished surfaces -- @ 168.7 feet: sheared bedding, 31 degree dip, clay-lined, polished surfaces -- @ 168.9 feet: shear, 45 degree dip, clay-lined, polished surfaces -- @ 169 feet: shear, 45 degree dip, clay-lined, polished surfaces			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38o

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		18	100		-- @ 169.3 feet: sheared bedding, 38.7 degree dip, clay-lined, polished surfaces -- @ 169.8 feet: fracture, 21.8 degree dip, open, tight -- @ 169.9 feet: shear, 58 degree dip, clay-lined, polished surfaces -- @ 170 feet: shear, 58 degree dip, clay-lined, polished surfaces -- @ 170.2 feet: shear, 38.7 degree dip, clay-lined, polished surfaces		59	CDR = 17/5
-126075					-- @ 170.3 feet: becomes SILTY SANDSTONE, gray, unweathered, moderately fractured, moderate, fine to medium grained. Joint, 45 degree dip, open, tight -- @ 170.6 feet: fracture, 50.2 degree dip, open, tight -- @ 171.2 feet: fracture, 50.2 degree dip, open, tight -- @ 171.8 feet: shear, 65.6 degree dip, clay-lined, polished surfaces. Joint, 63.4 degree dip, open, tight -- @ 172.2 feet: joint, 38.7 degree dip, open, tight -- @ 172.3 feet: joint, 38.7 degree dip, open, tight -- @ 173.5 feet: shear, 38.7 degree dip, clay-lined, polished surfaces -- @ 173.7 feet: joint, 50.2 degree dip, closed, calcium carbonate filled, well-healed -- @ 173.8 feet: joint, 45 degree dip, open, tight. Conjugate joint, horizontal, closed, calcium carbonate filled, well-healed, tight -- @ 174 feet: shear, horizontal, clay-lined, polished surfaces -- @ 174.1 feet: shear, 54.5 degree dip, clay-lined, polished surfaces -- @ 174.8 feet: joint, 26.6 degree dip, closed, calcium carbonate filled, well-healed			
		18 19	100		-- @ 175.1 feet: joint, 38.7 degree dip, closed, calcium carbonate filled, well-healed -- @ 175.2 feet: joint, 31 degree dip, clay-lined, polished surfaces -- @ 175.4 feet: shear, 5.7 degree dip. Conjugate shear (parallel), 11.3 degree dip. Both shears clay-lined with polished surfaces		45	CDR = 15/5.2
-125580					-- @ 176.3 feet: shear, 45 degree dip, clay-lined, polished surfaces -- @ 177.2 feet: joint, 50.2 degree dip, open, tight -- @ 177.5 feet: joint, 38.7 degree dip, open, tight -- @ 177.6 feet: joint, 21.8 degree dip, open, tight -- @ 177.8 feet: fracture, 31 degree dip, open, tight -- @ 178.3 feet: thin SAND lens, gray, very loose, saturated, fine sand -- @ 178.5 feet: silty sandstone, same. Joint, 38.7 degree dip, open, tight -- @ 178.8 feet: joint, 58 degree dip, open, tight -- @ 178.9 feet: joint, 21.8 degree dip, open, tight -- @ 179.3 feet: joint, 45 degree dip, open, tight -- @ 179.4 feet: shear, 31 degree dip, clay-lined, polished surfaces			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38p

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		19	100		-- @ 179.5 feet: thin SILTSTONE interbed, gray, highly fractured, hard, thinly bedded, 0.4 feet thick. Bedding, 38.7 degree dip, at contact with silty sandstone above -- @ 179.9 feet: bedding, 38.7 degree dip, at silty sandstone contact.		68	CDR = 17/5
-125085					-- @ 179.9 feet: joint, 61 degree dip, open, tight -- @ 180 feet: joint, 71.6 degree dip, open, tight -- @ 180.4 feet: joint, 50.2 degree dip, open, tight -- @ 180.6 feet: joint, 71.6 degree dip, open, tight -- @ 180.8 feet: silty sandstone becomes very soft, very weakly cemented -- @ 181 feet: becomes moderately well cemented, moderately soft -- @ 181.2 feet: joint, 38.7 degree dip, open, tight -- @ 181.3 feet: joint, 45 degree dip, open, tight -- @ 181.4 feet: joint, 38.7 degree dip, open, tight -- @ 182.1 feet: joint, 21.8 degree dip, open, tight -- @ 182.4 feet: joint, 38.7 degree dip, open, tight -- @ 182.7 feet: joint, 31 degree dip, open, tight -- @ 182.8 feet: joint, 38.7 degree dip, open, tight -- @ 183.2 feet: joint, 38.7 degree dip, open, tight -- @ 182.3 feet: joint, 38.7 degree dip, open, tight -- @ 183.5 feet: becomes very soft, very weakly cemented			
			100		-- @ 183.6 feet: shear, 21.8 degree dip, clay-lined, polished surfaces -- @ 183.8 feet: shear, 21.8 degree dip, clay-lined, polished surfaces. Joint, 50.2 degree dip, open, tight -- @ 184.1 feet: joint, 58 degree dip, open, tight -- @ 184.2 feet: silty sandstone becomes moderately soft to moderate, moderately well to well-cemented		63	CDR = 23/3
-124590					-- @ 184.6 feet: grades into coarse-grained SANDSTONE, moderate, well-cemented. shear, 54.5 degree dip, silt and clay-lined, polished surfaces -- @ 184.8 feet: shear, 58 degree dip, clay-lined, polished surfaces			
		20	100		-- @ 185 feet: becomes SILTY SANDSTONE, moderate, well-cemented, fine to medium grained. Joint, 63.4 degree dip, open, tight -- @ 185.3 feet: joint, 50.2 degree dip, open, tight -- @ 185.8 feet: joint, 21.8 degree dip, open, tight -- @ 186.3 feet: shear, horizontal, clay-lined, polished surfaces -- @ 186.9 feet: joint, 50.2 degree dip, open, tight -- @ 187.3 feet: shear zone, multiple shears, clay-lined polished surfaces, extends to 187.6 feet. Joint, 38.7 degree dip, open, tight		65	CDR = 8/2
			100		-- @ 188.5 feet: joint, 21.8 degree dip, open, tight		42	CDR = 18/5
					-- @ 188.7 feet: thick SILTSTONE interbed, gray, unweathered, moderately fractured, hard, thinly bedded, 3.4 feet thick. Joint, 45 degree dip, open, tight, silt-lined -- @ 188.8 feet: joint, 50.2 degree dip, open, tight, calcium carbonate lined. Bedding, 31 degree dip, tight			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38q

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-124095					-- @ 189.4 feet: bedding, 38.7 degree dip, tight -- @ 190 feet: bedding, 38.7 degree dip, tight -- @ 190.3 feet: bedding, 38.7 degree dip, tight -- @ 190.4 feet: joint, 21.8 degree dip, open, tight -- @ 190.9 feet: bedding, 38.7 degree dip, tight -- @ 191.7 feet: siltstone becomes soft (very stiff), brittle			
					-- @ 192.1 feet: bedding, 45 degree dip, tight, at contact with SILTY SANDSTONE. Silty sandstone is gray, unweathered, slightly fractured, moderate to moderately hard, very well cemented, fine to medium grained -- @ 192.8 feet: general bedding, 21.8 degree dip, tight -- @ 192.9 feet: joint, 54.5 degree dip, open, tight -- @ 195 feet: joint, 45 degree dip, open, tight -- @ 195.5 feet: joint, 38.7 degree dip, open, tight -- @ 197.4 feet: joint, 50.2 degree dip, open, tight -- @ 197.8 feet: joint, 38.7 degree dip, open, tight -- @ 198.6 feet: joint, 50.2 degree dip, open, tight			
		21	100				82	CDR = 16/5
-123300					-- @ 200.3 feet: joint, 52.4 degree dip, open, 1/8 inch wide, clay-lineed			
					-- @ 201.9 feet: joint, 70.3 degree dip, open, tight			
					-- @ 202.9 feet: jont, 45 degree dip, open, tight			
					Total depth = 203.5 feet No groundwater encountered Backfilled with CETCO high solids Volclay grout and capped with soil Note: Core sample diameter: 2.5 inches. Coring completed using wire line method			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38r

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					Drilling Fluids Used: **<=100 gallons fluid loss:** Normal conditions; water and CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer and/or CETCO Super Pac Drilling Fluid Enhancer polymer. **100 - 500 gallons fluid loss:** Minor fluid loss conditions; water, CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer or CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, and/or CETCO high solids Volclay grout.			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-2

PLATE A-38s

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Date Drilled:	4/25/01	Water Depth:	>123.5 feet
Drilled By:	Jet Drilling	Date Measured:	4/25/01
Drilling Method:	Core Nx Bit 3.25 in.	Elevation:	1291.0 feet
Logged By:	JLH,TAH	Reference Datum:	B+E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
			0		**COLLUVIUM:**		0	CDR = 30/12
-1290-					**Silty Sand (SM):** yellowish-brown, dry, loose to medium dense, fine to medium sand, silt content approximately 20%, contains fine to coarse angular to sub-rounded sandstone gravel to cobble clasts, thinly to thickly bedded			
5								
-1285-								
			0				0	

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39a

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1280-								
		1	100		**BEDROCK - Chatsworth Formation (Kcs):** **SANDSTONE:** yellowish-brown, highly to moderately weathered, moderately fractured, moderately hard to hard, slightly to moderately well-cemented (silica and iron oxidation cementation), some iron oxidation stains -- @ 13 feet: fracture -- @ 13.2 and 13.3 feet: fractures -- @ 13.4 feet: fracture -- @ 13.7 feet: fracture -- @ 13.9 feet: fracture -- @ 14.2 feet: fracture -- @ 14.5 feet: slightly weathered -- @ 14.6 feet: fracture		45	CDR = 12/5
15								
-1275-								
		1 2	100		-- @ 19 feet: color changes to brownish-gray/gray (gradational color shift from 19 feet to 22 feet)		70	CDR = 6/5
20								
-1270-								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39b

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		2	100		-- @ 22 feet: color changes to gray, unoxidized		70	CDR = 8/5
					-- @ 23 feet: color shifts back to yellowish-brown, oxidized			
25					-- @ 25 feet: joint, 76 degree dip, open, tight, clay-lined			
-1265-								
		2 3	100		-- @ 26.8 feet: color changes to gray (unoxidized), silica cement -- @ 27.4 feet: very well cemented, hard		70	CDR = 10/5
					-- @ 28.4 feet: color changes to yellowish-brown, moderately hard			
30					-- @ 29.8 feet: color changes to gray (unoxidized), very well cemented, very hard, silica cement			
-1260-					-- @ 30.8 feet: well cemented, hard -- @ 31 feet: faint iron oxidation staining			
		3	100				70	CDR = 10/5

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39c

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
35								
-1255-					-- @ 35.8 feet: bedding in sandstone, 34 degree dip angle, closed			
		3 4	100				60	CDR = 10/5
					-- @ 39.3 feet: joint, open, tight -- @ 39.5 feet: joint, open, tight -- @ 39.7 feet: joint, clay-lined, conjugate joint sets			
40					-- @ 40.1 feet: joint, open, tight -- @ 40.3 feet: joint, open, tight -- @ 40.4 feet: joint, thin SILTSTONE bed, moderately cemented, oxidized, 0.2 feet thick			
-1250-					-- @ 41.3 feet: joint, open, tight -- @ 41.5 feet: joint, open, tight			
		4	100				65	CDR = 9/5
					-- @ 42.6 feet: joint, open, tight -- @ 42.9 feet: joint, open, tight			
					-- @ 43.5 feet: joint, open, tight			
					-- @ 44.2 feet: joint, open, tight -- @ 44.3 feet: joint, open, tight -- @ 44.5 feet: joint, open, tight			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39d

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
45					-- @ 45 feet: joint, open, tight -- @ 45.3 feet: 2 conjugate joints, open, tight			
-1245-					-- @ 45.8 feet: joint, open, tight			
					-- @ 46.5 feet: joint, open, tight			
		4 5	100		-- @ 46.9 feet: joint, open, tight -- @ 47.5 feet: joint, open, tight		74	CDR = 7/5
					-- @ 48.5 feet: joint, open, tight			
50					-- @ 49.9 feet: 2 conjugate joints, open, tight			
					-- @ 50.5 feet: joint, open, tight			
-1240-					-- @ 50.9 feet: thin SILTSTONE bed -- @ 51.2 feet: joint, open, tight -- @ 51.3 feet: joint, open, tight -- @ 51.5 feet: joint, open, tight -- @ 51.8 feet: joint, open, tight			
		5 6	100		-- @ 52 feet: joint, open, tight		68	CDR = 22/5
					-- @ 52.9 feet: joint, open, tight -- @ 53.3 feet: joint, open, tight			
					-- @ 54.2 feet: joint, open, tight -- @ 54.6 feet: joint, open, tight			
55					-- @ 55 feet: fracture, thin SILTSTONE interbed, medium gray -- @ 55.2 feet: joint, open, tight -- @ 55.3 feet: joint, open, tight -- @ 55.6 feet: joint, open, tight -- @ 55.8 feet: joint, open, tight			
-1235-								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39e

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 56 feet: thin CLAY bed, 1-inch thick, fracture, open, tight			
		6	100		-- @ 57 feet: fracture, from 57 to 61.6 feet: 8 sets of parallel to sub-parallel joints in unoxidized fine to coarse sandstone		74	
					-- @ 57.8 feet: joint, open, tight			
					-- @ 58.8 feet: joint, open, tight -- @ 59 feet: joint, open, tight			
60					-- @ 59.8 feet: joint, open, tight -- @ 60 feet: joint, open, tight			
-1230-					-- @ 60.5 feet: joint, open, tight -- @ 60.8 feet: joint, open, tight			
					-- @ 61.6 feet: joint, open, tight			
		7	100		-- @ 62.2 feet: joint, open, tight -- @ 62.3 feet: 2 conjugate joints, open, tight		73	CDR = 8/5
					-- @ 64 feet: thin SILTSTONE interbed			
65								
-1225-					-- @ 65.6 feet: joint, open, tight			
		7 8	100				70	CDR = 10/5

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39f

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 67.7 feet: joint, open, tight			
					-- @ 69 feet: joint, open, tight -- @ 69.3 feet: joint, open, tight			
70					-- @ 69.9 feet: joint, open, tight -- @ 70.3 feet: joint, open, tight			
-1220-								
		8	84		-- @ 72 feet: fracture, well cemented sandstone predominantly -- @ 72.5 feet: joint, open, tight		57	CDR = 10/5
					-- @ 73.7 feet: joint, open, tight			
					-- @ 74.2 feet: joint, open, tight -- @ 74.4 feet: thin CLAY bed, lost 25 gallons drilling fluids to formation. joint, open, tight			
75					-- @ 75.5 feet: joint, open, tight -- @ 75.8 feet: joint, open, tight			
-1215-					-- @ 76.2 feet: joint, open, tight			
		8 9	100		-- @ 76.8 feet: joint, open, tight -- @ 77.2 feet: joint, open, tight		60	CDR = 10/5
					-- @ 77.8 feet: sheared clay bed, 1/16 inch thick, polished surfaces -- @ 78.2 feet: joint, open, tight -- @ 78.5 feet: sheared clay bed, 1 inch thick, polished surfaces -- @ 78.6 feet: joint, open, tight -- @ 78.8: pebbly sandstone layer, 2-inches thick, highly			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39g

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					fractured, extends to 79 feet -- @ 79.3 feet: joint, open, tight -- @ 79.5 feet: joint, open, tight			
80								
					-- @ 80.5 feet: joint, open, tight -- @ 80.8 feet: joint, open, tight			
-1210-								
					-- @ 81.8 feet: joint, open, tight			
		9	100				70	CDR = 10/5
					-- @ 82.6 feet: joint, open, tight -- @ 82.9 feet: joint, open, tight -- @ 83 feet: joint, open, tight -- @ 83.4 feet: joint, open, tight			
					-- @ 83.9 feet: joint, open, tight			
					-- @ 84.7 feet: joint, open, tight -- @ 84.8 feet: joint, open, tight -- @ 85.1 feet: joint, open, tight			
85								
					-- @ 85.8 feet: joint, open, tight -- @ 86.1 feet: joint, open, tight			
-1205-								
		10	100		-- @ 86.8 feet: shear, open, 1/16 inch thick, clay-lined, polished surfaces		51	CDR = 7/5
					-- @ 87.6 feet: joint, 51 degree dip, open, tight			
					-- @ 88.4 feet: joint, 70 degree dip, open, tight			
					-- @ 88.9 feet: shear,open, 1/16 inch thick, clay-lined, polished surfaces -- @ 89 feet: very weakly cemented, highly fractured, faint iron oxidation stains -- @ 89.3 feet: shear, open, 1/8 inch thick, clay-lined, polished surfaces -- @ 89.8 feet: moderately well to well cemented, silica cement -- @ 90.6 feet: shear, open, 1/8 inch thick, clay-lined, polished surfaces			
90								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39h

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1200-					-- @ 90.8 feet: joint, open, tight -- @ 91.2 feet: fracture -- @ 91.4 feet: joint, 26.6 degree dip, open, tight			
			93		-- @ 92 feet: joint, closed, tight, silica cemented, well-healed -- @ 92.3 feet: joint, open, tight -- @ 92.5 feet: joint, open, tight -- @ 92.7 feet: joint, open, tight -- @ 93 feet: joint, open, tight -- @ 93.3 feet: 2 conjugate joints, open, tight -- @ 93.5 feet: joint, open, tight -- @ 93.8 feet: joint, open, tight -- @ 93.9 feet: joint, open, tight -- @ 94.2 feet: joint, closed, tight, sand filled, silica cement -- @ 94.4 feet: joint, open, tight		20	CDR = 10/5
95					-- @ 94.8 feet: joint, open, tight -- @ 94.9 feet: joint, open, tight -- @ 95.2 feet: sandstone is weakly cemented, highly fractured -- @ 95.4 feet: joint, open, tight			
-1195-					-- @ 95.6 feet: joint, open, tight -- @ 96.5 feet: sandstone is well cemented			
		11	100		-- @ 97.4 feet: joint, open, tight -- @ 97.5 feet: joint, open, tight -- @ 98.8 feet: thin CLAY bed, 1-inch thick		68	CDR = 8/5
100					-- @ 100.2 feet: joint, open, tight -- @ 100.3 feet: CLAY bed, thinly bedded, internally sheared, 0.5 feet thick			
-1190-					-- @ 101 feet: becomes well cemented silty sandstone, light to medium gray, fine to medium-grained. joint, open, tight -- 101.5 feet: joint, open, tight			
			100				65	CDR = 7/5

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Chatsworth Ridge Estates
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Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39i

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 103.5 feet: joint, open, tight -- @ 103.8 feet: joint, open, tight -- @ 104.2 feet: joint, open, tight			
105								
					-- @ 105.3 feet: thin CLAY bed, thinly bedded, 0.25 feet thick			
-1185-					-- @ 106 feet: CLAYSTONE bed, 1 foot thick, contains intermittent thin layers of silica cemented siltstone, medium gray, very soft (medium stiff), no shears observed, thinly bedded, contact with silty sandstone above is polished			
		12	95		-- @ 107 feet: SANDSTONE, well cemented -- @ 107.5 feet: joint, open, tight		41	CDR = 10/5
					-- @ 108 feet: joint, open, tight -- @ 108.3 feet: joint, open, tight -- @ 108.6 feet: joint, open, tight -- @ 108.8 feet: joint, open, tight -- @ 108.9 feet: joint, open, tight -- @ 109 feet: joint, open, tight -- @ 109.2 feet: joint, open, tight -- @ 109.5 feet: joint, open, tight			
110					-- @ 110 feet: joint, open, tight -- @ 110.3 feet: joint, open, tight -- @ 110.5 feet: joint, open, tight			
-1180-					-- @ 110.9 feet: joint, open, tight			
					-- @ 111 feet: CLAYSTONE interbed, estimated 1 foot thick, thinly bedded, polished surface along bedding at 111 feet.			
			85		-- @ 112 feet: SILTY SANDSTONE, highly fractures, gray -- @ 112.2 feet: joint, open, tight -- @ 112.3 feet: joint, open, tight -- @ 112.7 feet: joint, open, tight -- @ 112.8 feet: joint, open, tight -- @ 113 feet: joint, open, tight -- @ 113.4 feet: joint, open, tight -- @ 113.6 feet: joint, open, tight		38	CDR = 13/5

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39j

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 113.8 feet: joint, open, tight -- @ 114 feet: severely fractured zone, 1 foot thick			
115					-- @ 115.3 feet: fracture, open, tight -- @ 115.5 feet: fracture, open, tight			
-1175-					-- @ 116 feet: uncemented sandstone zone, 1 foot thick			
					-- @ 117 feet: lost 366 gallons drilling fluids to formation			CDR = 24/5
		13	77		-- @ 118 feet: joint, open, 1/8 inch wide -- @ 118.2 feet: sandstone becomes well cemented -- @ 118.4 feet: joint, open, tight -- @ 118.6 feet: joint, open, tight -- @ 118.7 feet: joint, open, tight -- @ 118.9 feet: bedding, open, tight -- @ 119.1 feet: bedding, open, tight		43	
120					-- @ 119.8 feet: bedding, open, tight -- @ 119.9 feet: bedding, open, tight -- @ 120 feet: bedding, open, tight -- @ 120.2 feet: bedding, open, tight -- @ 120.5 feet: bedding, open, tight. joint, open, tight			
-1170-					-- @ 121 feet: thin clay bed, 1-inch thick and then back into silty sandstone			
			100		-- @ 121.8 feet: bedding, open, tight -- @ 121.9 feet: thin clay bed, 1-inch thick -- @ 122 feet: back into silty sandstone		61	CDR = 5/1.5
					-- @ 122.7 feet: bedding, open, tight -- @ 122.8 feet: bedding, open, tight			

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Chatsworth Ridge Estates
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Los Angeles County, CA

LOG OF BORING C-3

PLATE A-39k

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					Total depth = 123.5 feet No groundwater encountered backfilled with Volclay high solids grout Note: Core sample diameter: 2 inches. Coring completed using hard line method			

Drilling Fluids Used:

<u></=100 gallons fluid loss:</u> Normal conditions; water and CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer and/or CETCO Super Pac Drilling Fluid Enhancer polymer.

<u>100 - 500 gallons fluid loss:</u> Minor fluid loss conditions; water, CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer or CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, and/or CETCO high solids Volclay grout.

<u>500 - 2000 gallons fluid loss:</u> Major fluid loss conditions; water, CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, CETCO high solids Volclay grout, cellophane chips, wood chips/sawdust, Forta Drag Net Fiber (or CETCO Macro-Fill polymer).

Date Drilled:	6/7/01	Water Depth:	>109 feet
Drilled By:	Jet Drilling	Date Measured:	6/11/01
Drilling Method:	Core HQ 3.75 in	Elevation:	1296 feet
Logged By:	A. Harding	Reference Datum:	B+E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					BEDROCK - Chatsworth Formation (Kcs):			CDR = 12/3.5
		1	83		**SILTY SANDSTONE:** yellowish-brown, highly to moderately weathered, moderately fractured, very soft to moderately soft, slightly to moderately cemented, silica and iron oxide cement, fine to medium sand		54	
-1295-					-- @ 0.6 feet: highly weathered, uncemented; joint, top of recovered core			
			98				67	CDR = 19/5
					-- @ 4 feet: joint, 62.5 degree dip, closed, 1/8 inch wide, sand filled -- @ 4.4 feet: joint, 25.6 degree dip, open, tight -- @ 4.5 feet: joint, 25.6 degree dip, closed, 1/16 inch wide, sand filled			
5					-- @ 4.6 feet: joint, 25.6 degree dip, open, 1/16 inch wide			
-1290-								
					-- @ 6.8 feet: increased cementation, moderate to well cemented, moderate to hard			
		1 2	98				68	CDR = 20/5
					-- @ 9.2 feet: bedding, 43.8 degree dip, open, 1/8 inch wide, calcium carbonate development, small roots			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40a

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1285-					-- @ 10.1 feet: becomes moderately cemented, moderate -- @ 10.15 feet: bedding, 25.6 degree dip, open, 1/16 inch wide -- @ 10.7 feet: bedding, open, tight			
					-- @ 11.7 feet: bedding, 25.6 degree dip, open, tight, roots, small			
					-- @ 12.3 feet: joint, 25.6 degree dip, open, tight -- @ 12.5 feet: joint, 55.2 degree dip, open, 1/16 inch wide			
		2	100		-- @ 13.3 feet: joint, 25.6 degree dip, open, tight -- @ 13.6 feet: bedding, 25.6 degree dip, open, tight -- @ 13.85 feet: bedding, 25.6 degree dip, open, tight		56	CDR = 22/5
					-- @ 14.25 feet: joint, 43.8 degree dip, open, tight -- @ 14.4 feet: becomes moderately well cemented			
15					-- @ 15 feet: joint, open, 1/16 inch wide, sand/clay lined, small root in joint			
-1280-					-- @ 15.9 feet: joint, 43.8 degree dip, open, tight -- @ 16.1 feet: joint, 43.8 degree dip, open, 1/16 inch wide -- @ 16.5 feet: joint, 43.8 degree dip, open, 1/16 inch wide -- @ 16.6 feet: joint, 43.8 degree dip, open, tight			
		3	100		-- @ 17.9 feet: bedding, 25.6 degree dip, open, tight -- @ 18 feet: joint, 43.8 degree dip, open, tight -- @ 18.2 feet: bedding, 25.6 degree dip, open, tight -- @ 18.4 feet: joint, end of shoe -- @ 18.5 feet: becomes well cemented, well graded, sandstone is moderate, core is solid to 20 feet -- @ 19 feet: becomes very well cemented -- @ 19.1 feet: bedding, 13.5 degree dip, closed, no break		86	CDR = 22/5
20					-- @ 19.2 feet: light olive-brown, slightly weathered, slightly fractured, hard, fine to medium grained, thickly bedded. Bedding, 73.2 degree dip -- @ 19.35 feet: bedding, closed, 25.6 degree dip, no break			
-1275-					-- @ 20 feet: joint, open, 1/16 inch wide, sand/silt and clay lined, oxidized along joint faces, core is solid			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40b

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		3 4	100		-- @ 23.7 feet: joint, 62.5 degree dip, open, 1/16 inch wide		58	CDR = 35/5
25					-- @ 24.9 feet: joint, 55.2 degree dip, open, 1/16 inch wide, sand and silt lined -- @ 25 feet: joint, 25.6 degree dip, open, tight, sand lined			
-1270-					-- @ 26 feet: joint, 55.2 degree dip, open, 1/8 inch wide, sand and silt filled -- @ 26.3 feet: joint, 55.2 degree dip, tight -- @ 26.5 feet: bedding, open, tight; thin SILTSTONE interbed, gray, unoxidized, hard, 0.1 feet thick -- @ 26.6 feet: silty sandstone becomes moderate -- @ 26.7 feet: thin SIILTSTONE interbed, gray, unoxidized, hard, 0.1 feet thick -- @ 27.1 feet: joint, closed, tight, well healed, 25.6 degree dip -- @ 27.2 feet: thin SILTSTONE interbed, gray, hard, 0.1 feet thick			
		4	98		-- @ 27.3 feet: silty sandstone becomes moderate to soft, contains rip up clasts to 28.5 feet -- @ 27.6 feet: color changes to yellowish-brown. Shear, open, 1/8 inch wide, clay lined, polished surfaces -- @ 28 feet: silty sandstone becomes soft -- @ 28.5 feet: Silty sandstone becomes slightly weathered to unweathered, moderate, moderately fractured, thickly bedded, graded. Joint, end of shoe		77	CDR = 19/5
30					-- @ 28.6 feet: solid core to 31.5 -- @ 29.2 feet: joint, 25.2 degree dip, closed, tight, well healed, no break			
-1265-					-- @ 29.9 feet: becomes gray, unweathered, unoxidized, moderately hard -- @ 30.35 feet: bedding, closed, no break, 50.2 degree dip -- @ 30.75 feet: color changes to light yellowish-brown -- @ 31.5 feet: joint, open, 1/4 inch wide, sand filled -- @ 32.1 feet: joint, 43.8 degree dip, open, 1/16 inch wide, -- @ 32.2 feet: joint, 43.8 degree dip, open, 1/16 inch wide. conjugate joint, 25.2 degree dip			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40c

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		4 5	100		-- @ 32.6 feet: color changes to gray -- @ 32.9 feet: bedding, 25.2 degree dip, open, tight -- @ 33.5 feet: color changes to light olive brown, well to very well cemented -- @ 33.8 feet: joint, 70.9 degree dip, open, tight		38	CDR = 32/5.2
35					-- @ 35.2 feet: joint, 55.2 degree dip, open, tight -- @ 35.5 feet: joint, open, 1/16-1/8 inch wide, sand filled/no filling			
-1260-					-- @ 35.7 feet: fracture, 67.4 degree dip, open, 1/8-3/4 inch wide -- @ 35.8 feet: joint, open, 1/8 inch wide, sand filled			
					-- @ 36 feet: SHALE bed, 0.5 feet thick, gray, unweathered, unoxidized, thinly bedded. joint, 43.2 degree dip, open, 1/8 inch wide, sand filled -- @ 36.5 feet: shear, open, 1/8-1/4 inch wide, clay lined, polished surfaces, thinly bedded, internally sheared			
					-- @ 36.5 feet: becomes silty sandstone again, well-cemented -- @ 36.6 feet: joint, 55.2 degree dip, open, 1/8 inch wide, sand lined			
		5	94		-- @ 37.4 feet: sheared bedding, 43.8 degree dip, open, 1/16 inch wide, internally sheared. shear, open, 1/16 inch wide, clay lined, polished surfaces		73	CDR = 28/5.1
					-- @ 37.5 feet: SHALE, internally sheared, 0.2 feet thick			
40					-- @ 37.7 feet: joint, 43.8 degree dip, open, 1/16 inch wide -- @ 37.9 feet: shear, open, tight, clay lined, polished surfaces, sheared bedding			
-1255-					-- @ 38 feet: SHALE bed, internally sheared, 0.3 feet thick. -- @ 38.1 feet: shear, open, tight, clay lined, polished surfaces, sheared bedding			
					-- @ 38.3 feet: becomes silty sandstone again, light olive-brown, well cemented, silica cement fine to medium grained -- @ 38.7 feet: olive-brown/gray, slightly weathered, moderately fractured, very well cemented, fine to medium grained, hard			
					-- @ 40.9 feet: SHALE interbed, 0.2 feet thick. sheared bedding, open, 1/16 inch wide, clay lined, polished.			
		5 6	100		-- @ 41.1 feet: becomes silty sandstone, color changes to gray, becomes unoxidized, hard, fine to medium grained, very well cemented. -- @ 41.5 feet: joint, 55.2 degree dip, tight, calcium		89	CDR = 27/5.2

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40d

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
45					carbonate filled, well healed, no break -- @ 41.7 feet: fracture, 25.2 degree dip, open, 1/16 inch wide, iron oxidation stains -- @ 41.8 feet: shear, 62.5 degree dip, open, 1/16 inch wide, clay lined, polished			
-1250-					-- @ 42.1 feet: SHALE interbed, 0.2 feet thick			
					-- @ 42.9 feet: SHALE interbed, 0.2 feet thick. sheared bedding, 25.2 degree dip, open, 1/16 inch wide, clay lined, polished			
					-- @ 43.1 feet: becomes silty sandstone again. gray, moderately hard, bedding, 25.2 degree dip, open, 1/16 inch wide.			
					-- @ 46.4 feet: SILTSTONE interbed, thinly bedded, gray, hard, 0.3 feet thick -- @ 46.5 feet: bedding, 43.8 degree dip, open, 1/16 inch wide			
					-- @ 46.7 feet: becomes silty sandstone again, gray, unweathered, modeately hard to hard, very well cemented			
		6	100		-- @ 47.2 feet: joint, 43.8 degree dip, open, 1.8 inch wide, sand and clay lined -- @ 48.2 feet: shear, 43.8 degree dip, open, 1/16 inch wide, clay lined, polished surfaces		59	CDR = 28/5
50					-- @ 49 feet: some faint zones of iron oxidation staining, moderately fractured, hard to moderately hard -- @ 49.5 feet: joint, 70.9 degree dip, open, 1/16 inch wide, rough			
-1245-					-- @ 50.9 feet: joint, 73.4 degree dip, open, tight			
					-- @ 51.6 feet: bedding, 43.8 degree dip, open, 1/8 inch wide, iron oxidation stains along bedding contacts -- @ 51.8 feet: joint, 67.4 degree dip, open, 1/16 inch wide			
					-- @ 53.2 feet: joint, 55.2 degree dip, open, 1/16 inch wide -- @ 53.3 feet: bedding, 25.2 degree dip, open, tight, prominently oxidized along bedding surfaces			
		6 7	100				77	CDR = 25/5
55					-- @ 55.3 feet: color becomes light yellowish-brown/gray, slightly weathered, hard to moderately hard, well cemented. joint, 43.8 degree dip, open, sand and clay lined			
-1240-								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40e

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 55.5 feet: joint, 50.2 degree dip, open, 1/16 inch wide			
					-- @ 57 feet: joint, 55.2 degree dip, extends along edge of core, open, oxidized along joint surfaces			
		7	100		-- @ 58.7 feet: joint, 43.8 degree dip, open, 1/16 inch wide		53	CDR = 25/5
60					-- @ 59.6 feet: joint, 62.5 degree dip, open, 1/16 inch wide, clay lined/no filling			
-1235-					-- @ 60.3 feet: joint, 75.4 degree dip, open, 1/16 inch wide, sand lined. -- @ 60.6 feet: joint, 55.2 degree dip, closed, 1/16 inch wide, clay and sand filled			
					-- @ 61.5 feet: joint, open, tight			
		7 8	100		-- @ 62.8 feet: SHALE interbed, gray, thinly bedded, internally sheared, 0.5 feet thick, breaks with moderate difficulty along bedding. -- @ 62.95 feet: bedding, 25.6 degree dip, open, tight, clay lined. Sheared bedding, closed, polished surfaces -- @ 63.2 feet: sheared bedding, 25.6 degree dip, 1/16 inch wide		70	CDR = 31/5
					-- @ 63.3 feet: becomes silty sandstone again, color becomes gray, unoxidized, hard -- @ 63.6 feet: joint, 43.8 degree dip, open, tight			
65					-- @ 65 feet: SHALE bed, internally sheared, 0.8 feet thick. bedding, 13.5 degree dip, closed, tight, clay lined -- @ 65.05 and 65.4 feet: 2 bedding planes, 25.6 degree dip, open, tight, clay lined. joint, 25.3 degree dip, open, tight. shear, 25.6 degree dip, open, tight, clay lined, polished, sheared bedding. @ 65.75 feet: bedding, 25.6 degree dip, open, tight, clay lined. sheared bed, open, tight, clay lined			
-1230-					-- @ 66.2 feet: joint, 43.8 degree dip, open, tight, iron oxidation stains along joint faces			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40f

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		8 9	100		-- @ 68 feet: light yellowish-brown, well cemented, moderately hard to moderate -- @ 68.2 feet: joint, 55.2 degree dip, open, 1/16 inch wide, iron oxidation along joint faces -- @ 68.85 feet: bedding, 35.8 degree dip, bottom of recovered core			CDR = 19/5
70 -1225-					-- @ 69.4 feet: SHALE bed, gray, thinly bedded, brittle, internally sheared, 0.9 feet thick. shear, closed, tight, polished -- @ 69.5 feet: shear, 69.5 degree dip, open, tight, polished, clay lined. companion shear bed, open, tight, clay lined, polished -- @ 69.6 feet: sheared bed, 25.6 degree dip, open, tight, clay lined, polished shear bed -- @ 70.2 feet: sheared bed, 25.6 degree dip, open, tight, clay lined, polished surfaces, shear bed -- @ 70.3 feet: SILTY SANDSTONE becomes moderately fractured, well cemented, moderate to soft -- @ 70.7 feet: joint, 43.8 degree dip, open, tight, sand lined -- @ 70.9 feet: joint, 43.8 degree dip, open, tight, sand lined -- @ 71.4 feet: joint, 43.8 degree dip, open, tight, sand and clay lined, oxidized surfaces -- @ 71.5 feet: joint, 55.2 degree dip, open, tight, clay lined, polished, some iron oxidation along surfaces -- @ 71.6 feet: shear, open, tight, sand and clay lined, polished, some iron oxidation along surfaces -- @ 72.1 feet: joint, 43.8 degree dip, open, tight, sand lined, oxidized surfaces -- @ 72.4 feet: joint, 50.2 degree dip, open, tight, sand lined, iron oxidized surfaces -- @ 72.5 feet: joint, 43.8 degree dip, open, tight, sand lined, oxidized surfaces. conjugate joint, 69.3 degree dip, open, 1/8 inch wide, sand filled, oxidized -- @ 72.8 feet: becomes highly fractured, weak, moderately well cemented, soft. joint, 77.0 degree dip, open/closed, 1/8-1/4 inch wide, sand filled/silt filled, partially healed -- @ 73.2 feet: joint, 62.5 degree dip, open, 1/16 inch wide -- @ 73.3 feet: joint, 62.5 degree dip, open, tight -- @ 73.5 feet: joint, 43.8 degree dip, open, tight -- @ 73.8 feet: joint, end of recovered core -- @ 74 feet: becomes gray, unweathered, hard, very well cemented, slightly fractured. joint, top of recovered core.			
75 -1220-		9	100				50	CDR = 25/5
		9	96		-- @ 74.3 feet: SHALE bed, gray, thinly bedded, internally sheared, moderately fractured, hard, brittle, 1.1 feet thick -- @ 74.5 feet: sheared bedding, 25.6 degree dip open, tight, clay lined, polished,		40	CDR = 25/5

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40g

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		10			-- @ 74.75 feet: sheared bedding, 25.6 degree dip, open, 1/16 inch wide, clay lined, polished -- @ 74.9 feet: sheared bedding, 25.6 degree dip, open, 1/16 inch wide, clay lined, polished -- @ 75 feet: sheared bedding, 25.6 degree dip, open, tight, clay lined, polished -- @ 75.2 feet: sheared bedding, 25.6 degree dip, open, tight, clay lined, polished			
80					-- @ 75.4 feet: becomes SILTY SANDSTONE -- @ 77.4 feet: plastic deformation zone, flame structures, 0.4 feet thick -- @ 77.9 feet: joint, 77.0 degree dip, closed, 1/16 inch wide, sand filled -- @ 79 feet: joint, 75.4 degree dip, open, 1/16-1/8 inch wide, no filling/sand lined -- @ 79.7 feet: sheared bedding, 25.6 degree dip, open, tight, clay lined, polished			
-1215-					-- @ 79.8 feet: SHALE bed, 0.6 feet thick. shear bedding, 25.6 degree dip, open, 1/16 inch wide, clay lined, polished -- @ 80.1 feet: sheared bedding, 25.6 degree dip, open, 1/16 inch wide, clay lined, polished			
		10	100		-- @ 81 feet: joint, 67.4 degree dip, closed, tight, sand filled, well healed, cemented -- @ 81.5 feet: joint, 67.4 degree dip, open, 1/16-1/4 inch wide. shear, 55.2 degree dip, closed, 1/8 inch wide, clay filled, cemented, well healed		82	CDR = 33/5
85					-- @ 82.3 feet: SHALE interbed, 0.3 feet thick -- @ 82.4 feet: sheared bedding, 25.6 degree dip, open, tight, clay lined, polished -- @ 82.5 feet: sheared bedding, 55.2 degree dip, open, 1/16 inch wide, clay lined, polished			
-1210-					-- @ 83 feet: SILTSTONE interbed, thinnly bedded, hard, unoxidized, gray, 0.1 feet thick. sheared bedding, open, tight, clay lined, polished. -- @ 83.4 feet: sheared bedding, 43.8 degree dip, open, 1/16 inch wide, clay lined, polished			
					-- @ 83.6 feet: SHALE interbed,dark charcoal gray/black, 0.4 feet thick. sheared bedding, 25.6 degree dip, open, tight, clay lined, polished. highly sheared internally.			
		10 11	100		-- @ 84 feet: top of recovered core, contains 5/16 inch thick shale layer. -- @ 84.15 feet: bedding, 25.6 degree dip, open, tight -- @ 84.55 feet: bedding, 35.8 degree dip -- @ 84.9 feet: bedding, 35.8 degree dip, open, tight -- @ 85 feet: bedding, 35.8 degree dip, open, 1/16 inch wide. core solid to 85.8 feet		49	CDR = 33/5
90					-- @ 89.8 feet: CLAY bed, gray, stiff, internally sheared, 0.3 feet thick. sheared bedding, 25.6 degree dip, open, tight, clay lined, polished -- @ 90.1 feet: becomes silty sandstone again, graded			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40h

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
-1205-					-- @ 90.3 feet: joint, 43.8 degree dip, open, 1/16 inch wide, sand lined.			
					-- @ 92.2 feet: joint, 25.6 degree dip, open, tight -- @ 92.4 feet: joint, 25.6 degree dip, open, tight -- @ 92.5 feet: joint, 43.8 degree dip, open, tight -- @ 92.7 feet: joint, 67.4 degree dip, open, 1/16 inch wide, sand lined -- @ 92.9 feet: joint, 55.2 degree dip, open, 1/16 inch wide, sand lined -- @ 93.2 feet: joint, 43.8 degree dip, open, 1/8 inch wide			
		11	96		-- @ 93.4 feet: joint, 55.2 degree dip, open, 1/16 inch wide		50	CDR = 24/5
95					-- @ 94.6 feet: uncemented zone, 0.3 feet thick. joint, 25.6 degree dip, open, 1/16 inch wide, sand lined. joint, 43.8 degree dip, open, 1/16 inch wide, sand filled -- @ 94.8 feet: joint, 25.6 degree dip, open, 1/16 inch wide, sand filled. joint, 55.2 degree dip, open, tight			
-1200-					-- @ 95.3 feet: joint, 67.4 degree dip, open, tight -- @ 96.1 feet: joint, 43.8 degree dip, open, tight			
					-- @ 96.7 feet: joint, 25.6 degree dip, open, 1/16 inch wide -- @ 97 feet: lost 200 gallons drilling fluid to formation, added cellophane and sawdust			
					-- @ 98 feet: joint, 43.8 degree dip, open, tight			
		11 12	100		-- @ 98.6 feet: shear, 43.8 degree dip, open, tight to closed and 1/4 inch wide, sand lined, calcium carbonate filled, partially healed -- @ 99 feet: silty sandstone becomes moderately hard to moderate, extending to 100.5 feet		25	CDR = 22/5
100					-- @ 99.5 feet: bedding, 25.6 degree dip, open, tight. joint, 43.8 degree dip, closed, tight, sand and clay filled -- @ 100.1 feet: joint, 70.9 degree dip, open, 1/16-1/8 inch wide.			
-1195-					-- @ 100.7 feet: joint, 67.4 degree dip, open, 1/16-1/8 inch wide			
					-- @ 101.5 feet: moderate to soft, extending to 103 feet. joint, 83.4 degree dip, open, 1/16-1/4 inch wide, no filling/sand filling.			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE

A-40i

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		12	100		-- @ 103 feet: soft, uncemented/very weakly cemented to 104 feet. -- @ 103.4 feet: joint, 55.2 degree dip, open, 1/16-3/16 inch wide, no filling/sand filling -- @ 103.6 feet: shear, closed, 1/8 inch wide, sand filled and clay lined, some polished surfaces -- @ 103.9 feet: joint, end of recovered core -- @ 104 feet: becomes moderately hard extending to 107.1 feet. solid core to 105.8 feet.		43	CDR = 17/5
105								
-1190-					-- @ 105.8 feet: joint, 35.8 degree dip, open, tight -- @ 105.9 feet: joint, open, 1/16 inch wide. shear, 55.2 degree dip, open, 1/16-1/8 inch wide, clay and sand filled/sand lined, polished clay surfaces -- @ 106.3 feet: joint, 62.5 degree dip, open, 1/8 inch wide -- @ 106.5 feet: joint, 70.9 degree dip, open, tight -- @ 107.1 feet: becomes moderate extending to 107.4 feet. joint, 62.5 degree dip, closed, tight, well healed -- @ 107.4 feet: becomes moderate to soft extending to 109 feet. shear, 62.5 degree dip, open, tight, sand lined, some clay, some polished surfaces -- @ 107.6 feet: fracture, 55.2 degree dip, open, tight, related to shear at 107.4 feet -- @ 107.9 feet: fracture, 43.8 degree dip, open, tight, related to shear at 108 feet -- @ 108 feet: shear, 55.2 degree dip, open, 1/16 inch wide, sand and clay lined, polished clay surfaces -- @ 108.1 feet: joint, 43.8 degree dip, open, 1/16 inch wide -- @ 108.4 feet: joint, 55.2 degree dip, open, 1/16 inch wide, sand filled/sand lined -- @ 108.8 feet: joint, 43.8 degree dip, end of recovered core Total Depth = 109 feet No groundwater encountered Backfilled with Volclay grout, CETCO super Gel-X extra high yield Bentonite powder and Portland Cement from 109 feet to 3 feet Capped with PureGold Bentonite medium chips and soil from 3 feet to 0 feet Note: Core sample diameter: 2.5 inches. Coring completed using wire-line method			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40j

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					Drilling Fluids Used: <u></=100 gallons fluid loss:</u> Normal conditions; water and CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer and/or CETCO Super Pac Drilling Fluid Enhancer polymer. <u>100 - 500 gallons fluid loss:</u> Minor fluid loss conditions; water, CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer, CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, and/or CETCO high solids Volclay grout. <u>500 - 2000 gallons fluid loss:</u> Major fluid loss conditions; water, CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, CETCO high solids Volclay grout, cellophane chips, wood chips/sawdust, Forta Drag Net Fiber (or CETCO Macro-Fill polymer).			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-4

PLATE A-40k

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Date Drilled:	6/11/01	Water Depth:	>169.5 feet
Drilled By:	Jet Drilling	Date Measured:	6/19/01
Drilling Method:	Core HQ 3.75-in.	Elevation:	1358 feet
Logged By:	A. Harding	Reference Datum:	B+E Engineers Survey 2000

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					BEDROCK - Chatsworth Formation (Kcs):			CDR = 22/4.5
		1	78		**SILTY SANDSTONE:** Yellowish-brown, highly to moderately weathered, moderately fractured, very soft, brittle, weakly to moderately cemented, fine to medium grained, graded, all bedding plane surfaces root-lined and stained with iron oxidation to 4.5 feet -- @ 1 foot: becomes soft -- @ 1.3 feet: joint, 43.8 degree dip, open, tight, sand-lined -- @ 2.25 feet, bedding, 25.6 degree dip, open, tight -- @ 2.6 feet: becomes moderately soft -- @ 2.8 feet: joint, 62.5 degree dip, open, tight -- @ 3.45 feet: bedding, 35.8 degree dip, open, tight -- @ 3.9 feet: bedding, 25.6 degree dip, open, tight -- @ 4.15 feet: joint, 43.8 degree dip, open, tight		10	
			100		-- @ 4.5 feet: end of root-lined discontuities		49	CDR = 25/5
5					-- @ 5.05 feet: bedding, 25.6 degree dip, open, tight -- @ 5.5 feet: bedding, 25.6 degree dip, open, tight -- @ 6 feet: bedding, 25.6 degree dip, open, tight -- @ 6.5 feet: joint, 43.8 degree dip, open, tight -- @ 6.8 feet: bedding, 35.8 degree dip, open, tight -- @ 7.05 feet: bedding, 25.6 degree dip, open, tight -- @ 7.2 feet: bedding, 25.6 degree dip, open, tight -- @ 7.3 feet: bedding, 25.6 degree dip, open, tight -- @ 7.5 feet: joint, 43.8 degree dip, 1/8 inch wide, open, tight. Conjugate joint, 50.2 degree dip, open, tight -- @ 8.5 feet: becomes highly fractured -- @ 8.8 feet: bedding, 25.6 degree dip, open, tight -- @ 9 feet: bedding, 25.6 degree dip, open, tight			
		1 2	100		-- @ 9.5 feet: becomes highly to moderately fractured, moderate to moderately soft, generally increased		36	CDR = 21/5

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41a

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					cementation. Recovered core is solid, extending to 11.3 feet.			
					-- @ 11.3 feet: bedding, 25.6 degree dip, open, tight			
					-- @ 11.75 feet: becomes soft, very slightly cemented. Joint, 67.4 degree dip, open, 1/4 inch wide, sand-filled, scalloped section, sand filled			
					-- @ 12.25 feet: recovered core is solid, extending to 13.4 feet.			
					-- @ 12.4 feet: joint, 62.4 degree dip, open, tight			
					-- @ 13.4 feet: bedding, 25.6 degree dip, open, tight			
					-- @ 13.85 feet: bedding, 25.6 degree dip, open, tight			
					-- @ 13.95 feet: bedding, 25.6 degree dip, open, tight			
					-- @ 14 feet: bedding, 25.6 degree dip, open, tight			
		2	100		-- @ 14.05 feet: bedding, 25.6 degree dip, open, tight		0	CDR = 13/1.5
15					-- @ 14.5 feet: Silty sandstone becomes very soft, very slightly cemented			
			100		-- @ 14.95 feet: SILTSTONE package with interbedded CLAYSTONE, olive-brown, slightly weathered, highly fractured, moderate, brittle, thinly bedded, extends to 18.8 feet. Bedding, 25.6 degree dip, open, tight, siltstone/sandstone contact.		0	CDR = 40/3.5
					-- @ 15.25 feet: bedding, 25.6 degree dip, open, tight			
					-- @ 15.35 feet: bedding, 25.6 degree dip, open, tight			
					-- @ 15.55 feet: bedding, 25.6 degree dip, open, tight			
					-- @ 15.65 feet: bedding, 13.5 degree dip, open, tight			
					-- @ 15.85 feet: bedding, 13.5 degree dip, open, tight			
					-- @ 16 feet: bedding, 25.6 degree dip, open, tight			
					-- @ 16.3 feet: sheared bedding, 25.6 degree dip, clay-lined, polished			
					-- @ 16.5 feet: shear zone extending to 17 feet, polished throughout, multiple shears, poorly-healed, brecciated silt and clay, soft to medium stiff, wet			
					-- @ 17 feet: bedding, 25.6 degree dip, open, tight, clay-lined			
					-- @ 17.2 feet: sheared bedding, 25.6 degree dip, clay-lined, polished			
		3	97		-- @ 17.5 feet: sheared bedding, 25.6 degree dip, clay-lined, polished		26	CDR = 33/5
20					-- @ 17.9 feet: sheared bedding, 43.8 degree dip, clay-lined, polished			
					-- @ 18.25 feet: sheared bedding, 25.6 degree dip, clay-lined, polished			
					-- @ 18.4 feet: sheared bedding, 25.6 degree dip, clay-lined, polished			
					-- @ 18.6 feet: bedding, 43.8 degree dip, open, tight			

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41b

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 18.8 feet: becomes SILTY SANDSTONE again, yellowish-brown, very soft, weakly cemented, fine to medium grained -- @ 18.9 feet: bedding, 25.6 degree dip, open, tight -- @ 19.5 feet: Silty sandstone becomes soft -- @ 19.8 feet: SILTSTONE interbed, yellowish-brown/olive-brown, slightly weathered, moderate, thinly bedded, internally sheared, brittle. At silty sandstone/siltstone contact; sheared bedding, 25.6 degree dip, clay-lined, polished -- @ 19.9 feet: sheared bedding, 25.6 degree dip, clay-lined, polished -- @ 20.1 feet: sheared bedding, 25.6 degree dip, clay-lined, polished			
25		3 4	94		-- @ 20.2 feet: sheared bedding, 25.6 degree dip, clay-lined, polished -- @ 20.5 feet: sheared bedding, 25.6 degree dip, clay-lined, polished -- @ 20.6 feet: sheared bedding, 25.6 degree dip, clay-lined, polished -- @ 20.9 feet: joint, 43.8 degree dip, open, tight, clay-lined -- @ 21.1 feet: sheared bedding, 25.6 degree dip, clay-lined, polished -- @ 21.6 feet: SILTY SANDSTONE, yellowish-brown, slightly to moderately weathered, moderate, moderately well cemented, graded, breaks with moderate ease along bedding planes. Sheared bedding at contact with siltstone, 25.6 degree dip, clay-lined, polished -- @ 21.8 feet: joint, 35.8 degree dip, open, tight, sand-lined -- @ 22 feet: joint, 26.5 degree dip, open, tight -- @ 22.2 feet: joint, 35.8 degree dip, open, tight -- @ 23 feet: bedding, 25.6 degree dip, open, tight -- @ 23.1 feet: bedding, 25.6 degree dip, open, tight -- @ 23.2 feet: lost 50 gallons drilling fluids to formation		68	CDR = 26/5
30		4	100		-- @ 23.7 feet: joint, 43.8 degree dip, open, tight -- @ 24.3 feet: bedding, 25.6 degree dip, open, tight -- @ 24.5 feet: Silty Sandstone becomes moderately fractured. Bedding, 25.6 degree dip, end of shoe -- @ 25.1 feet: bedding, 25.6 degree dip, open, tight -- @ 25.25 feet: bedding, 13.5 degree dip, open, tight -- @ 26.1 feet: joint, 67.4 degree dip, open, 1/16 inch wide. Fracture, open, tight -- @ 26.6 feet: fracture, 25.6 degree dip, open, tight -- @ 28.45 feet: joint, 13.5 degree dip, open, tight -- @ 28.5 feet: fracture, 43.8 degree dip, open, tight -- @ 29.4 feet: joint, 25.6 degree dip, open, tight -- @ 29.5 feet: Silty Sandstone becomes highly weathered, soft to moderate, moderately well cemented, thinly to thickly bedded -- @ 30.2 feet: bedding, 43.8 degree dip, open, tight, sand-lined		43	CDR = 20/5

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41c

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		4 5	100		-- @ 30.7 feet: bedding, 43.8 degree dip, open, tight, sand-lined -- @ 31.2 feet: bedding, 43.8 degree dip, open, tight, sand-lined -- @ 31.5 feet: bedding, 43.8 degree dip, open, tight, sand-lined -- @ 32.2 feet: bedding, 35.8 degree dip, open, tight, sand-lined -- @ 32.5 feet: joint, 55.2 degree dip, open, tight -- @ 32.6 feet: bedding, 43.8 degree dip, open, tight, sand-lined -- @ 33.15 feet: bedding, 25.6 degree dip, open, tight, sand-lined -- @ 33.3 feet: bedding, 43.8 degree dip, open, tight, sand-lined -- @ 33.6 feet: uncemented sand zone, very soft, crumbles in hand. Joint, 55.2 degree dip, open, tight, sand-lined -- @ 33.7 feet: general bedding, 43.8 degree dip, open, tight, sand-lined -- @ 35 feet: becomes yellowish-brown, SILTY SANDSTONE again, highly weathered, highly fractured, moderate, moderately cemented, fine to medium grained, graded, fine to medium grained. Shear, 35.8 degree dip, open, tight, sand and clay-lined, polished surfaces -- @ 35.2 feet: bedding, 43.8 degree dip, open, tight -- @ 36 feet: joint, 70.9 degree dip, open, 1/16 to 1/8 inch wide, sand and clay-lined, polished surfaces		46	CDR = 21/5
35								
		5	100		-- @ 36.2 feet: joint, 43.8 degree dip, open, tight, sand and clay-lined, polished surfaces -- @ 36.4 feet: fracture, open, tight, related to joints at 36 and 36.2 feet -- @ 36.6 feet: fracture, 73.4 degree dipopen, 1/8 to 1/4 inch wide -- @ 37 feet: horizontal fracture, open, tight, from above joints -- @ 37.2 feet: horizontal fracture, open, tight, from above joints -- @ 37.3 feet: horizontal fracture, open, tight, sand-lined -- @ 37.4 feet: horizontal fracture, open, tight, sand-lined -- @ 37.6 feet: silty sandstone becomes moderately weathered, moderately fractured, moderate -- @ 39.5 feet: SILTSTONE package, olive-brown, slightly weathered, internally sheared along bedding, thinly bedded, brittle, polished surfaces at contact with silty sandstone above. Lost 50 gallons drilling fluids to formation. -- @ 39.8 feet: shear, 13.5 degree dip, open, clay-lined, polished		50	CDR = 33/5
40								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41d

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
45			100		-- becomes Silty Sandstone again, moderately weathered, moderately fractured, moderate, fine to medium grained, graded -- @ 40.8 feet: joint, 43.8 degree dip, open, 3/16 inch wide, sand-filled -- @ 42.3 feet: sheared bedding, 25.6 degree dip, open/closed, 1/8 inch wide, sand filled/clay-lined, polished surfaces -- @ 42.4 feet: joint, 67.3 degree dip, open, 3/16 to 1/2 inch wide, sand filled. Shear, 13.5 degree dip, open, clay-lined, polished		64	CDR = 14/1.4 CDR = 23/3.6
		6	69		-- @ 43.1 feet: SILTSTONE package, olive-brown, slightly weathered, internally sheared along bedding, thinly bedded, brittle, polished surfaces at contact with silty sandstone above. sheared bed at contact, 25.6 degree dip, clay-lined, polished -- @ 43.4 feet: sheared bed, 25.6 degree dip, clay-lined, polished -- @ 43.5 feet: sheared bed, 25.6 degree dip, clay-lined, polished -- @ 43.6 feet: becomes silty sandstone again, moderate. -- @ 44.2 feet: joint, 43.8 degree dip, open, 1/16 inch wide. Conjugate joint, 55.2 degree dip at end of recovered core -- @ 44.5: joint, 55.2 degree dip, open, tight -- @ 45 feet: lost 305 gallons drilling fluids to formation. Driller states bit plugged forcing fluids out into formation (artifical fluid loss) -- @ 45.8 feet: joint (bottom of recovered core)		0	CDR = 18/5
50			66		-- @ 46 feet: lost 1,450 gallons drilling fluids to formation. -- @ 47 feet: SILTSTONE package, yellowish-brown, moderately weathered, moderately soft to soft, thinly bedded, moderately well to well-cemented, internally sheared, extends to 47.8 feet. Joint (top of recovered core) -- @ 47.15 feet: bedding, 25.6 degree dip, open, 1/8 inch wide -- @ 47.4 feet: shear, 13.5 degree dip, open, clay-lined, some polished surfaces -- @ 47.5 feet: sheared bedding, 25.6 degree dip, open, 1/2 inch wide, highly fractured, clay-lined, polished surfaces -- @ 47.8 feet: sheared bedding, 25.6 degree dip, clay-lined, polished, contact with silty sandstone		18	CDR = 24/5
55			74		-- @ 47.8 feet: back into SILTY SANDSTONE, yellowish-brown, moderately, weathered, moderate. Joint, 25.6 degree dip, open, tight -- @ 47.9 feet: joint, 43.8 degree dip, open, 1/4 inch wide, coarse sand/pebble filled -- @ 48.05 feet: joint, 55.2 degree dip, open, 1/16 inch wide		0	

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41e

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 48.5 feet: becomes, highly weathered, highly fractured, soft. Joint, 75.4 degree dip, open, 1/16 to 1/8 inch wide -- @ 48.85 feet: joint, 25.6 degree dip, open, tight -- @ 49.4 feet: joint (end of recovered core) -- @ 49.5 feet: lost 25 gallons drilling fluids to formation to 54.5 feet (gradual loss) -- @ 51.2 feet: becomes moderately weathered, moderately well cemented, moderate. -- @ 52.3 feet: silty sandstone becomes highly weathered, highly fractured, soft, moderately to poorly cemented,, brittle, medium to coarse grained			
					-- @ 53.9 feet: SILTSTONE interbed, olive-gray, moderately weathered, highly fractured, soft, brittle, internally sheared -- @ 54 feet: shear, 5.2 degree dip, clay-lined, polished surfaces			CDR = 19/4
60		7	93		-- @ 54.5 feet: No recovery to 55.8 feet. -- @ 55.8 feet: becomes SILTY SANDSTONE again, moderately to highly weathered, highly fractured, moderately cemented -- @ 55.9 feet: joint, 25.6 degree dip, open, tight, sand-filled -- @ 56 feet: joint, 43.8 degree dip, open, tight, sand-lined -- @ 56.4 feet: joint, 25.6 degree dip, 1/16 inch wide -- @ 56.6 feet: joint, 25.6 degree dip, 1/8 inch wide, sand-lined -- @ 56.7 feet: joint, 25.6 degree dip, 1/16 inch wide -- @ 56.9 feet: Silty Sandstone becomes moderately fractured, soft. Joint, 55.2 degree dip, open, piece missing -- @ 58.4 feet: joint, 25.6 degree dip, open, tight		35	
			100		-- @ 58.5 feet: becomes highly fractured, poorly cemented -- @ 59.4 feet: joint, 25.6 degree dip, end of recovered core sample -- @ 59.5 feet: No recovery to 59.8 feet -- @ 59.8 feet: becomes moderately weathered, moderately fractured, moderately soft, moderately to well-cemented. Joint, 25.6 degree dip, top of recovered core sample		0	CDR = 5/1 CDR = 13/5
65			84		-- @ 60.3 feet: joint, 67.4 degree dip, open, 1/8 inch wide -- @ 61 feet: joint, 43.8 degree dip, 1/16 inch wide, sand filled -- @ 61.4 feet: joint, 55.2 degree dip, open, 1/16 inch wide -- @ 62 feet: joint, 43.8 degree dip, open, tight -- @ 62.2 feet: joint, 43.8 degree dip, open, tight -- @ 62.9 feet: bedding, 25.6 degree dip, closed, tight -- @ 63.3 feet: SILTSTONE interbed, yellowish-brown, moderately weathered, hard, very well cemented, thinly		8	

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41f

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					bedded -- @ 63.5 feet: becomes Silty Sandstone again, moderately weathered, highly fractured, moderate, well-cemented. lost 1,460 gallons drilling fluids to formation. Bedding, 25.6 degree dip, tight -- @ 63.6 feet: joint, 50.2 degree dip, open, 1/8-3/16 inch wide -- @ 64 feet: joint, 35.8 degree dip, open, tight -- @ 64.1 feet: bedding, 35.8 degree dip, tight. Fracture, 84.6 degree dip, open, 1-inch wide, no filling -- @ 64.5 feet: joint, end of recovered core sample -- @ 65.3 feet: becomes moderate, moderately cemented, wide fractures. Fracture, 70.9 degree dip, open, 1/8-3/16 inch wide -- @ 66.2 feet: fracture, 35.8 degree dip, open, tight-1/4 inch wide -- @ 66.5 feet: lost 1,734 gallons drilling fluids to formation via wide fractures -- @ 66.7 feet: bedding, 25.6 degree dip, 1/16-1/8 inch wide -- @ 66.8 feet: bedding, 35.6 degree dip, tight -- @ 66.9 feet: bedding, 35.6 degree dip, tight -- @ 67.2 feet: joint, 55.2 degree dip, open, 1/8 inch wide, pieces missing. Fracture, horizontal, open, 1/8-1/4 inch wide -- @ 67.5 feet: becomes highly weathered, very soft, very slightly cemented. -- @ 68.4 feet: silty sandstone becomes highly fractured, soft, slightly to moderately cemented. Fracture, 25.6 degree dip, open, 1/2 inch wide -- @ 68.5 feet: fracture, 35.8 degree dip, open, 1/8 inch wide -- @ 69.5 feet: silty sandstone becomes moderately weathered, moderately cemented -- @ 71.2 feet: fracture, 25.6 degree dip, 1/4-1/2 inch wide -- @ 71.3 feet: joint, 55.2 degree dip, open, tight -- @ 72.1 feet: fracture, 25.6 degree dip, open, tight -- @ 72.3 feet: joint, 55.2 degree dip, open, 3/16 inch wide -- @ 72.4 feet: uncemented zone, highly weathered, very soft, 0.6 feet thick -- @ 72.7 feet: fracture, horizontal, open, tight -- @ 72.8 feet: fracture, horizontal, open, tight -- @ 72.9 feet: fracture, 25.6 degree dip, open, 1/16 inch wide -- @ 73 feet: becomes highly fractured, very weakly cemented, very soft -- @ 73.2 feet: joint, 25.6 degree dip, open, 1/16-1/8 inch wide -- @ 73.5 feet: fracture, horizontal, open, 1/8 inch wide -- @ 73.6 feet: silty sandstone becomes moderately cemented, soft, brittle -- ~~@ 74 feet: joint, 67.4 degree dip, open, 1/8 inch wide~~			
70		8	94				9	CDR = 21/4.9
75		8 9	100				61	CDR = 13/5.1

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41g

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		9	100		-- @ 74.1 feet: becomes very soft, very weakly cemented -- @ 74.4 feet: joint, 25.6 degree dip, open, tight. Conjugate joint, 43.8 degree dip, closed, 1/8 inch side, sand filled -- @ 74.5 feet: becomes moderately weathered, moderately fractured, moderate to moderately soft -- @ 74.6 feet: 2 conjugate joints, both open, 1/16 inch wide, sand-filled, 25.6 and 55.2 degree dips. -- @ 74.9 feet: bedding, 25.6 degree dip, tight -- @ 75 feet: silty sandstone becomes moderately well to well cemented, graded -- @ 75.7 feet: joint, 25.6 degree dip, open, 1/16 inch wide -- @ 75.9 feet: fracture, 13.5 degree dip, open, 1/8 inch wide -- @ 76 feet: joint, 55.2 degree dip, closed, tight, sand filled. Fracture, 13.5 degree dip, open, tight, clay and sand-lined -- @ 76.3 feet: fracture, 13.5 degree dip, open, tight -- @ 78.9 feet: fracture, 25.6 degree dip, open, tight -- @ 79.2 feet: joint, 35.8 degree dip, open, 1/8 inch wide		27	CDR = 10/5
80								
		9 10	100		-- @ 79.5 feet: Silty sandstone becomes moderately weathered, moderately fractured, moderately soft to moderate, thickly bedded, graded. Joint, 43.8 degree dip, open, tight -- @ 80.3 feet: bedding, 13.5 degree dip, closed, 1/16 inch wide, sand and silt filled -- @ 80.4 feet: becomes medium to coarse grained with pebles (bottom graded portion of bed described above). joint, 50.2 degree dip, closed, tight, sand filled -- @ 80.6 feet: bedding, 25.6 degree dip, tight -- @ 80.7 feet: fracture, 73.4 degree dip, open, 1/8-3/16 inch wide -- @ 81 feet: bedding, 13.5 degree dip, tight -- @ 81.2 feet: bedding, 13.5 degree dip, tight -- @ 81.3 feet: joint, 43.8 degree dip, open, 1/16 inch wide -- @ 82 feet: bedding, 13.5 degree dip, tight -- @ 82.1 feet: joint, 35.8 degree dip, open, 1/16 inch wide -- @ 82.2 feet: Silty sandstone becomes moderate, fine to medium grained (new graded bed), thickly bedded, moderately cemented, graded -- @ 82.5 feet: joint, 77 degree dip, open, 1/8 inch wide -- @ 83.3 feet: joint, 35.8 degree dip, open, 1/16 inch wide		54	CDR = 17/5
85								
		10	98		-- @ 83.4 feet: becomes soft -- @ 83.8 feet: bedding, 25.6 degree dip, tight -- @ 84 feet: bedding, 13.5 degree dip, open, tight -- @ 84.1 feet: shear, 13.5 degree dip, 1/16 inch wide, clay and sand-lined, some minor polished surfaces -- @ 84.5 feet: Silty Sandstone becomes mouderately		50	CDR = 21/5
90								

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41h

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					weathered, soft, moderatately cemented -- @ 85 feet: Becomes moderately fractured, moderately well cemented, moderately soft. Joint, 13.5 degree dip, open, tight, sand and clay-lined, minor polishing -- @ 86.7 feet: joint, 43.8 degree dip, open, tight -- @ 85.8 feet: joint, 59.2 degree dip, closed 1/16 inch wide, sand filled -- @ 86.2 feet: bedding, 25.6 degree dip, tight -- @ 87 feet: joint, 55.2 degree dip, open, 1/16-3/16 inch wide -- @ 87.9 feet: Silty Sandstone becomes highly fractured, soft, moderately cemented -- @ 88.3 feet: joint, 59.2 degree dip, closed, tight, sand filled -- @ 88.5 feet: joint, 50.2 degree dip, open, tight -- @ 88.8 feet: bedding, 35.8 degree dip, tight -- @ 89.1 feet: bedding, 35.8 degree dip, tight -- @ 89.3 feet: joint, 25.6 degree dip, open, piece missing -- @ 89.4 feet: joint, 25.6 degree dip, end of recovered core sample -- @ 89.8 feet: joint, 43.8 degree dip, open, tight-1/16 inch wide -- @ 90.3 feet: joint, 43.8 degree dip, open, tight-1/16 inch wide -- @ 90.5 feet: fracture, 55.2 degree dip, open, tight -- @ 91.5 feet: Silty Sandstone becomes very soft -- @ 91.6 feet: fracture, horizontal open, tight -- @ 91.8 feet: fracture, horizontal, open, tight -- @ 91.9 feet: joint, 43.8 degree dip, open, 1/16 inch wide sand and clay-lined, minor polishing			
95	10 11		100				98	CDR = 23/5
					-- @ 92 feet: SHALE interbed, gray, unweathered, moderate, very well cemented, internally sheared, brittle. Sheared bedding, 35.8 degree dip, open, tight, clay-lined, polished surfaces -- @ 92.1 feet: sheared bedding, 35.8 degree dip, tight, clay-lined, polished surfaces -- @ 92.2 feet: sheared bedding, 35.8 degree dip, tight, clay-lined, polished surfaces			
100	11		100		-- @ 92.4 feet: SANDY SILTSTONE interbed, gray, unweathered, hard, very well cemented, thinly bedded, fine sand -- @ 92.6 feet: sheared bedding, 35.8 degree dip, tight, clay-lined, polished surfaces		60	CDR = 24/5
					-- @ 92.8 feet: SILTY SANDSTONE, gray, unweathered, moderate -- @ 93.1 feet: color changes to yellowish-brown, slightly to moderately weathered -- @ 93.5 feet: bedding, 35.8 degree dip, tight -- @ 93.9 feet: bedding, 35.8 degree dip, tight, sand lined, small rootlets lining bedding planes -- @ 94.4 feet: bedding, 35.8 degree dip, end of			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41i

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					recovered core sample -- @ 94.6 feet: bedding, 35.8 degree dip, tight -- @ 95.1 feet: color changes to gray. Silty Sandstone becomes unweathered, slightly fractured, moderate to moderately hard, very well cemented, graded, thickly bedded. Bedding, 25.6 degree dip, closed -- -- @ 97 feet: Color changes to light brown/tan. Joint, 35.8 degree dip, closed, tight, sand filled, silica cemented, very well healed			
105		11 12	100		-- @ 97.1 feet: 55.2 degree dip, closed, tight, sand filled, silica cemented, very well healed -- @ 97.9 feet: joint, 55.2 degree dip, closed, 1/16 inch wide, sand and silt filled, silica cemented, very well healed -- @ 99.1 feet: Color changes to yellowish-brown, silty sandstone becomes slightly to moderately weathered. Bedding, 25.6 degree dip, closed -- @ 100.1 feet: fracture, 70.9 degree dip, closed, 1/8 inch wide, sand and clay filled, former root lines visible -- @ 100.7 feet: joint, 35.8 degree dip, open, tight, oxidized surfaces -- @ 102.3 feet: bedding, 25.6 degree dip, tight -- @ 101.8 feet: bedding, 25.6 degree dip, tight		48	CDR = 22/5
					-- @ 102.1 feet: SILTSTONE interbed, olive-brown, hard, very well cemented, thinly bedded. Bedding, 25.6 degree dip, tight, contact with silty sandstone above -- @ 102.3 feet: bedding, 35.8 degree dip, tight -- @ 201.5 feet: fracture, 13.5 degree dip, open, tight, related to sheared bedding at 102.6 feet			
110		12	92		-- @ 102.6 feet: SHALE interbed, olive-brown, very soft, weakly cemented, internally sheared, thinly bedded. Sheared bedding, 25.6 degree dip, closed, 1/4 inch wide, clay filled, polished surfaces -- @ 102.7 feet: bedding, 25.6 degree dip, closed, 1/4 inch wide, clay-filled, contact with Silty Sandstone below.		0	CDR = 26/5
					-- @ 102.8 feet: SILTY SANDSTONE, yellowish-brown, moderately weathered, moderately soft to moderate -- @ 104.3 feet: bedding, 25.6 degree dip, tight -- @ 104.7 feet: joint, 35.8 degree dip, open, 1/16 inch wide -- @ 105 feet: sheared bedding, 25.6 degree dip, closed, 1/16 inch wide, silt filled, polished surfaces -- @ 105.4 feet: sheared bedding, 25.6 degree dip, closed, 1/16 inch wide, silt filled, polished surfaces -- @ 106.4 fee: joint, 67.4 degree dip, open, 1/8-3/16 inch wide, highly oxidized surfaces -- @ 108.6 feet: SHALE interbed, olive-brown, internally sheared, 0.1 feet thick. Sheared bedding, 25.6 degree dip, open, tight, clay-lined, polished surfaces -- @ 208.7 feet: becomes SILTY SANDSTONE,			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41j

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
			44		yellowish-brown, slightly to moderately weathered, soft, moderately well cemented -- @ 109.1 feet: bedding, 25.6 degree dip, tight -- @ 109.2 feet: joint, 43.8 degree dip, end of recovered core sample		0	CDR = 40/5
115					-- @ 109.5 feet: becomes highly fractured, moderately soft to soft -- @ 109.9 feet: joint, 65.2 degree dip, top of recovered core sample -- @ 110.4 feet: fracture, 55.2 degree dip, open, 1/8-3/16 inch wide, highly oxidized along surfaces -- @ 110.8 feet: fracture, 72.2 degree dip, open, 3/16 inch wide -- @ 111 feet: lost 546 gallons drilling fluids to formation -- @ 111.4 feet: fracture, horizontal, open, 1/8 inch wide -- @ 111.5 feet: joint, 43.8 degree dip, open, 1/16 inch wide -- @ 111.6 feet: bedding, 25.6 degree dip, tight -- @ 111.7 feet: fracture, horizontal, open, 1/8 inch wide -- @ 112 feet: fracture, horizontal, 1/8 inch wide -- @ 112.1 feet: joint, 43.8 degree dip, open/closed, 3/16 inch wide, sand/clay filled, minor polishing			
		13	100		-- @ 112.2 feet: fracture, 25.6 degree dip, open, tight. Joint, 59.2 degree dip, open, 1/16 inch wide		0	CDR = 17/5
120					-- @ 112.6 feet: joint, 55.2 degree dip, open/closed, 1/16 inch wide, sand filled. Fracture, 73.4 degree dip, closed, 1/16 inch wide, sand filled -- @ 113.1 feet: joint, 43.8 degree dip, open, tight -- @ 113.2 feet: fracture, 77 degree dip, open, 1/16-1/8 inch wide -- @ 114 feet: joint, 43.8 degree dip, open, tight -- @ 114.1 feet: fracture, 25.6 degree dip, open, tight -- @ 114.5 feet: joint, 59.2 degree dip, closed, tight, sand lined -- @ 114.9 feet: SILTSTONE, olive brown/charcoal gray, hard, very well cemented, thinly bedded, internally sheared (to 115.1 feet). Sheared bedding, 25.6 degree dip, clay-lined, polished surfaces, at silty sandstone/siltstone contact -- @ 116.1 feet: bedding, 25.6 degree dip, tight -- @ 116.6 feet: joint, 35.8 degree dip, open, tight -- @ 116.7 feet: bedding, 25.6 degree dip, tight -- @ 116.8 feet: siltstone is highly fractured -- @ 117.3 feet: no recovery to 119.5 feet -- @ 119.5 feet: SILTY SANDSTONE, yellowish-brown, highly fractured, very soft to soft, uncemented, internally sheared, brittle.			
		13 14	100				0	CDR = 29/5
125					-- @ 119.7 feet: bedding, 25.6 degree dip, tight -- @ 121.5 feet: becomes slightly cemented. Sheared bedding, shear, 43.8 degree dip, open, clay-lined, polished surfaces			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE

A-41k

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					-- @ 122 feet: bedding, 25.6 degree dip, tight -- @ 122.2 feet: joint, 43.8 degree dip, open, 1/16 inch wide, sand filled -- @ 122.5 feet: 3 conjugate fractures, 67.4 degree dips, open, tight, sand filled -- @ 123 feet: 2 conjugate fractures, 67.4 degree dips, closed, tight, sand filled -- @ 123.4 feet: fracture: 55.2 degree dip, open, tight, sand filled -- @ 123.8 feet: joint, 55.2 degree dip, open, 1/16-1/8 inch wide, sand filled -- @ 124.2 feet: joint, 35.8 degree dip, open, 1/8 inch wide -- @ 124.4 feet: joint, 35.8 degree dip, end of recovered core sample -- @ 124.5 feet: Silty Sandstone becomes moderately weathered, very soft. Joint, 35.8 degree dip, top of recovered core sample			
		14	100		-- @ 124.7 feet: CLAYSTONE interbed, 0.2 feet thick		17	CDR = 28/5
130					-- @ 124.9 feet: SILTY SANDSTONE, same. Shear, 25.6 degree dip, closed, 1/8 inch wide, sand and clay filled, polished surfaces, internally deformed -- @ 125 feet: fracture, 67.4 degree dip, open, 1/16 inch wide, sand and silt filled -- @ 125.8 feet: bedding: 35.8 degree dip, closed, 1/8 inch wide, sand and clay filled, bedding dip direction changes (cross bedding) -- @ 125.9 feet: shear, 35.8 degree dip, clay-lined, polished surfaces -- @ 126.4 feet: CLAYSTONE interbed, 0.1 feet thick. Shear (possible fault?), 55.2 degree dip, closed, 1-inch thick, gouge, strongly foliated, highly deformed, some calcium carbonate development, polished surfaces. Conjugate shear, 43.8 degree dip, open, 1/16 inch wide, clay-lined, polished surfaces -- @ 126.4 feet: CLAYSTONE interbed, 1-inch thick -- @ 126.5 feet: fracture, 50.2 degree dip, open, tight. Sheared bedding, 35.8 degree dip, open, 1/16 inch wide, clay-lined, polished surfaces -- @ 126.7 feet: joint, 43.8 degree dip, open, 1/16-1/8 inch wide			
135		14 15	97		-- @ 127.3 feet: fracture, 43.8 degree dip, closed, 1 inch wide, sand filled, possible gouge. Sheared bedding, 35.8 degree dip, open, 1/16 inch wide, clay-lined, polished surfaces -- @ 127.7 feet: fracture, open/closed, tight-1/4 inch wide -- @ 127.9 feet: joint, 55.2 degree dip, closed, 1/16 inch wide, calcium carbonate filled. Fracture, 13.5 degree dip, closed, 1/16 inch wide, calcium carbonate filled -- @ 128.3 feet: fracture, 43.8 degree dip, open, 1/4 inch wide, sand filled, possible gouge -- @ 128.5 feet: joint, 43.8 degree dip, open, 1/8-3/16		9	CDR = 22/5

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PROJECT NO. 58-9194-02/002 C:JHN

Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-411

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					inch wide, sand filled/calcium carbonate lined -- @ 128.9 feet: fracture, 43.8 degree dip, open, 1/16 inch wide, sand filled -- @ 129.5 feet: Silty Sandstone becomes uncemented -- @ 130.4 feet: becomes weakly cemented. Sheared bedding, 25.6 degree dip, 1/8 inch wide, clay-lined, polished surfaces -- @ 130.6 feet: shear, 43.8 degree dip, tight, clay-lined, polished surfaces -- @ 131.3 feet: joint, 43.8 degree dip, open, 1/8 inch wide			
140		15	100		-- @ 131.6 feet: sheared bedding, 35.8 degree dip, open, 1/16-1/8 inch wide, sand and clay-lined, polished surfaces -- @ 131.8 feet: thin SILTSTONE interbed, 1/2 inch thick. Sheared bedding, 35.8 degree dip, open, 1/16 inch wide, clay-lined, polished surfaces, at contact with Silty Sanstone above -- @ 131.9 feet: Silty Sandstone becomes moderately well cemented		42	CDR = 27/5
					-- @ 132.05 feet: thin SILTSTONE interbed, 0.4 feet thick. Sheared bedding, 35.8 degree dip, open, 1/16 inch wide, polished surfaces -- @ 132.45 feet: SILTY SANDSTONE, same -- @ 132.6 feet: joint, 55.2 degree dip, open, 1/16 inch wide, no filling/sand lined -- @ 133.7 feet: Silty Sandstone becomes weakly cemented, highly fractured. Joint, 55.2 degree dip, open, tight -- @ 133.8 feet: fracture, 25.6 degree dip, open, tight -- @ 134.1 feet: 2 conjugate shears, horizontal and 25.6 dips, open, 1/16 inch wide, clay-lined, polished surfaces -- @ 134.4 feet: joint, 25.6 degree dip, end of recovered core sample			
145		15 16	100		-- @ 134.5 feet: Silty Sandstone becomes moderately fractured, soft, brittle, internally sheared -- @ 135.2 feet: shear, 50.2 degree dip, closed, 1/16 inch wide, clay and sand filled, polished surfaces -- @ 135.7 feet: fracture, 50.2 degree dip, open, tight, related to shear at 135.2 feet -- @ 136.2 feet: sheared bedding, 25.6 degree dip, tight, sand and clay-lined, polished surfaces -- @ 136.9 feet: sheared bedding, 35.8 degree dip, tight, sand and clay-lined, polished surfaces -- @ 137.3 feet: sheared bedding, 35.8 degree dip, tight, sand and clay-lined, polished surfaces -- @ 137.4 feet: joint, 35.8 degree dip, open, tight -- @ 137.9 feet: sheared bedding, 35.8 degree dip, open, 1/18 inch wide, sand filled/clay-lined, polished surfaces -- @ 138.2 feet: Silty Sandstone becomes moderately soft, moderately cemented -- @ 138.9 feet: joint, 25.6 degree dip, open, 1/16 inch wide		0	CDR = 18/5

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41m

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		16	97		-- @ 139.2 feet: bedding, 25.6 degree dip, tight -- @ 139.5 feet: Silty Sandstone becomes slightly fractured, moderately well cemented. Joint, 79.3 degree dip, open/closed, tight, sand filled/sand lined -- @ 139.7 feet: joint, 35.8 degree dip, closed, tight -- @ 140.1 feet: bedding, 25.6 degree dip, tight -- @ 140.5 feet: bedding, 35.8 degree dip, tight -- @ 141 feet: sheared bedding, 25.6 degree dip, open, tight, sand/clay-lined, minor polishing along surfaces -- @ 141.1 feet: joint, 67.4 degree dip, 1/16 inch wide, sand filled -- @ 142.2 feet: joint, 43.8 degree dip, open, tight -- @ 143.3 feet: joint, 13.5 degree dip, open, tight -- @ 144.5 feet: lost 180 gallons drilling fluids to formation. Fracture, 25.6 degree dip, open, 1/8 inch wide, sand filled -- @ 145.3 feet: fracture, 13.5 degree dip, open, tight -- @ 145.5 feet: joint, 43.8 degree dip, open, tight-1/8 inch wide no filling/sand filled -- @ 145.6 feet: joint, 55.2 degree dip, open, 1/8 inch wide, sand filled -- @ 146.3 feet: joint, 55.2 degree dip, open, 1/16 inch wide, sand lined -- @ 146.5 feet: joint, 55.2 degree dip, open, 1/16 inch wide, sand filled -- @ 146.8 feet: fracture, horizontal dip, open, tight -- @ 147.4 feet: fracture, 13.5 degree dip, open, tight -- @ 147.8 feet: Silty Sandstone becomes highly fractured, very soft, uncemented to very slightly cemented. Shear, 59.2 degree dip, closed, 1/16 inch wide, clay-filled, polished surfaces -- @ 147.9 feet: 2 shears, 13.5 degree dips, closed, 1/16 inch wide, clay-filled, polished surfaces -- @ 148 feet: shear, 13.5 degree dip, closed, 1/16 inch wide, clay-filled, polished surfaces		0	CDR = 19/5 CDR = 10/5
150 155		16 17	66		-- @ 149.5 feet: Silty Sandstone becomes highly fractured (thin to wide fractures), moderately soft, moderately well-cemented. Lost 75 gallons drilling fluids to formation gradually to 154.5 feet -- @ 150.1 feet: bedding, 43.8 degree dip, tight -- @ 150.2 feet: bedding, 43.8 degree dip, tight -- @ 150.3 feet: bedding, 43.8 degree dip, tight -- @ 150.5 feet: fracture, horizontal dip, open, 1/4 inch wide -- @ 150.6 feet: fracture, 81.2 degree dip, open, 1/16-1/8 inch wide -- @ 150.7 feet: fracture, horizontal dip, open, 1/16-1/4 inch wide -- @ 151.2 feet: fracture, 50.2 degree dip, open, tight-1/8 inch wide -- @ 151.3 feed: fracture: 86.3 degree dip, open, 1/16-3/8 inch wide, no filling/sand lined/calcium carbonate filled (in descrete zones) -- @ 152.5 feet: fracture: 75.4 degree dip, open,		0	CDR = 11/5
160								

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Chatsworth Ridge Estates
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Los Angeles County, CA

LOG OF BORING C-5

PLATE A-41n

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
		17	88		1/16-1/8 inch wide, no filling/calcium carbonate filled -- @ 153.3 feet: fracture: 43.8 degree dip, open, tight -- @ 153.4 feet: fracture, 62.5 degree dip, open, 3/16-1/4 inch wide, no filling/sand lined -- @ 153.8 feet: fracture, 25.6 degree dip, open, tight -- @ 154.5 feet: no recovery to 156.2 feet -- @ 156.2 feet: Silty Sandstone becomes moderately to highly weathered, slightly cemented, very soft, brittle, thinly to thicly bedded, graded -- @ 156.3 feet: bedding, 25.6 degree dip, tight. Fracture, 55.2 degree dip, open/closed, 1/8-3/16 inch wide, weathered calcium carbonate filling/sand lined -- @ 156.4 feet: bedding, 25.6 degree dip, tight. Fracture, 65.2 degree dip, closed, 1/8 inch wide, sand filled/weathered calcium carbonate filling -- @ 156.7 feet: fracture, 25.6 degree dip, open, tight -- @ 156.8 feet: fracture, 65.2 degree dip, closed, 1/8 inch wide, sand filled/weathered calcium carbonate filling -- @ 157.7 feet: joint, 50.2 degree dip, open, 1/16 inch wide, sand filled/sand lined. Conjugate joint, 67.4 degree dip, open, 1/8 inch wide, sand filled -- @ 157.9 feet: joint, 25.6 degree dip, open, tight. Bedding, 35.8 degree dip, tight -- @ 158 feet: joint, 43.8 degree dip, open, 1/16-1/8 inch wide, no filling/sand filled -- @ 158.3 feet: joint, 43.8 degree dip, open, 1/16-1/8 inch wide -- @ 158.5 feet: fracture, horizontal dip, open, 1/8-3/16 inch wide. Conjuate fracture, 78.2 degree dip, wedge of recovered core sample missing -- @ 158.9 feet: fracture, horizontal dip, open, 1/8 inch wide -- @ 159.3 feet: bedding, 25.6 degree dip, tight -- @ 159.5 feet: lost 1,097 gallons drilling fluids to formation -- @ 160.1 feet: Silty Sandstone becomes soft, moderately cemented. Fracture, 67.4 degree dip, open, 1/8-1/4 inch wide, no filling/some calcium carbonate lining. Conjugate fracture, 43.8 degree dip, open, 1/8-1/4 inch wide, no filling/sand lined -- @ 160.3 feet: fracture, horizontal dip, open, 1/16 inch wide -- @ 160.4 feet: fracture, horizontal dip, open, 1/16 inch wide -- @ 160.7 feet: fracture, horizontal dip, open, 1/16 inch wide -- @ 161.2 feet: fracture, horizontal dip, open, 1/8 inch wide -- @ 161.3 feet: joint, 35.8 degree dip, open, 1/16 inch wide -- @ 161.5 feet: fracture, 59.2 degree dip, open, 1/8-1/4 inch wide -- @ 161.9 feet: joint, 35.8 degree dip, open, tight, sand		0	
165		17	60				0	CDR = 10/5

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Chatsworth Ridge Estates
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LOG OF BORING C-5

PLATE A-41o

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					lined -- @ 162.1 feet: fracture, 13.5 degree dip, open, tight, sand filled -- @ 162.3 feet: fracture, 13.5 degree dip, open, tight, sand filled. Conjugate fracture, 70.9 degree dip, open, tight, sand filled -- @ 162.8 feet: color changes to gray, Silty Sandstone becomes unweathered, moderately soft, moderately well cemented, brittle. Fracture, horizontal dip, open, tight, sand filled -- @ 163.5 feet: fracture, horizontal dip, open, tight, sand filled. Conjugate fracture, 78.2 degree dip, open, tight/1/16 inch wide, sand lined -- @ 164.5 feet: lost 125 gallons drillig fluids to formation. No recovery to 166.5 feet -- @ 166.5 feet: Silty Sandstone becomes soft to moderately soft, internally sheared. Shear, 83.7 degree dip, open, 1/8-3/4 inch wide, sand filled/clay-lined, polished surfaces. Fracture, 70.9 degree dip, open, 1/16-1/8 inch wide, related to shear -- @ 167.9 feet: uncemented zone extending to 169.5 feet, brecciated. Fracture, 65.2 degree dip, open, tight, sand filled -- @ 168.3 feet: fracture, 25.6 degree dip, open, 1/16 inch wide, sand filled. Conjugate fracture, 43.8 degree dip, open, 1/8 inch wide, sand filled -- @ 168.4 feet: fracture, 62.5 degree dip, open, 1/8 inch wide, sand filled -- @ 168.7 feet: fracture, 43.8 degree dip, open, 1/8 inch wide, sand filled Total depth = 169.5 feet No groundwater encountered Backfilled with Portland Cement (Kwikcrete) mixed with Na-bentonite chips, and CETCO high solids Volclay grout (2-169.5 feet bgs), and capped with soil (0-2 feet bgs) Note: Core sample diameter: 2.5 inches. Coring completed using wire line method **Drilling Fluids Used:** < 100 gallons fluid loss: Normal conditions; water and CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer or CETCO Super Pac Drilling Fluid Enhancer polymer. 100 - 500 gallons fluid loss: Minor fluid loss conditions; water, CETCO Insta-Vis Plus Drilling Fluid Enhancer polymer or CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, and/or CETCO high solids Volclay grout. 500 - 1500 gallons fluid loss: Major fluid loss conditions; water, CETCO Super Pac Drilling Fluid Enhancer polymer, CETCO Super Gel-X Extra High Yield Na-Bentonite powder, CETCO high solids Volclay grout, cellophane chips, wood chips/sawdust, Forta Drag Net			

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Chatsworth Ridge Estates
Chatsworth Area
Los Angeles County, CA

LOG OF BORING C-5

PLATE
A-41p

Drafted by_____ Reviewed by_____

Explanation To Logs On Plate A-1

Elevation (feet) Depth	Sample Type	Box Number	Core Recovery (%)	Graphic Log	SOIL/BEDROCK DESCRIPTION AND CLASSIFICATION *(Continued From Previous Page)*	Rock Mass Ratio (RMR)	RQD (%)	Core Drilling Rate (CDR): Min./Core Interval (ft)
					Fiber (or CETCO Macro-Fill polymer). Note: for fluid loss conditions >1500 gallons, driller elected to pull rod/core pipe (entire depth or fluid loss zones) and filled coring cavity with mixtures consisting of plaster-of-paris and Portland cement, Portland cement and CETCO high solids Volclay grout, or CETCO high solids Volclay grout and CETCO Super Gel-x extra high yield Na-bentonite powder			

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LOG OF BORING C-5

PLATE

A-41q

Drafted by_____Reviewed by_____

Explanation To Logs On Plate A-1

APPENDIX B
LABORATORY ANALYSES

After visual classification of the soil samples in the field, the soil and or rock samples were transported to our laboratory in Diamond Bar, California. The earth materials were classified in accordance with the Unified Soil Classification System and Unified Rock Classification System and a testing program was established. Laboratory tests were performed on representative intact and bulk samples to estimate engineering characteristics of the various earth materials encountered. Testing was performed in accordance with one of the following references:

1. Lambe, T. William, Soil Testing for Engineers, Wiley, New York, 1951
2. Laboratory Soils Testing, U.S. Army, Office of the Chief of Engineers, Engineering Manual No. 1110-2-1906, November 30, 1970
3. ASTM Standards for Soil Testing, latest revisions
4. Uniform Building Code, 1997 edition

LABORATORY MOISTURE AND UNIT WEIGHT DETERMINATIONS

In-situ moisture content and dry unit weight tests were performed on samples collected from the borings in accordance with ASTM Standard Test Method D 2216-92 and D 2937-94, respectively. The results are presented in Table B-1, Moisture Content and Unit Weight.

GRAIN SIZE DISTRIBUTION

The grain size distribution of selected soil samples were evaluated by conducting sieve analyses in general accordance with ASTM Standard Test Method D 422-63. The test results are presented on Plate B-1, Grain Size Distribution.

DIRECT SHEAR

The relative strength characteristics of the subsurface materials were estimated from the results of direct shear tests (ASTM D 3080). Direct shear tests were conducted on relatively

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undisturbed samples and on remolded samples. The test results for relatively undisturbed samples are presented on Plates B-2 through B-4 and B-8, Direct Shear Test.

Direct shear tests were also conducted on remolded samples of the encountered soils compacted to approximately 90 percent of maximum dry density as determined by ASTM D 1557 test procedures. The remolded samples were placed in contact with water for at least 24 hours before testing and then sheared under normal loads ranging from approximately 0.5 to 6 KSF. The test results for the remolded samples are presented on Plates B-5 through B-7, Direct Shear Test.

One sample of the siltstone materials, which was prepared by remolding the sample to a wet density of 125 pcf, was saturated and sheared three times to evaluate the along bedding residual shear strength of the siltstone materials. The results of this test are presented on Plate B-9, Direct Shear Test.

CORROSIVITY TESTS

A series of chemical tests were performed by others on selected near surface samples to estimate Soluble Sulfate (California Test Method 417), Soluble Chloride (California Test Method 422) and pH and Resistivity (California Test Method 643). The test results may be used by a qualified corrosion engineer to evaluate the general corrosion potential with respect to the construction materials. The results of the tests are presented in Table B-2, Corrosion Test Results.

MAXIMUM DRY DENSITY

Maximum dry density testing was performed on three selected samples of the near-surface soils encountered at the site. The tests were performed in general accordance with ASTM Standard Test Method D 1557. The test results are presented on Table B-3, Maximum Dry Density and Optimum Moisture Content.

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UNCONFINED COMPRESSION TEST

AP Engineering and Testing, Inc performed unconfined compression tests on selected, relatively undisturbed samples of the bedrock core samples. The test results are attached to this appendix. As shown on the stress strain diagram, the peak strength of the material exceeded the capacity of the testing equipment, which is approximately 262 KSF. The tests were performed in general accordance with ASTM Standard Test Method D 2166.

TRIAXIAL COMPRESSION TESTS

AP Engineering and Testing, Inc. performed consolidated undrained (CU) triaxial compression tests on relatively undisturbed samples of the bedrock core samples to evaluate the undrained shear strength of the on site materials. Tests were performed in general accordance with the Army Engineering Manual EM-1110-2-1906, Appendix X. The results of the tests are attached to this appendix. As shown in the attached plots, the peak strengths of the materials exceeded the capacity of the testing equipment.

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Table B-1
Moisture Content and Unit Weight

Boring	Depth (feet)	Dry Unit Weight (pcf)	Moisture Content (%)
KB-3B	5	95	2.8
KB-3B	20	115	4.2
KB-4	10	106	10.0
KB-7	10	101	6.4
KB-8	10	117	2.6
KB-8	35	111	3.3
KB-9	5	94	3.5
KB-9	10	128	5.4
KB-9	60	120	8.7
KB-11	10	132	1.1
KB-11	15	128	5.0
KB-11	30	103	18.8
KB-11	40	123	7.9
KB-11	50	127	8.2
KB-11	60	101	4.1
KB-11	70	103	2.7
KB-12	10	121	3.4
KB-12	20	119	4.1
KB-12	30	111	5.2
KB-12	40	125	5.4
KB-12	50	129	5.1
KB-12	60	126	9.7

Table B-2
Corrosion Test Results

Boring	Depth (feet)	Minimum Resistivity (Ω-cm)	pH	Sulfate Content (ppm)	Chloride Content (ppm)
KB-2	10	5400	7.6	33	125
KB-3B	5	7300	6.3	13	551
KB-10	5	3500	7.1	16	569
KB-11	30	1900	7.2	46	607
KB-12	30	6700	8.4	29	489
C-2	15	8300	7.3	9	549
C-5	20	5000	8.8	10	553

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Table B-3
Maximum Dry Density and Optimum Moisture Content

Boring	Depth (feet)	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
KB-7	40	125	10
KB-8	50	116	14
KB-10	10	128	11

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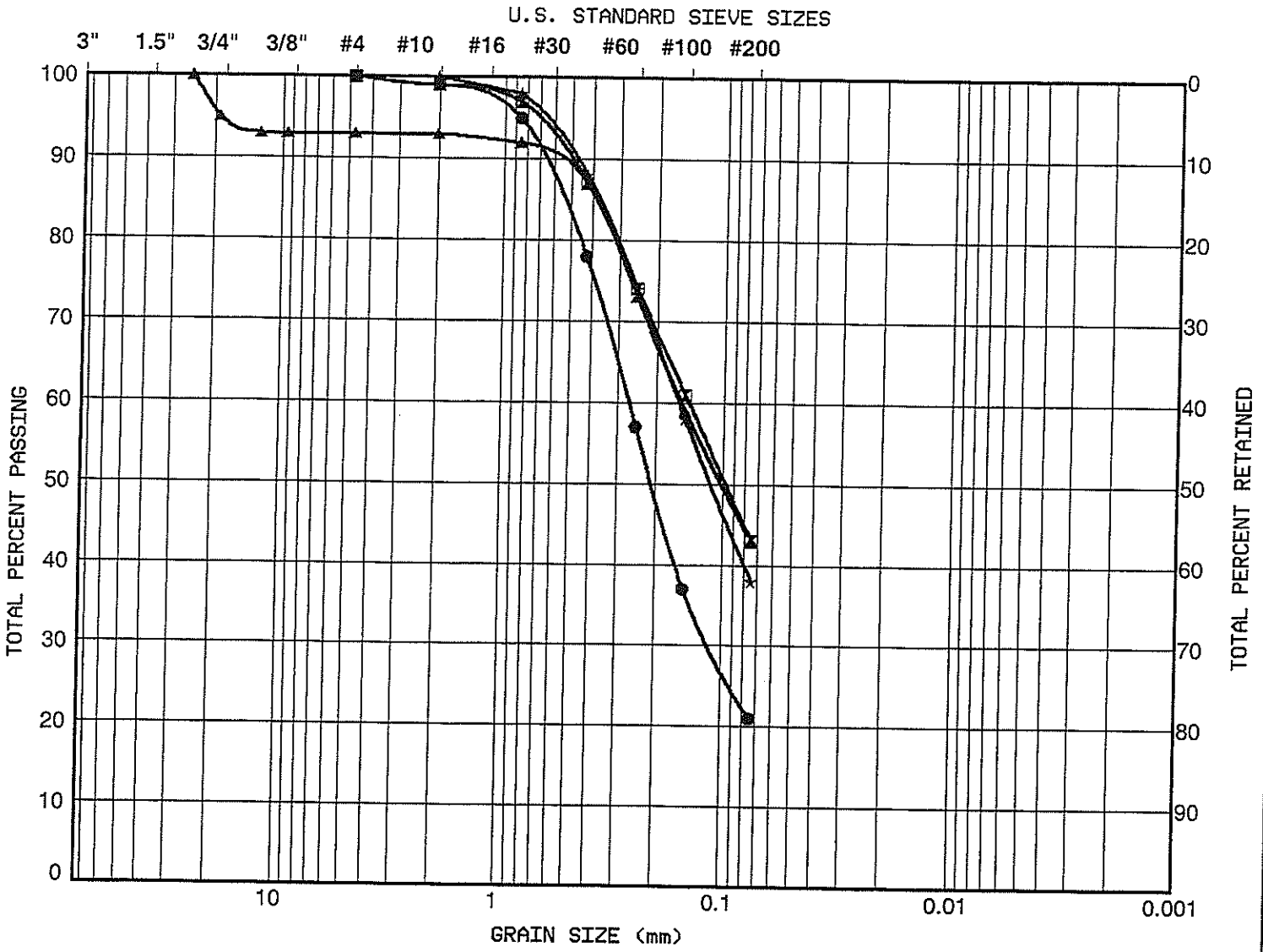
SIEVE ANALYSIS	HYDROMETER



GRAVEL		SAND			SILT	CLAY
coarse	fine	coarse	medium	fine		

Symbol	Sample	Depth (ft)	Description	Classification
●	KB-2	10.0	Silty Sandstone	NA
⊠	KB-4	5.0	Silty Sandstone	NA
▲	KB-4	20.0	Silty Sandstone	NA
★	KB-4	30.0	Silty Sandstone	NA

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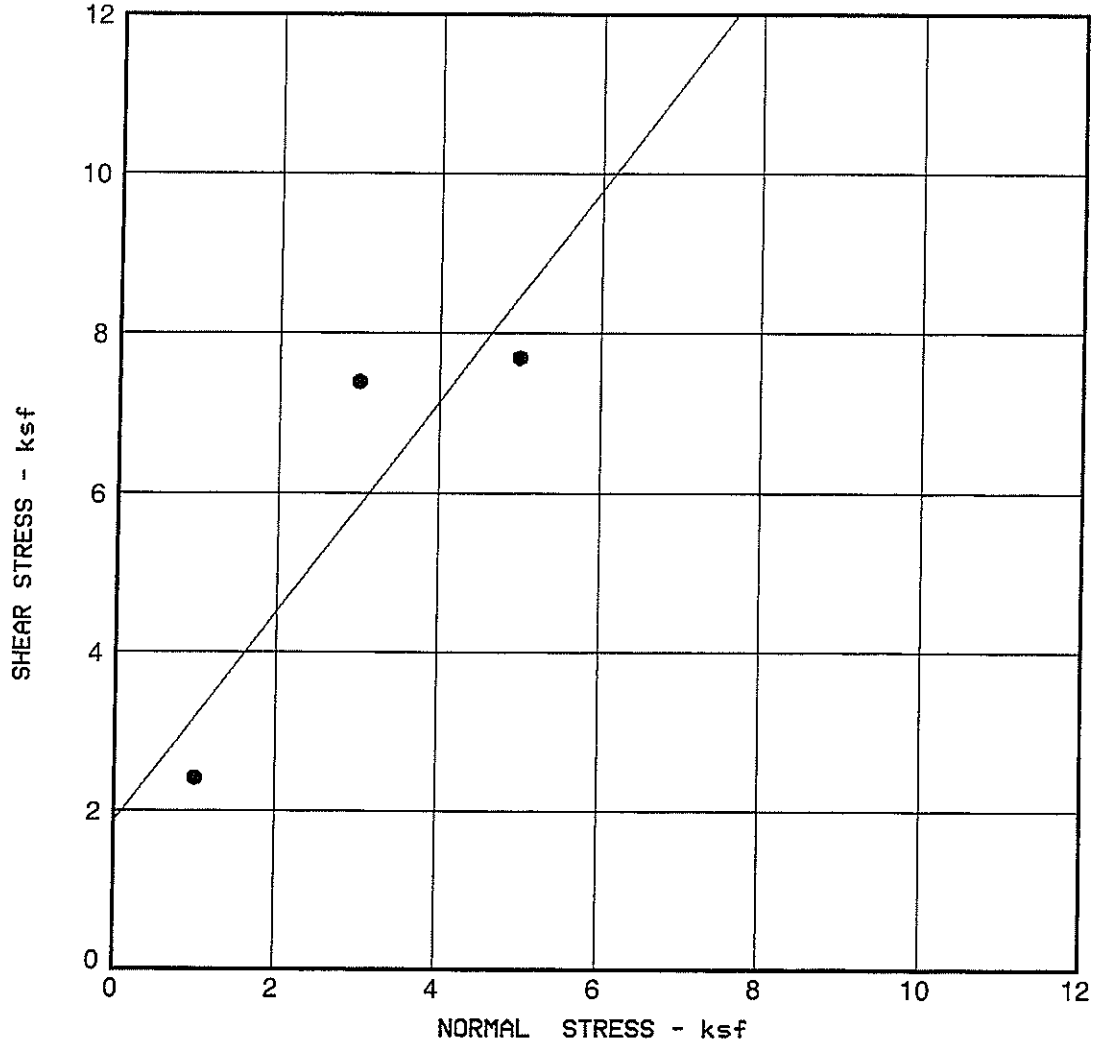
Chatsworth Area

GRAIN SIZE DISTRIBUTION

PLATE

B-1



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	1000	3000	5000
Maximum Shear - psf	2412P	7391P	7691P
Shear Strain - %	2.9	5.8	4.6

Boring	KB-4
Depth - ft	5.0
Friction Angle - deg	53
Cohesion - ksf	1.87
Description	Silty Sandstone
Classification	NA

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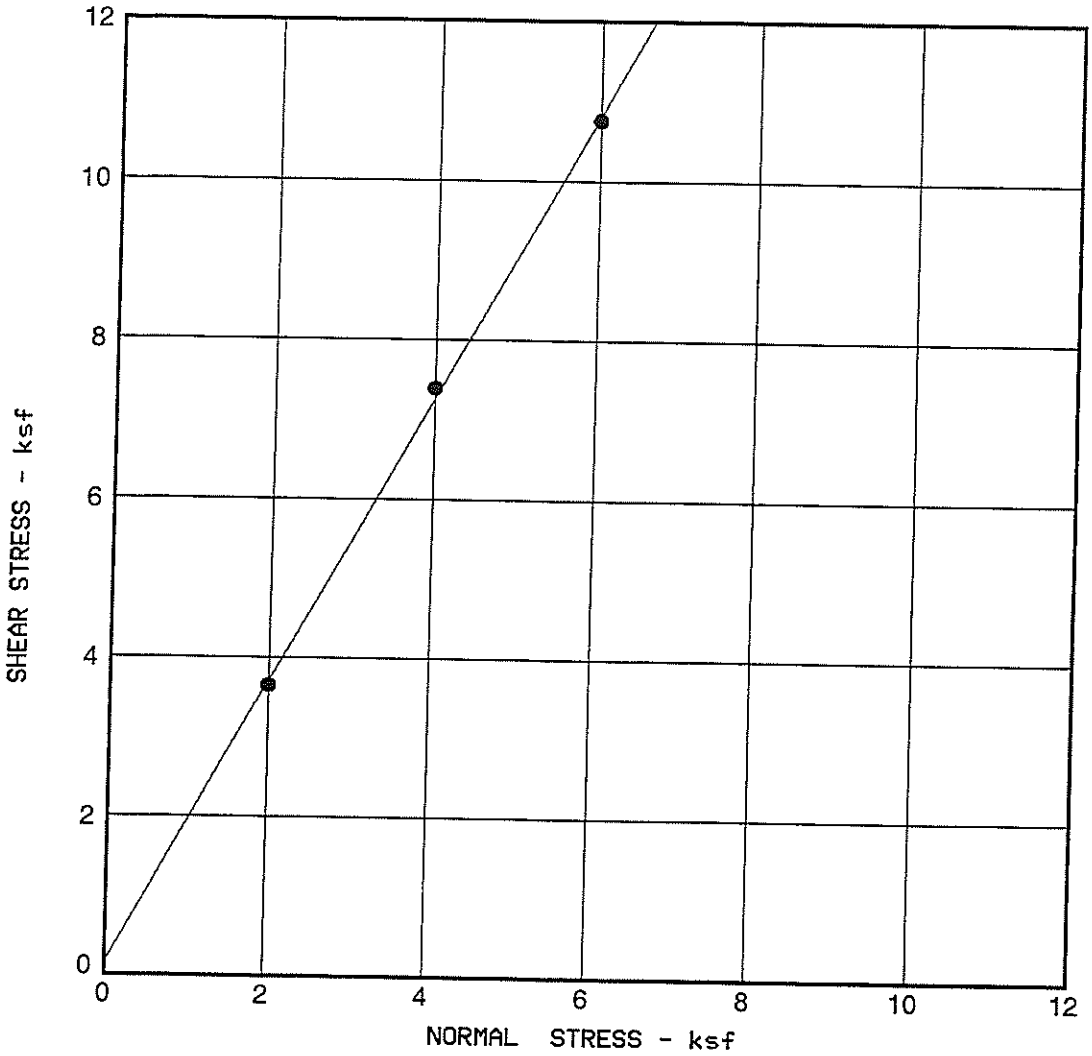
DIRECT SHEAR TEST

PLATE

B-2



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	2000	4000	6000
Maximum Shear - psf	3648P	7391P	10751P
Shear Strain - %	3.3	5.4	7.0

Boring	KB-4
Depth - ft	20.0
Friction Angle - deg	61
Cohesion - ksf	0.16
Description	Silty Sandstone
Classification	NA

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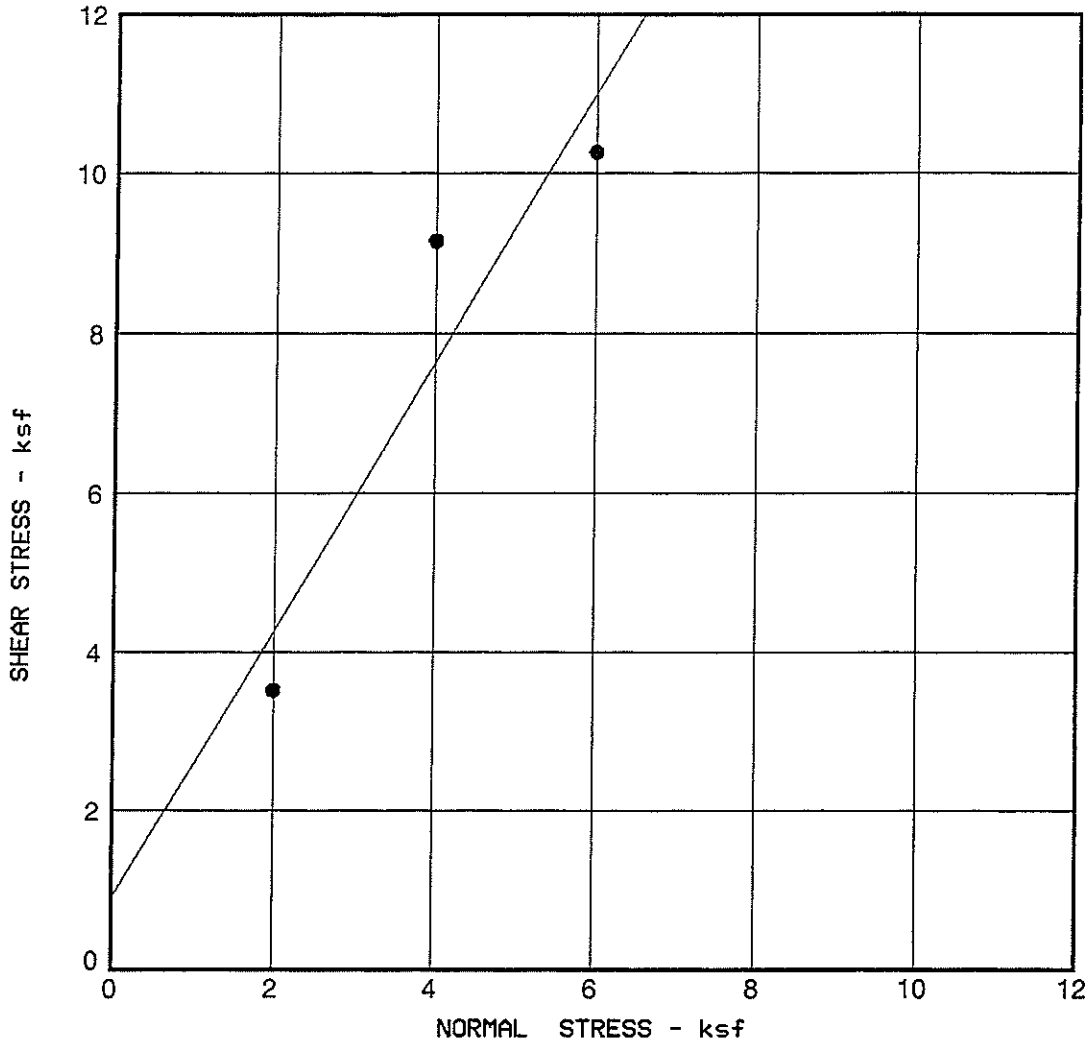
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-3



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	2000	4000	6000
Maximum Shear - psf	3516P	9143P	10259P
Shear Strain - %	2.9	5.4	5.8

Boring	KB-4
Depth - ft	30.0
Friction Angle - deg	59
Cohesion - ksf	0.90
Description	Silty Sandstone
Classification	NA

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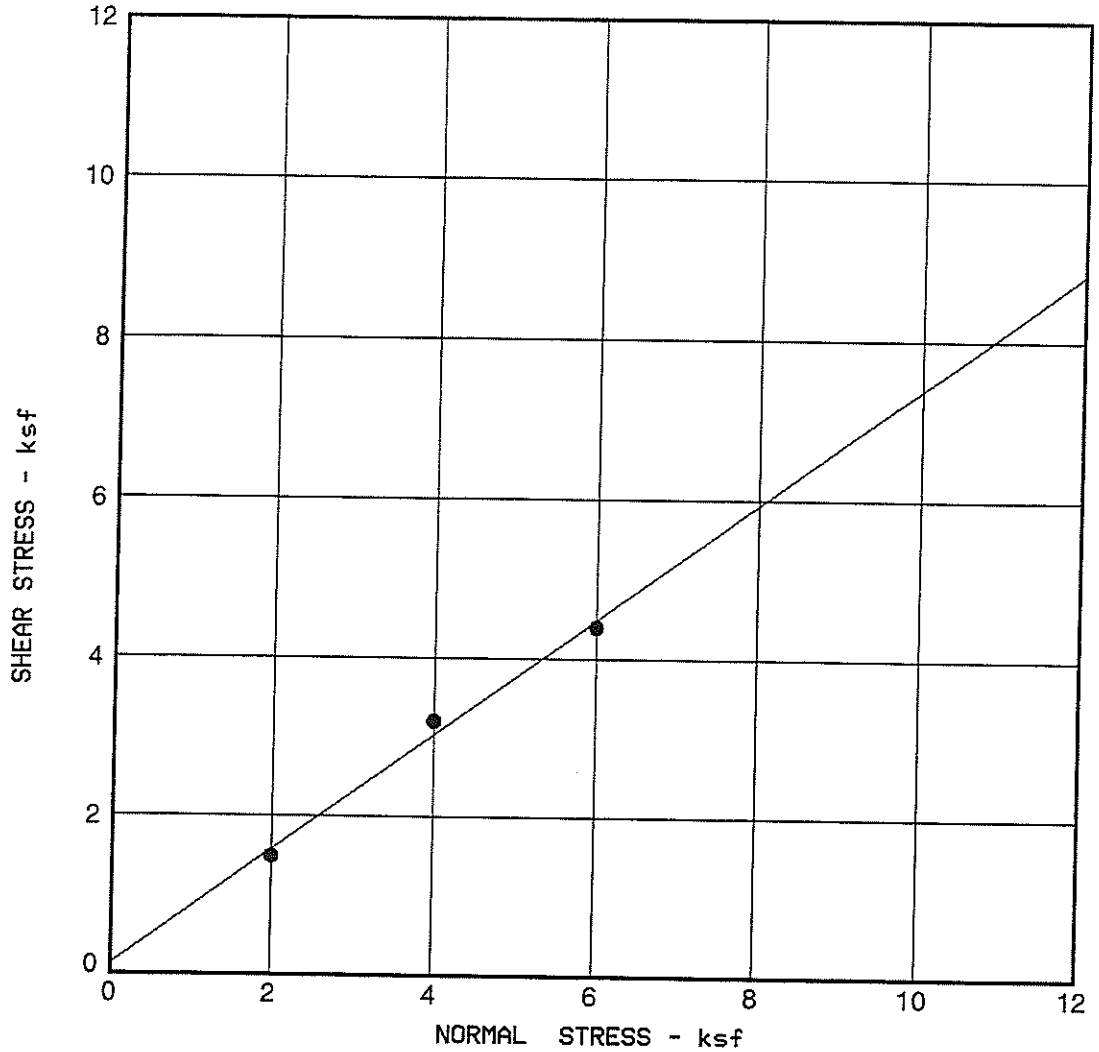
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-4



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	2000	4000	6000
Maximum Shear - psf	1488P	3204P	4392P
Shear Strain - %	2.1	4.1	4.1

Boring	KB-7 *
Depth - ft	40.0
Friction Angle - deg	36
Cohesion - ksf	0.12
Description	Sandy Siltstone
Classification	NA

*Sample compacted to 90% of Maximum Dry Density
Maximum Dry Density = 124.5 pcf; Optimum Moisture Content = 10.0 %
Test Sample: Dry Density = 112.1 pcf, Moisture Content = 10.0 %

KLEINFELDER

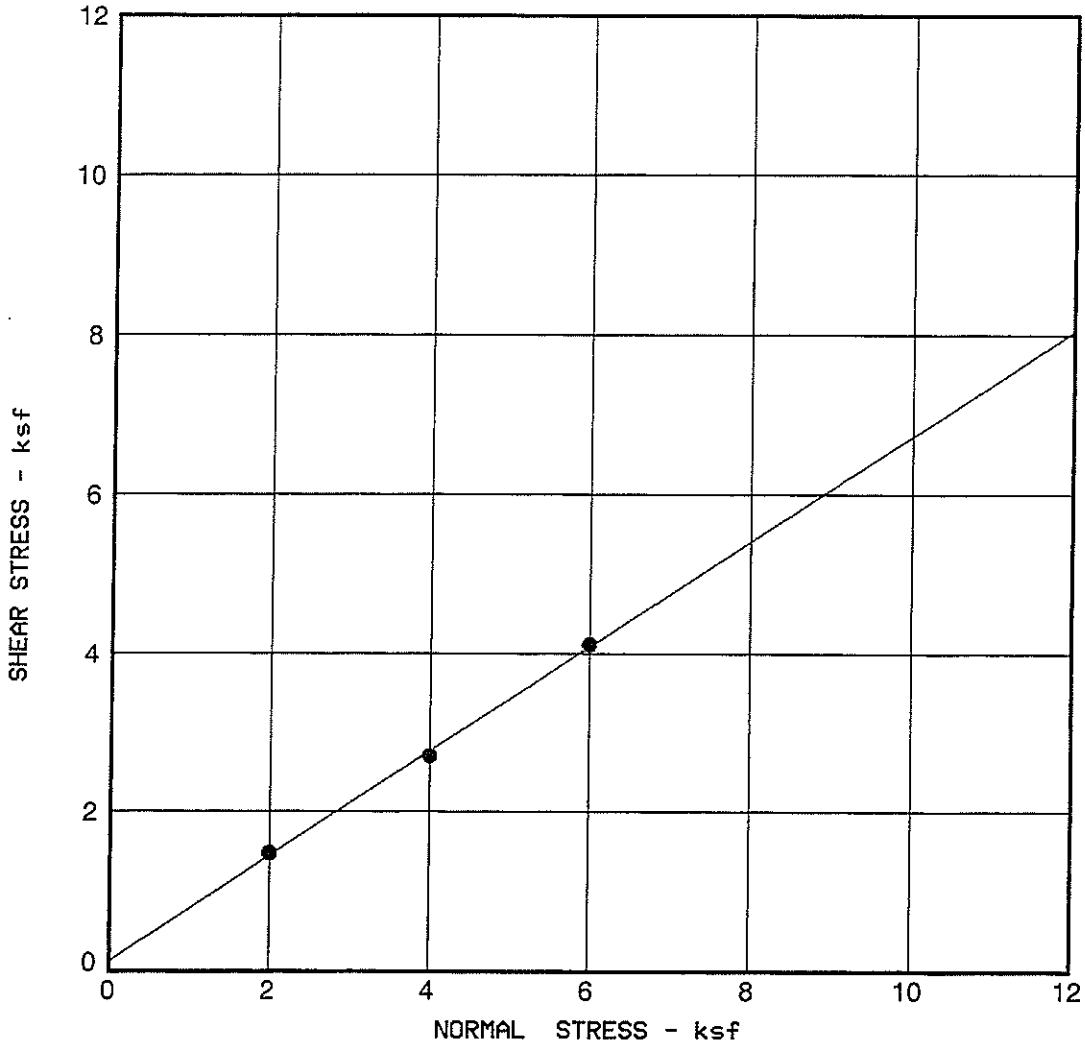
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-5



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	2000	4000	6000
Maximum Shear - psf	1476P	2700P	4116P
Shear Strain - %	10.3	10.3	5.0

Boring	KB-8 *
Depth - ft	50.0
Friction Angle - deg	33
Cohesion - ksf	0.12
Description	Sandstone
Classification	NA

*Sample compacted to 90% of Maximum Dry Density
Maximum Dry Density = 116.0 pcf; Optimum Moisture Content = 14.0 %
Test Sample: Dry Density = 104.4 pcf, Moisture Content = 14.2 %

KLEINFELDER

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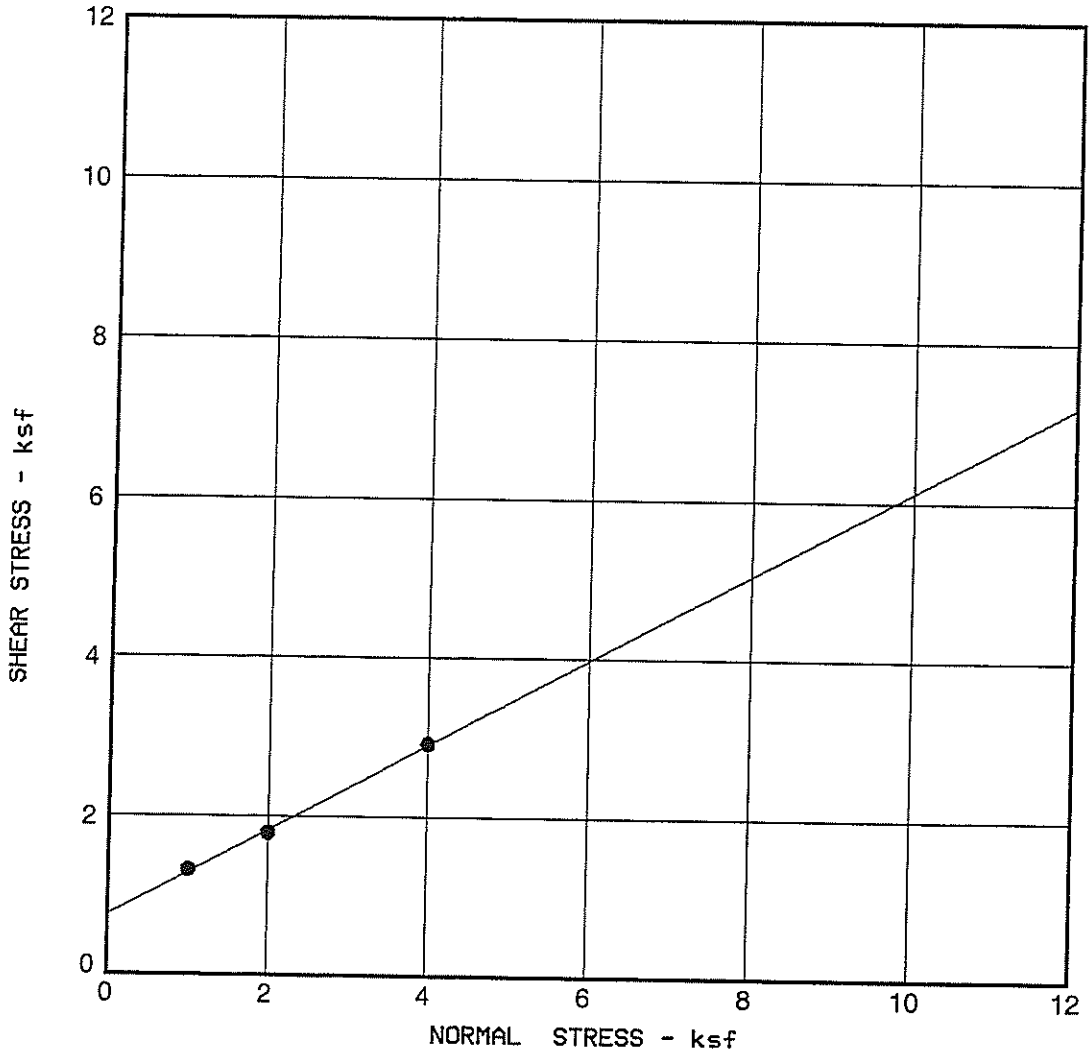
Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-6



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	1000	2000	4000
Maximum Shear - psf	1320P	1788P	2916P
Shear Strain - %	1.7	1.7	10.3

Boring	KB-10 *
Depth - ft	9.0
Friction Angle - deg	28
Cohesion - ksf	0.76
Description	Siltstone/Sandstone
Classification	NA

*Sample compacted to 90% of Maximum Dry Density
Maximum Dry Density = 127.5 pcf; Optimum Moisture Content = 11.0 %
Test Sample: Dry Density = 114.8 pcf, Moisture Content = 11.0 %

KLEINFELDER

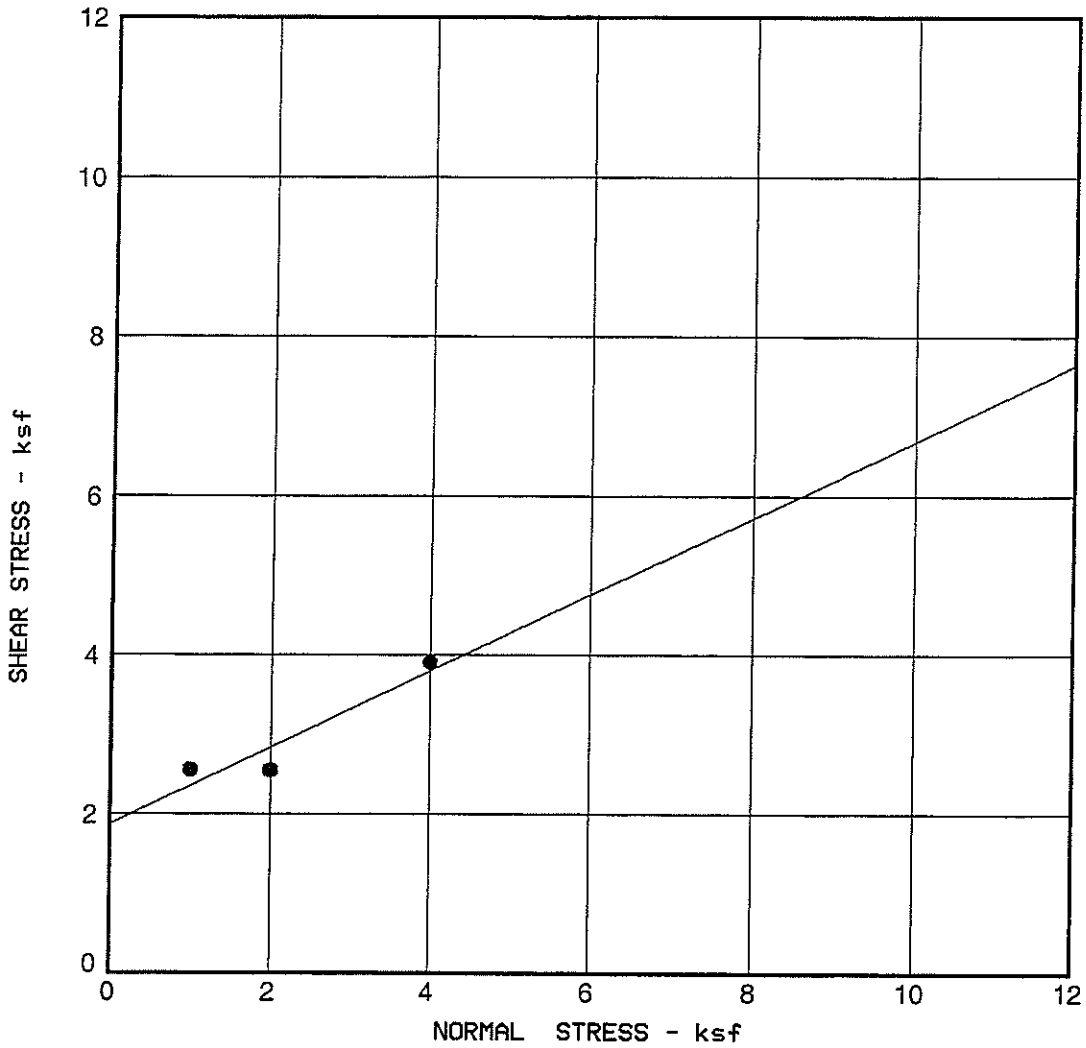
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-7



Test type	controlled - strain test		
Rate of shear - in/min	0.05		
Normal Stress - psf	1000	2000	4000
Maximum Shear - psf	2556P	2544P	3900P
Shear Strain - %	2.9	4.1	4.6

Boring	KB-12
Depth - ft	20.0
Friction Angle - deg	26
Cohesion - ksf	1.88
Description	Sandstone
Classification	NA

KLEINFELDER

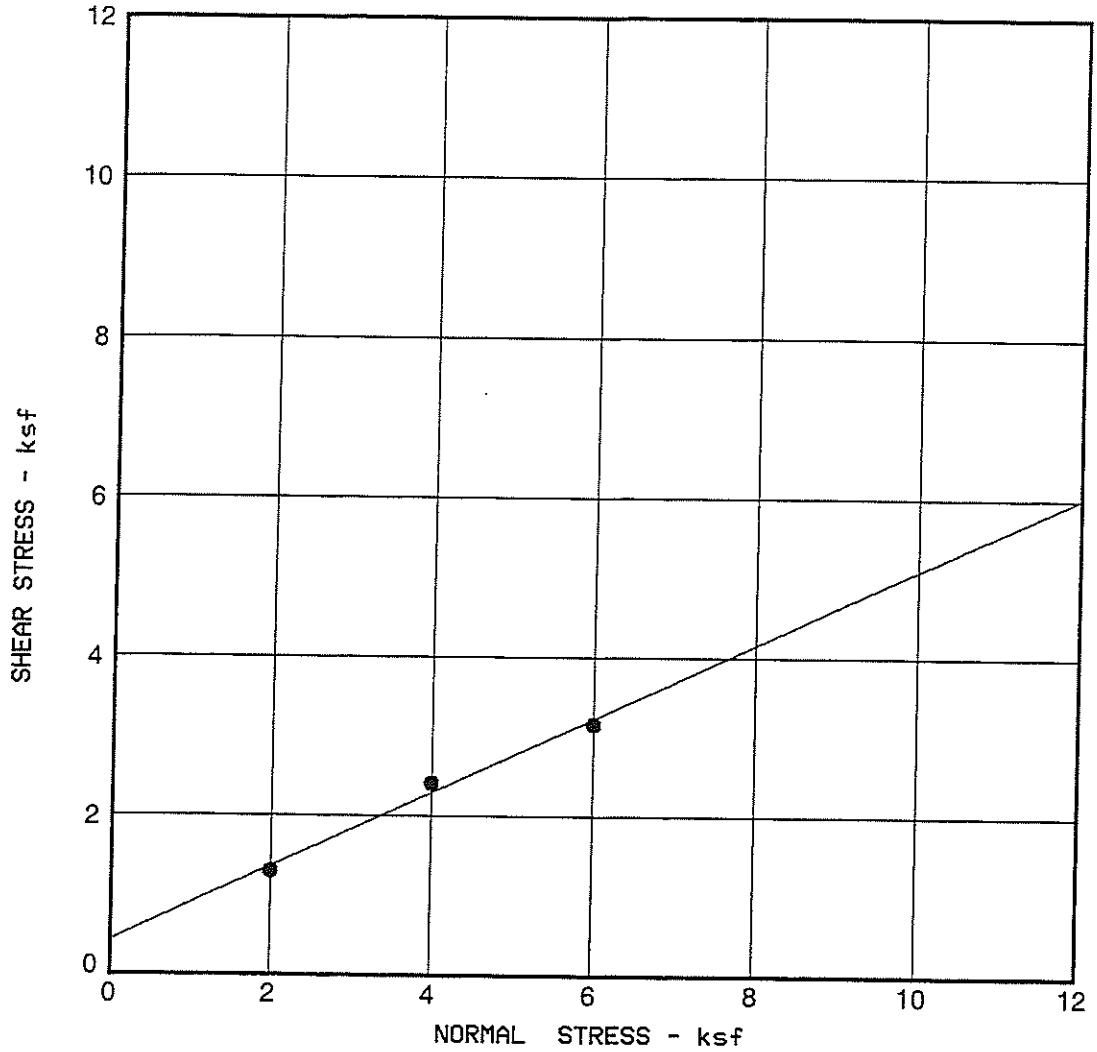
PROJECT NO. 58-9194-02

Chatsworth Ridge Estates
Los Angeles County, California
Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-8



Test type	controlled - strain test		
Rate of shear - in/min	0.0125		
Normal Stress - psf	2000	4000	6000
Maximum Shear - psf	1296	2412	3156
Shear Strain - %			

Moisture Content Before Test= 11.3 %
Moisture Content After Test = 19.2 %

Sample	BA-1
Depth - ft	83.0
Friction Angle - deg	25
Cohesion - ksf	0.43
Description	Remolded Siltstone
Classification	-

-Sample remolded to wet density of 125 pcf
-Sample was sheared 3 times. Results of final shear (residual shear strength) are presented above

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Chatsworth Area

DIRECT SHEAR TEST

PLATE

B-9

AUG 02 2001

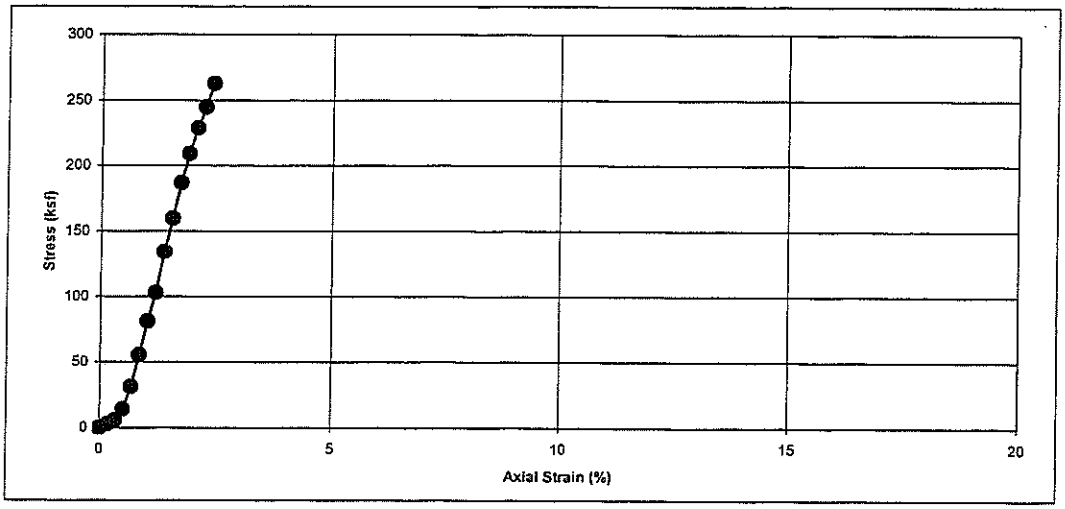
AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

UNCONFINED COMPRESSION TEST

Project Name:	Presidio - Chatsworth/Core	Sample Type:	Undisturbed
Project No.:	58-9194-02/002	Soil Description	Gray Sandstone
Boring No.:	C-1A	Dry Density (pcf):	N/A
Sample No.:	-	Moisture Content (%)	0.0
Depth (feet):	90.5-92	Test Date:	7/23/01

Sample Diameter (inch):	2.497	Wt. Wet Soil+Container(gms)	0
Sample Hieght (inch):	5.87	Wt. Dry Soil+Container(gms)	0
Sample Weight (gms):	1108.63	Wt. Container (gms)	1



Load (lbs)	Deformation (inch)	Area (sq.in)	Axial Stress (ksf)	Axial Strain (%)
0	0.00	4.90	0.00	0.00
89	0.01	4.91	2.61	0.17
201	0.02	4.91	5.89	0.34
490	0.03	4.92	14.34	0.51
1075	0.04	4.93	31.40	0.68
1908	0.05	4.94	55.63	0.85
2794	0.06	4.95	81.32	1.02
3550	0.07	4.96	103.15	1.19
4630	0.08	4.96	134.29	1.36
5515	0.09	4.97	159.69	1.53
6467	0.1	4.98	186.93	1.70
7250	0.11	4.99	209.19	1.88
7948	0.12	5.00	228.94	2.05
8511	0.13	5.01	244.73	2.22
9162	0.14	5.02	262.99	2.39

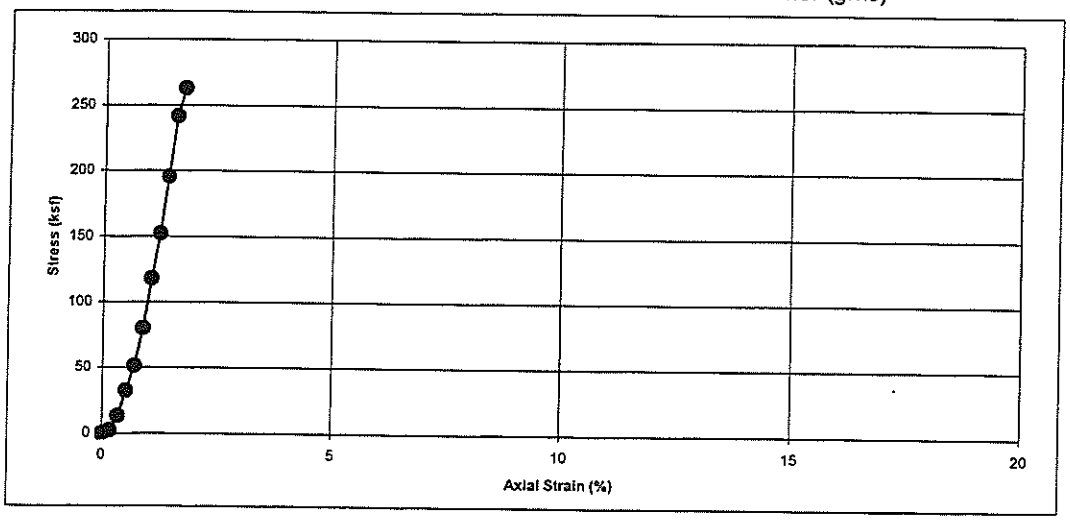
AP Engineering and Testing, Inc.

GEOTECHNICAL TESTING LABORATORY

UNCONFINED COMPRESSION TEST

Project Name:	Presidio - Chatsworth/Core	Sample Type:	Undisturbed
Project No.:	58-9194-02/002	Soil Description	Gray Sandstone
Boring No.:	C-2	Dry Density (pcf):	N/A
Sample No.:	-	Moisture Content (%)	0.0
Depth (feet):	54	Test Date:	7/27/01

Sample Diameter (inch):	2.492	Wt. Wet Soil+Container(gms)	0
Sample Hieght (inch):	5.81	Wt. Dry Soil+Container(gms)	0
Sample Weight (gms):	1081.81	Wt. Container (gms)	1



Load (lbs)	Deformation (inch)	Area (sq.in)	Axial Stress (ksf)	Axial Strain (%)
0	0.00	4.88	0.00	0.00
85	0.01	4.89	2.51	0.17
454	0.02	4.89	13.36	0.34
1112	0.03	4.90	32.66	0.52
1761	0.04	4.91	51.63	0.69
2734	0.05	4.92	80.02	0.86
4042	0.06	4.93	118.10	1.03
5225	0.07	4.94	152.40	1.21
6722	0.08	4.95	195.73	1.38
8324	0.09	4.95	241.95	1.55
9071	0.1	4.96	263.20	1.72

AP Engineering and Testing, Inc.
Geotechnical Testing Laboratory

CONSOLIDATED UNDRAINED TRIAXIAL TEST

Test Procedure: ASTM D 4767

Project Name:	Presidio - Chatsworth/Core	Tested by: KK	Date: 7/21/01
Project No.:	58-9194-2/2	Input Data by: SY	Date: 7/26/01
Boring No.:	C-2	Reviewed by: SY	Date: 7/27/01
Sample No.:	-	Sample Description: Brown Sandstone	
Depth(ft):	50		
Sample Type:	Undisturbed		

Diameter (in)	2.518	2.497	2.492	Avg. =	2.502
Height (in)	6.061	6.055	6.059	Avg. =	6.058

	BEFORE CONSOLIDATION	AFTER CONSOLIDATION	
Area (in²)	4.918		4.918
Moisture Content (%)	2.92	FINAL	0.00
Wet Weight (gms)	459.62		0.00
Dry Weight (gms)	447.95		0.00
Container Weight (gms)	48.34		1.00
Density and Saturation			
Wet Weight (gms)	1146.24		
Container Weight (gms)	0.00		
Wet Density (pcf)	146.6		
Dry Density (pcf)	142.4		
Initial Void Ratio	0.183		
% Saturation (after)	0.0		

Specific Gravity = 2.70

Back Pressure Saturation

B Value (%) =	94	Change in Ht. of the Specimen (in)=	0

Consolidation

Cell Pressure (psi) =	80.1	Initial Burette Ht.(cm)=	12.0
Back Pressure(psi) =	50.1	Final Burette Ht.(cm)=	12.0
Eff. Consol. Stress (psi) =	30.0	Final Height (in)=	6.053
Change in Ht. of Specimen (in) =	0.0050	Final Volume (cu.in) =	29.794

Shear		At Failure	
Rate of Deformation (in/min)=	0.0080	Deviator Stress (ksf) =	148.78
Time to 50% primary Consolidation =	min.	Eff. Minor Principal stress (ksf) =	2.09
Failure Criteria:		Eff. Major Principal stress (ksf) =	150.87
Condition at which maximum deviator stress occurs		Axial Strain (%) =	9.09

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Cell No. 1

Project Name:	Presidio - Chatsworth/Core	Cell Pressure:	80.1	psi
Project No:	58-9194-2/2	Back Pressure :	50.1	psi
Boring No.:	C-2	Consolidation Pressure :	30.0	psi
Depth(ft):	50	Initial Sample Height:	6.058	in
Sample No.:	-	Initial Area of Sample:	4.918	sq. in.
Sample Type:	Undisturbed	Final Sample Ht.* (L):	6.053	in
Sample Description:	Brown Sandstone	Final Sample Area (A)*:	4.918	sq. in.

* After Consolidation

Cell Pressure (psi)	Load (lbs)	Axial Deformation (in)	Back Pressure 0	Deviator Stress (S1-S3) (ksf)	Axial Strain (%)	Pore Pressure Change (ksf)	Shear Stress q' (S1-S3)/2 (ksf)	Normal Stress p' (S1'+S3')/2 (ksf)
80.1	0	0.000	50.4	0.00	0.00	0.00	0.00	4.32
80.1	45	0.010	51.1	1.32	0.17	0.10	0.66	4.88
80.1	72	0.020	54.5	2.10	0.33	0.59	1.05	4.78
80.1	263	0.030	60.6	7.66	0.50	1.47	3.83	6.68
80.1	621	0.040	65.3	18.06	0.66	2.15	9.03	11.21
80.1	1125	0.050	68.2	32.67	0.83	2.56	16.33	18.09
80.1	1648	0.060	69.5	47.78	0.99	2.75	23.89	25.46
80.1	2219	0.070	70.3	64.22	1.16	2.87	32.11	33.57
80.1	2753	0.080	70.6	79.54	1.32	2.91	39.77	41.18
80.1	3291	0.090	70.7	94.93	1.49	2.92	47.47	48.86
80.1	3710	0.100	70.5	106.84	1.65	2.89	53.42	54.84
80.1	4171	0.110	70.1	119.91	1.82	2.84	59.96	61.44
80.1	4626	0.120	69.2	132.77	1.98	2.71	66.38	68.00
80.1	5051	0.130	67.6	144.72	2.15	2.48	72.36	74.20
80.1	5589	0.140	65.9	159.87	2.31	2.23	79.93	82.02

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CONSOLIDATED UNDRAINED TRIAXIAL TEST

Test Procedure: ASTM D 4767

Project Name:	Presidio - Chatsworth/Core	Tested by: KK	Date: 7/21/01
Project No.:	58-9194-2/2	Input Data by: SY	Date: 7/26/01
Boring No.:	C-2	Reviewed by: SY	Date: 7/27/01
Sample No.:	-	Sample Description: Brown Sandstone	
Depth(ft):	189		
Sample Type:	Undisturbed		

Diameter (in)	2.485	2.500	2.492	Avg. =	2.492
Height (in)	4.930	4.927	4.925	Avg. =	4.927

	BEFORE CONSOLIDATION	AFTER CONSOLIDATION
Area (in²)	4.879	4.879
Moisture Content (%)	2.13	FINAL 0.00
Wet Weight (gms)	398.61	0.00
Dry Weight (gms)	391.34	0.00
Container Weight (gms)	49.84	1.00
Density and Saturation		
Wet Weight (gms)	993.12	
Container Weight (gms)	0.00	
Wet Density (pcf)	157.4	
Dry Density (pcf)	154.1	
Initial Void Ratio	0.093	
% Saturation (after)	0.0	

Specific Gravity = 2.70

Back Pressure Saturation

B Value (%) =	92	Change in Ht. of the Specimen (in)=	0

Consolidation

Cell Pressure (psi) =	100.1	Initial Burette Ht.(cm)=	12.0
Back Pressure(psi) =	40.1	Final Burette Ht.(cm)=	12.0
Eff. Consol. Stress (psi) =	60.0	Final Height (in)=	4.922
Change in Ht. of Specimen (in) =	0.0050	Final Volume (cu.in) =	24.039

Shear		At Failure	
Rate of Deformation (in/min)=	0.0080	Deviator Stress (ksf) =	162.46
Time to 50% primary Consolidation =	min.	Eff. Minor Principal stress (ksf) =	0.01
Failure Criteria:		Eff. Major Principal stress (ksf) =	162.48
Condition at which maximum deviator stress occurs		Axial Strain (%) =	2.23

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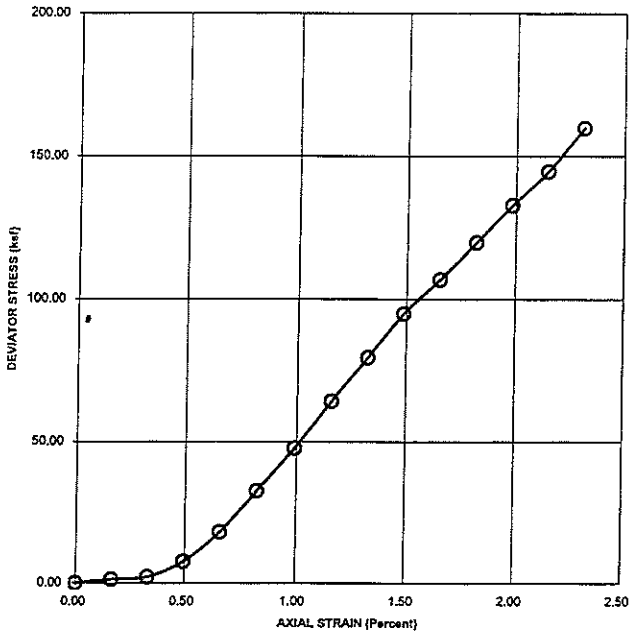
CONSOLIDATED UNDRAINED TRIAXIAL TEST

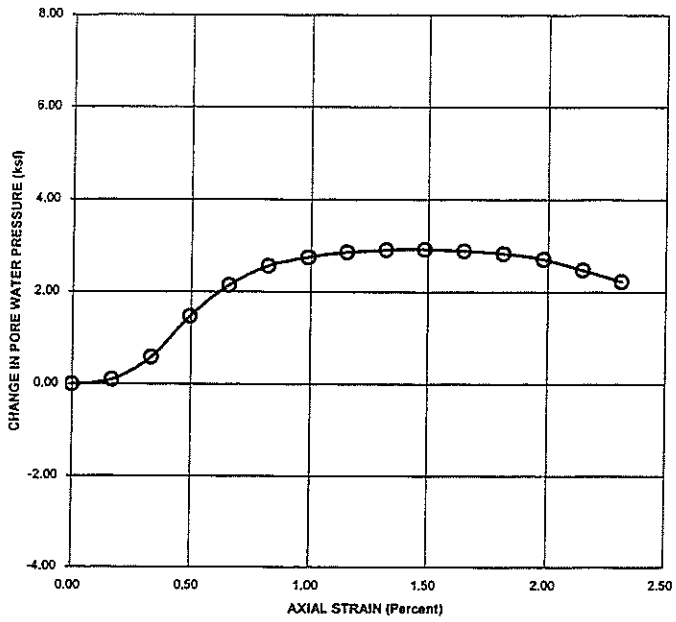
Cell No. 1

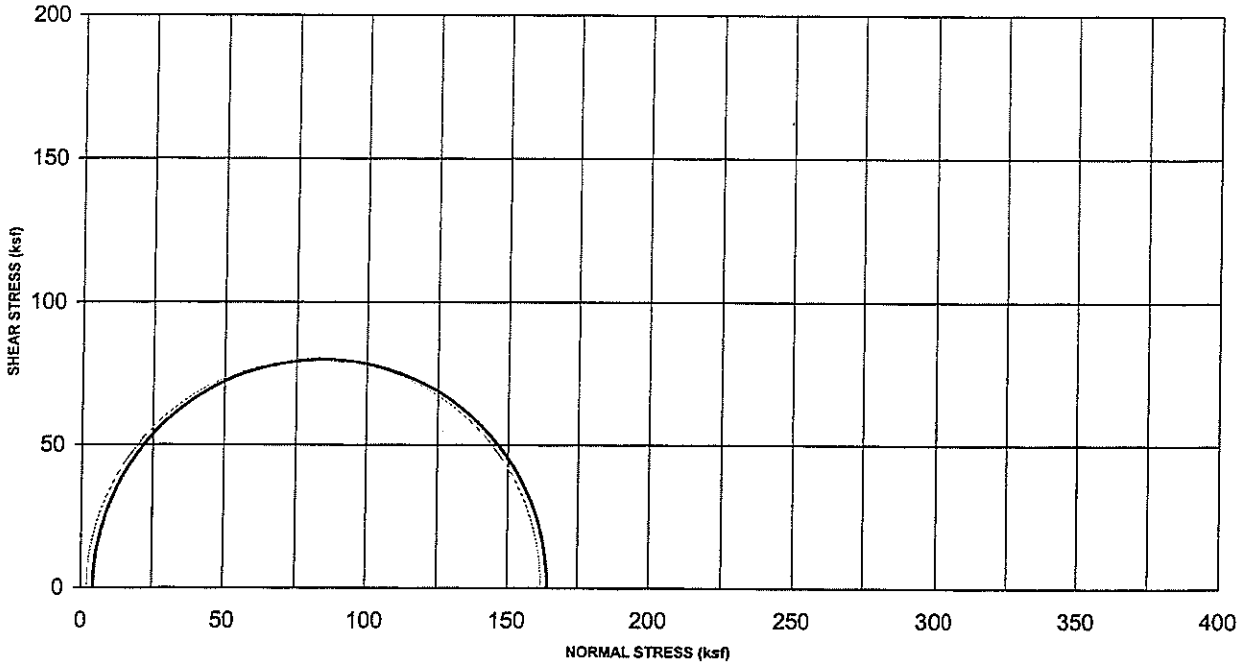
Project Name:	Presidio - Chatsworth/Core	Cell Pressure:	100.1 psi
Project No:	58-9194-2/2	Back Pressure :	40.1 psi
Boring No.:	C-2	Consolidation Pressure :	60.0 psi
Depth(ft):	189	Initial Sample Height:	4.927 in
Sample No.:	-	Initial Area of Sample:	4.879 sq. in.
Sample Type:	Undisturbed	Final Sample Ht.* (L):	4.922 in
Sample Description:	Brown Sandstone	Final Sample Area (A)*:	4.879 sq. in.

* After Consolidation

Cell Pressure (psi)	Load (lbs)	Axial Deformation (in)	Back Pressure 0	Deviator Stress (S1-S3) (ksf)	Axial Strain (%)	Pore Pressure Change (ksf)	Shear Stress q' (S1-S3)/2 (ksf)	Normal Stress p' (S1'+S3')/2 (ksf)
100.1	0	0.000	40.5	0.00	0.00	0.00	0.00	8.64
100.1	358	0.010	55.1	10.55	0.20	2.10	5.27	11.81
100.1	1008	0.020	76.7	29.63	0.41	5.21	14.82	18.24
100.1	1839	0.030	85.6	53.95	0.61	6.49	26.97	29.12
100.1	2638	0.040	89.2	77.23	0.81	7.01	38.62	40.24
100.1	3266	0.050	90.4	95.42	1.02	7.19	47.71	49.16
100.1	3829	0.060	92.6	111.64	1.22	7.50	55.82	56.96
100.1	4246	0.070	94.2	123.54	1.42	7.73	61.77	62.68
100.1	4598	0.080	96.2	133.51	1.63	8.02	66.75	67.37
100.1	4917	0.090	98.7	142.48	1.83	8.38	71.24	71.50
100.1	5154	0.100	99.5	149.04	2.03	8.50	74.52	74.66
100.1	5630	0.110	100.4	162.46	2.23	8.63	81.23	81.25







Project Name:	Presidio - Chatsworth/Core	Sample Type:	Undisturbed
Project No.:	58-9194-2/2	Sample Description:	Brown Sandstone
Boring No.:	C-2	Dry Unit Weight (pcf):	142.4
Sample No.:	-	Initial Moisture Content (%):	7.1
Depth (ft):	50	Eff. Confining Pressure (ksf):	4.32

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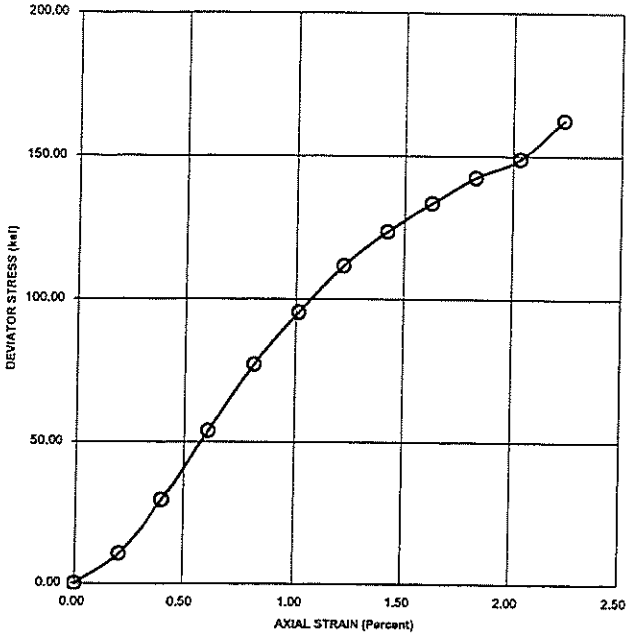

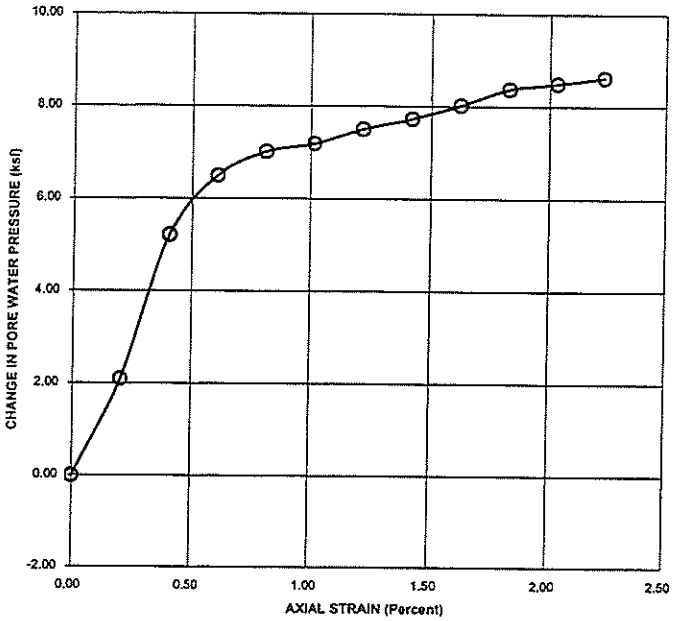

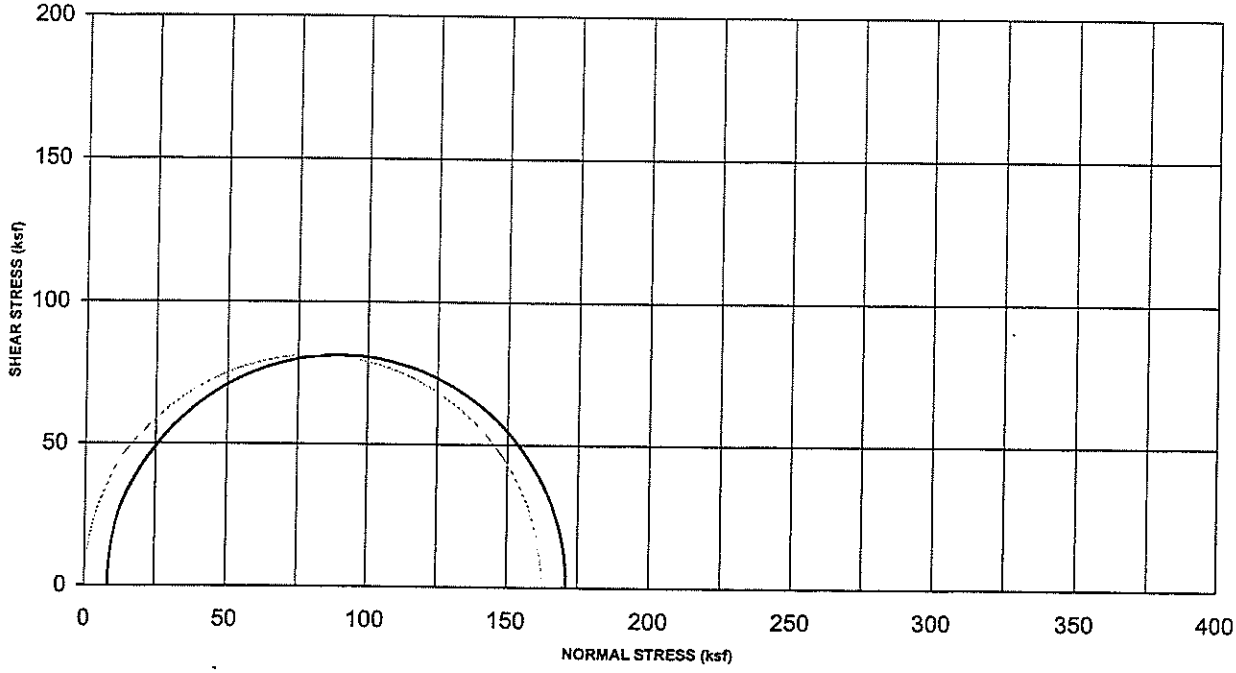

Project Name:	Presidio - Chatsworth/Core	Sample Type:	Undisturbed
Project No.:	58-9194-2/2	Sample Description:	Brown Sandstone
Boring No.:	C-2	Dry Unit Weight (pcf):	154.1
Sample No.:	-	Initial Moisture Content (%):	2.1
Depth (ft):	189	Eff. Confining Pressure (ksf):	8.64

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CONSOLIDATED UNDRAINED TRIAXIAL TEST

Test Procedure: ASTM D 4767

Project Name:	Presidio - Chatsworth/Core	Tested by: KK	Date: 7/21/01
Project No.:	58-9194-2/2	Input Data by: SY	Date: 7/26/01
Boring No.:	C-1A	Reviewed by: SY	Date: 7/27/01
Sample No.:	-	Sample Description: Brown Sandstone	
Depth(ft):	91		
Sample Type:	Undisturbed		

Diameter (in)	2.490	2.492	2.493	Avg. =	2.492
Height (in)	5.953	5.962	5.948	Avg. =	5.954

	BEFORE CONSOLIDATION	AFTER CONSOLIDATION
Area (in²)	4.876	4.876
Moisture Content (%)	1.51	FINAL 0.00
Wet Weight (gms)	360.68	0.00
Dry Weight (gms)	356.07	0.00
Container Weight (gms)	50.12	1.00
Density and Saturation		
Wet Weight (gms)	1099.10	
Container Weight (gms)	0.00	
Wet Density (pcf)	144.2	
Dry Density (pcf)	142.1	
Initial Void Ratio	0.186	
% Saturation (after)	0.0	

Specific Gravity = 2.70

Back Pressure Saturation			
B Value (%) =	98	Change in Ht. of the Specimen (in)=	0

Consolidation			
Cell Pressure (psi) =	100.5	Initial Burette Ht.(cm)=	12.0
Back Pressure(psi) =	40.5	Final Burette Ht.(cm)=	12.0
Eff. Consol. Stress (psi) =	60.0	Final Height (in)=	5.949
Change in Ht. of Specimen (in) =	0.0050	Final Volume (cu.in) =	29.034

Shear		At Failure	
Rate of Deformation (in/min)=	0.0080	Deviator Stress (ksf) =	167.45
Time to 50% primary Consolidation =	min.	Eff. Minor Principal stress (ksf) =	5.80
Failure Criteria:		Eff. Major Principal stress (ksf) =	173.26
Condition at which maximum deviator stress occurs		Axial Strain (%) =	1.85

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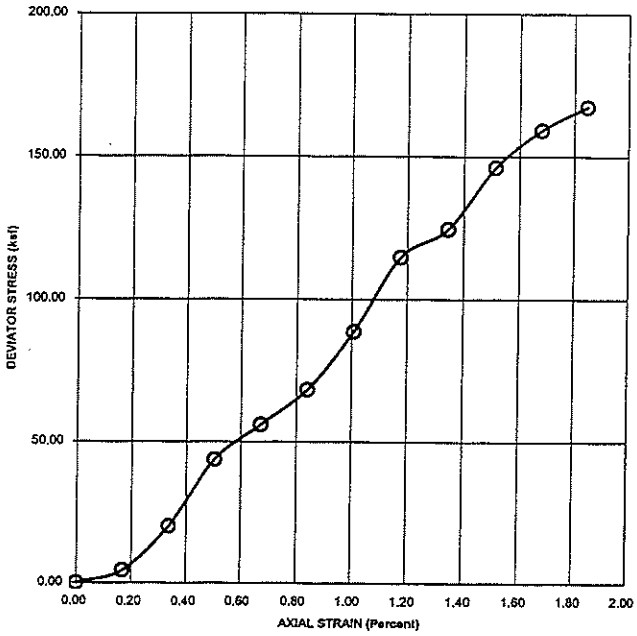
CONSOLIDATED UNDRAINED TRIAXIAL TEST

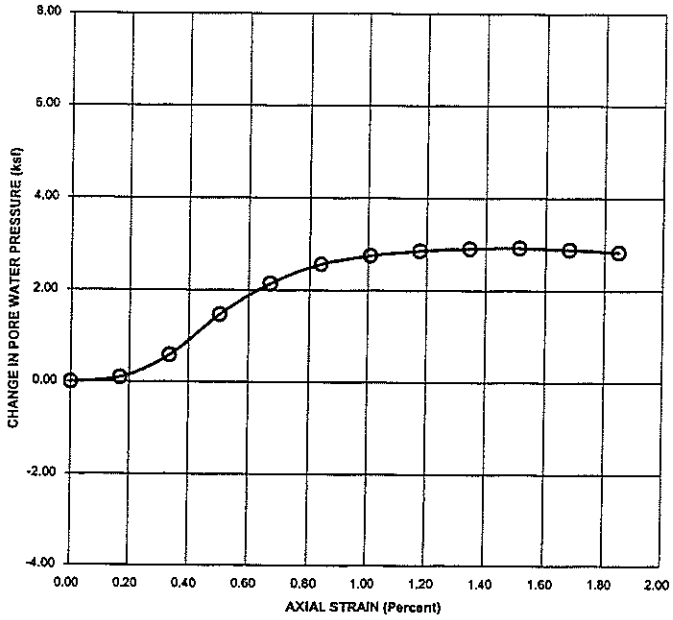
Cell No. 1

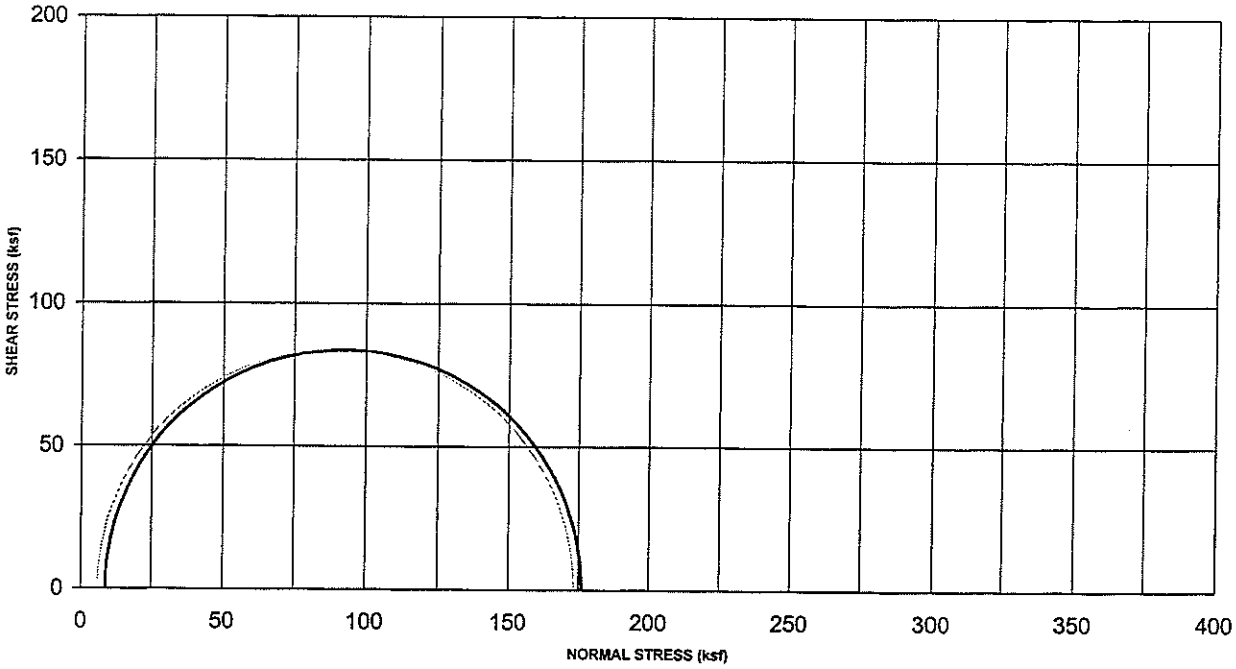
Project Name:	Presidio - Chatsworth/Core	Cell Pressure:	100.5 psi
Project No:	58-9194-2/2	Back Pressure :	40.5 psi
Boring No.:	C-1A	Consolidation Pressure :	60.0 psi
Depth(ft):	91	Initial Sample Height:	5.954 in
Sample No.:	-	Initial Area of Sample:	4.876 sq. in.
Sample Type:	Undisturbed	Final Sample Ht.* (L):	5.949 in
Sample Description:	Brown Sandstone	Final Sample Area (A)*:	4.876 sq. in.

* After Consolidation

Cell Pressure (psi)	Load (lbs)	Axial Deformation (in)	Back Pressure 0	Deviator Stress (S1-S3) (ksf)	Axial Strain (%)	Pore Pressure Change (ksf)	Shear Stress q' (S1-S3)/2 (ksf)	Normal Stress p' (S1'+S3')/2 (ksf)
100.5	0	0.000	50.4	0.00	0.00	0.00	0.00	8.64
100.5	151	0.010	51.1	4.45	0.17	0.10	2.23	10.77
100.5	684	0.020	54.5	20.13	0.34	0.59	10.07	18.12
100.5	1489	0.030	60.6	43.75	0.50	1.47	21.88	29.05
100.5	1910	0.040	65.3	56.03	0.67	2.15	28.01	34.51
100.5	2333	0.050	68.2	68.32	0.84	2.56	34.16	40.24
100.5	3033	0.060	69.5	88.67	1.01	2.75	44.33	50.22
100.5	3933	0.070	70.3	114.78	1.18	2.87	57.39	63.17
100.5	4277	0.080	70.6	124.61	1.34	2.91	62.30	68.04
100.5	5027	0.090	70.7	146.21	1.51	2.92	73.11	78.82
100.5	5482	0.100	70.5	159.17	1.68	2.89	79.59	85.33
100.5	5777	0.110	70.1	167.45	1.85	2.84	83.73	89.53







Project Name:	Presidio - Chatsworth/Core	Sample Type:	Undisturbed
Project No.:	58-9194-2/2	Sample Description:	Brown Sandstone
Boring No.:	C-1A	Dry Unit Weight (pcf):	142.1
Sample No.:	-	Initial Moisture Content (%):	6.6
Depth (ft):	91	Eff. Confining Pressure (ksf):	8.64

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APPENDIX C
SLOPE STABILITY ANALYSIS

GENERAL

In order to assess stability of the fill slopes and the natural sandstone slopes a slope stability analysis was performed on the proposed slopes at the Presidio development. The slopes were analyzed using the computer program XSTABL. XSTABL is a two-dimensional, limit equilibrium analysis to compute the factor of safety for slopes. The program can be used to search for the most critical surface or the factor of safety may be calculated for a specified surface. Failure mechanisms of cut and fill slopes and several repair alternatives for existing and proposed slopes were performed. Table # in our appendix lists all of the analysis performed n the slopes. Plates # to # show the stability analysis sections that were taken.

GEOMETRY OF THE SLOPE AND FAILURE PLANE

The surface topography of the slope to be modeled in XSTABL was obtained from the topographic map prepared by B&E Engineers, Inc. Our geological investigation indicated that the bedding inclination of the sandstone bedrock underlying the slope was both cross and parallel to the slope depending on the location of the profile. All slope stability analysis were performed on proposed sections surface geometry with the exception of Section C-C', P-P', AA-AA' and Q-Q'. We analyzed the stability of these sections for both the existing and proposed slopes since these were all existing landslides.

MATERIAL PROPERTIES

The material properties used in the slope stability analysis are summarized in the table below:

Table C-1

Condition	Moist Density (pcf)	Saturated Density (pcf)	Friction Angle (deg)	Cohesion (psf)
Parallel Bedding	120	130	24.0	150
Cross Bedding	120	130	28.0	4000
Fill Material	120	130	33.0	120
Landslide – Slide Plane	120	130	27	0

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These material parameters were arrived at by studying the site geology maps and strike and dip of the Kcs sandstone bedding, boring logs both past and previous, the results from the laboratory tests, and a parametric study of the material parameters. Additionally, Rock Quality Designation (RQD) data and correlations were used in arriving at material parameters for both parallel and cross bedding strengths. The material parameters for the section at C-C', P-P', AA-AA', and Q-Q all of which are existing landslides were arrived at by performing a back analysis approach.

From our analysis we confirmed that the choice of 0 pounds per square foot for the cohesive strength and 27-degrees for the internal angle of friction were appropriate parameters for the slide failure plane for the landslide analysis. The material parameters were estimated by targeting a resulting factor of safety of 1.0. These properties resulted in a factor of safety of 1.0 for all sections.

SLOPE STABILITY ANALYSIS

A series of parametric studies were carried out to bracket the material parameters used in the analysis. Several factors were considered in arriving at these material parameters:

- Stability of the existing slopes
- Material parameters used in previous studies
- Geometry of the existing slope
- Bedding angle whether (parallel or cross)
- Existing landslides
- Laboratory testing and geology
- The analysis was carried out accounting for the parallel versus cross bedding of the existing natural slopes.

Three different search approaches were experimented with to arrive at the most likely failure mechanism for each individual slope section failure surface:

- Circular Failure

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- Block Failure
- Specified Failure

When selecting the initiation and termination ranges for the circular and block surface searches initially a wide range of values was prescribed. Several ranges covering the hypothesized critical areas were run to ensure the worst possible failure surface and surface type was selected. Once we were able to narrow down the location of the failure surfaces, we re-ran the analysis to cluster the 10 most critical failure surfaces. There were cases where by using a block failure surface we yielded a lower factor of safety than by using a circular failure surface and vice versa. The results and the factors of safety are discussed in detail in the following sections.

In cases where both circular and block failure surfaces were generated, the failure surface repair was analyzed using the lower of the two failure surfaces also. For the three landslides that were identified in profiles C-C', P-P', AA-AA' and P-P'; all three failure surfaces were generated and the failure surface resulting in the lowest factor of safety was used to arrive at our material parameters.

MATERIAL MODEL AND ANISOTROPY

The conventional Mohr-Coulumb strength envelope was used as the material model within XSTABL. The option of selecting the non-linear Mohr-Coulumb model was not used. We feel due to uncertainties in material parameters and lack of sufficient stress strain behavior of the materials, this level of exactness is not warranted. The conventional Mohr-Coulumb model is a well accepted model and is standard of practice in slope stability analysis.

Anisotropic strengths were assigned to the K_{cs} sandstone bedrock material at the site to capture and account for the directional shear strength due to bedding strike and dip. Cross and parallel bedding shear strength properties were assigned to appropriate zones by studying the orientation. A minimum of 20 degrees angle range was used when assigning the anisotropic strength parameter ranges to account for the variability and uncertainty in the bedding angles.

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PSEUDO-STATIC ANALYSIS

As discussed in our seismicity and geology section, this area is known for experiencing earthquakes, and therefore all permanent slopes were analyzed for stability under earthquake loading. We used a pseudo-static approach towards modeling the seismic stability of slopes. In our method of analysis, a horizontal coefficient is applied to the potential slide mass and the factor of safety against slope stability is evaluated. The horizontal coefficient used in our analysis was K_H=0.15. We assumed a vertical coefficient, K_v = 0.0. The results of the pseudo-static analysis are presented in the results section of this report and are also summarized in TableC-2 in Appendix C.

FACTOR OF SAFETY

It is noted that the factor of safety is defined as the resisting forces divided by the driving forces. Therefore a factor of safety of 1.0 indicates the driving forces equal the resisting forces and the slope is stable. If a slope is safely moving along a slide plane its factor of safety is slightly less than 1.0, say 0.95. Man made fill slopes is usually designed to have a factor of safety of 1.5. All permanent slopes were analyzed to have a minimum static factor of safety of 1.5 and a minimum pseudo-static factor of safety of 1.1. Temporary cut slopes was analyzed to have a minimum factor of safety of 1.5.

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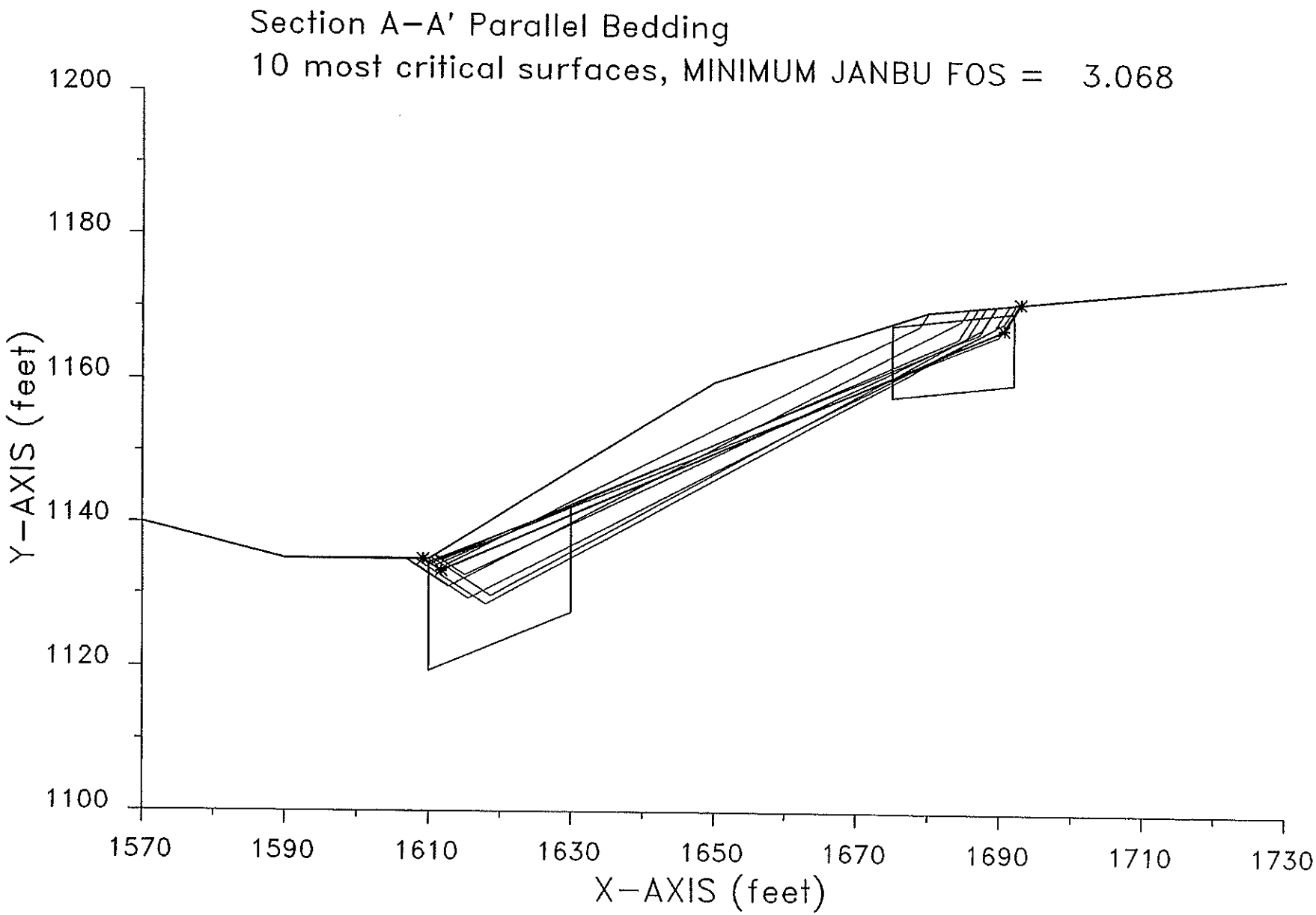
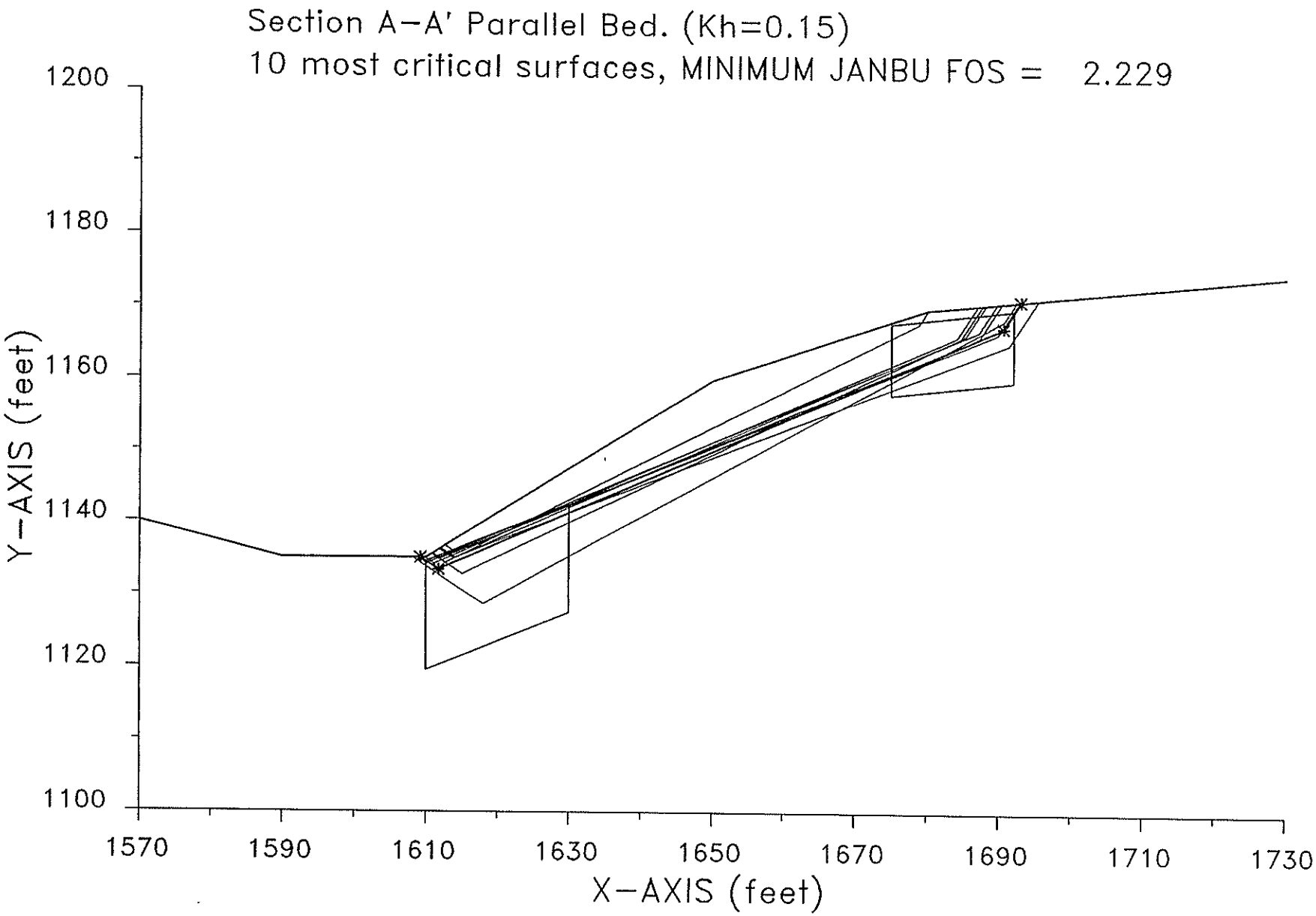
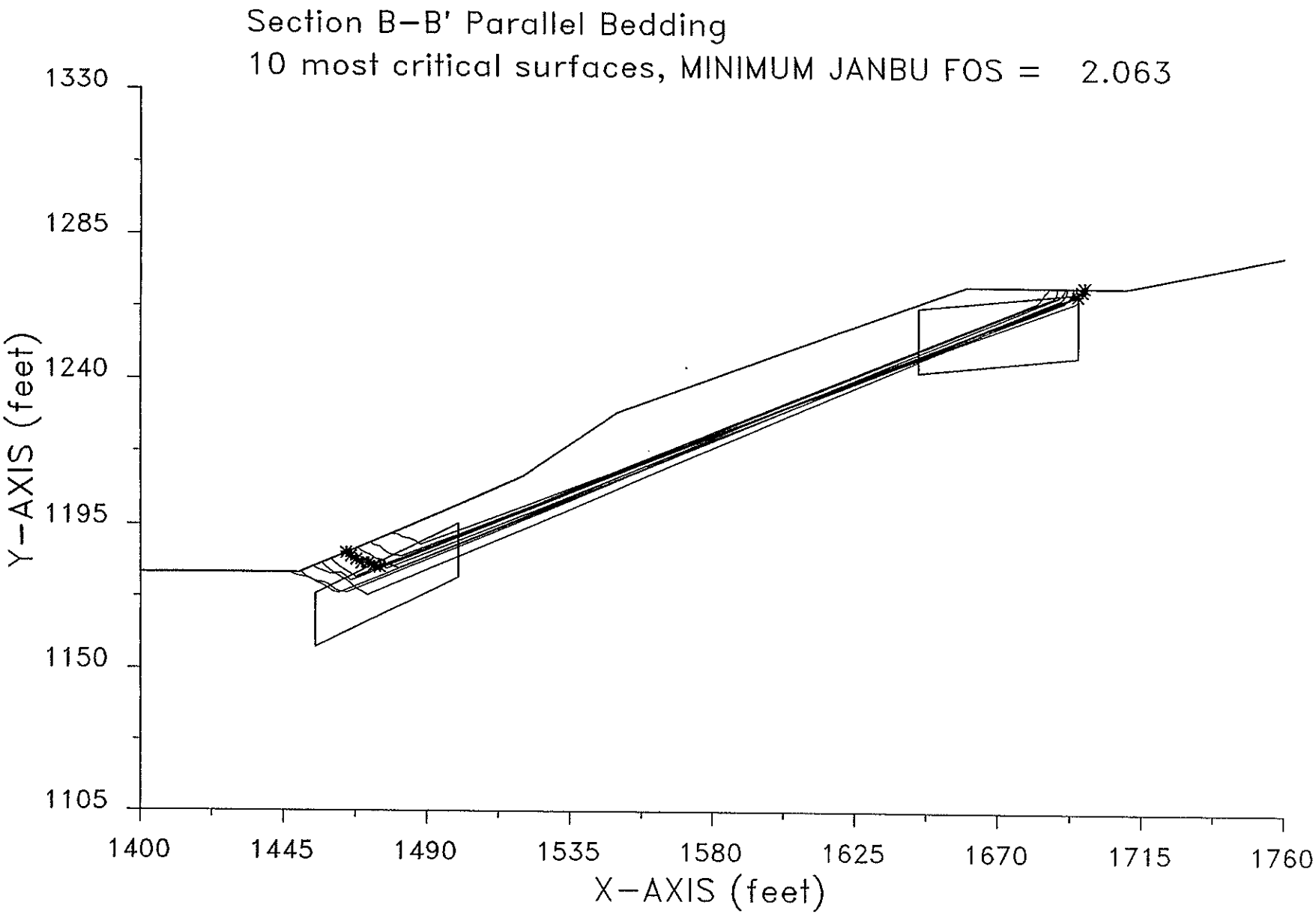
SLOPE NO	Profile Name	Bedding*	Grading of Slope Type	FS (Static)	FS (Pseudo-Static)	Description	SETBACK DISTANCE
1	A-A'	Parallel	Cut in sandstone	3.1	2.2	Existing conditions stable no improvments necessary	
2	B-B'	Parallel	Cut in sandstone	2.1	1.5	Existing conditions no improvments necessary	
2	B-B'	Parallel	CDMG Tension crack	2.3	>1.1	Tension crack at the toe stability evaluation	
3	C-C'	Parallel	Existing landslide	1.0		Unstable - Existing conditions, with no improvments to slide mass	
3	C-C'	Parallel	Existing landslide with fill at top	1.0		Unstable - Fill placed at top of slope to shadow homes	
3	C-C'	Parallel	Sandstone Stability	1.4		Existing conditions no remediations will fill placed at top	
3	C-C'	Parallel	Existing landslide	1.5	1.1	Setback analysis with setback measured from top of slope	100.0
3	CC-CC'	Parallel	Existing landslide	1.5	1.1	Fill placed at top of slope to shadow homes no setback	
3	C3-C3'	Parallel	Existing landslide	1.4	NA	Bedrock stability with fill at top, Unstable mitigation required	
3	C3-C3'	Parallel	Existing landslide	1.5	1.1	Setback analysis with setback taken from top of slope	45.0
4	D-D'	Cross	Cut Slope	>1.5	>1.1	OK by observation Cross Bedding no remediation required	
5	E-E'	Parallel	Cut at top of Sandstone	1.6	1.2	Block analysis of entire slope	
5	E-E'	Parallel	Cut at top of Sandstone	1.9		Initiation at mid slope	
5	E-E'	Parallel	Cut at top of Sandstone	3.6	2.1	Top of slope with 13 degree begging plane analysis	
6	F-F'	Cross	Cut at top of Sandstone	2.4	2.0	Fault w/ 5' tension crack circular analysis	
7	G-G'	Parallel	Cut at top of Sandstone	1.4		Existing conditions Unstable, Slope mitigation required	
7	G-G'	Parallel	Cut at top of Sandstone	1.5	1.1	Setback analysis with setback distance measured from top of slope	60.0
7	G-G'	Parallel	Cut at top of Sandstone	1.5	1.1	Daylight cut shear key, Buttress fill W=65 ft, H=20 ft	
7	G-G'	Parallel	Cut at top of Sandstone	1.7		Temporary cut with 50' toe and 2:1 back cut	
7	G-G'	Parallel	Cut at top of Sandstone	1.9	1.4	Butress fill slope 50' fill at toe and 2.5:1 final fill slope to buttress slope. Block surface used to perform analysis	
8	H-H'	Cross	Fill Slope	>1.5	>1.1	Ok by observation and I-I' Analysis	
9	I-I'	Cross	Fill Slope	1.7	1.2	Fill stability towards the bottom of the slope	
9	I-I'	Cross	Fill Slope	1.8	1.3	Fill stability towards the top of the slope	
10	J-J'	Cross	Cut at toe fill at top	>1.5	>1.1	Stable by observation cross bedded slope	
11	K-K'	Parallel	Fill at top	1.8	1.3	Bottom of fill slope	
11	K-K'	Parallel	Fill at top	1.9	1.4	Middle of fill slope	
11	K-K'	Parallel	Fill at top	1.9	1.4	Top of fill slope	
11	K-K'	Parallel	Fill at top	1.7	1.1	Sandstone Block Failure	
12	L-L'	Cross	Cut and fill at top	1.8	1.5	Sandstone Circular failure	
13	M-M'	Parallel	Fill at top	>1.5	>1.1	Need to study Structural remediation alternatives such as a combination of a MSE wall and drilled pier with and engineered fill	
14	N-N'	Sincline Parallel	Cut at toe and top	>1.5	>1.1	Stable by observation and O-O analysis	
15	O-O'	Sincline Parallel	Cut at toe	1.7	1.2	Folded bedrock circular analysis	
16	P-P'	NA	Existing landslide secondary slide	1.0		Specifyed surface spencers method of analysis	
16	P-P'	NA	Existing landslide secondary slide	0.9		Circular surface Bishops method of analysis	
16	P-P'	NA	Engineering fill slope analysis	1.5	1.0	Circular surface barely stable look at daylight cut shear key	
16	P-P'	NA	Engineering fill slope analysis	1.6	1.1	Daylight cut shear key W=60', H=30' , L=40' dist from top of slope, 1:1 cut slope to increase FS>1.5	
17	AA-AA'	Parallel	Existing landslide	2.0	1.6	Circular analysis	
18	Q-Q'	Sincline Parallel	Existing Landslide and Debri basin size	1.5	1.1	Buttress remediation at the toe, removal of slide debris and placment of engineered fill. 2.25:1 Back-Cut, W=40', D=10'	
18	Q-Q'	Sincline Parallel	Existing Landslide and Debri basin size	1.0			
19	T-T'	Parallel	Sandstone monument on slope with a 11 foot cut	1.5	1.4	Block analysis for 11' vertical cut to construct wall	
19	T-T'	Parallel	Sandstone monument on slope with a 11 foot cut	1.5	1.1	Load that the wall is required to carry to achieve a FS=1.5: 7100LB	
Notes:	See Geologic X-Section for left ot right reference do not look at slope stability analysis sheets This average value represents the entire slope ht. See geologic profiles for details						
	For the Pseudo Static cases a horizontol coefficient Kh=0.15 and Kv=0.0 was used in the analysis						

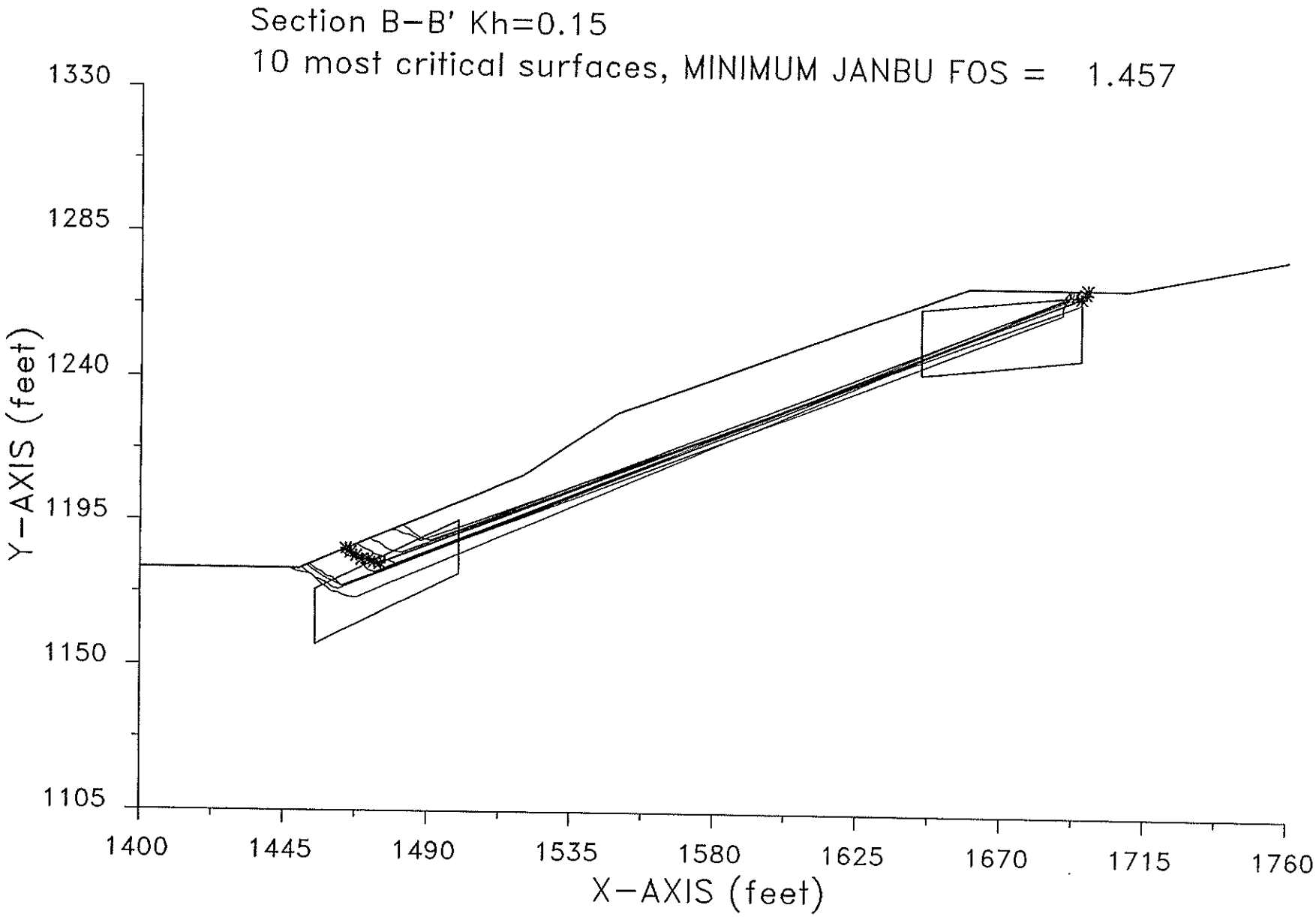
Slope Stability Analysis Summary Table

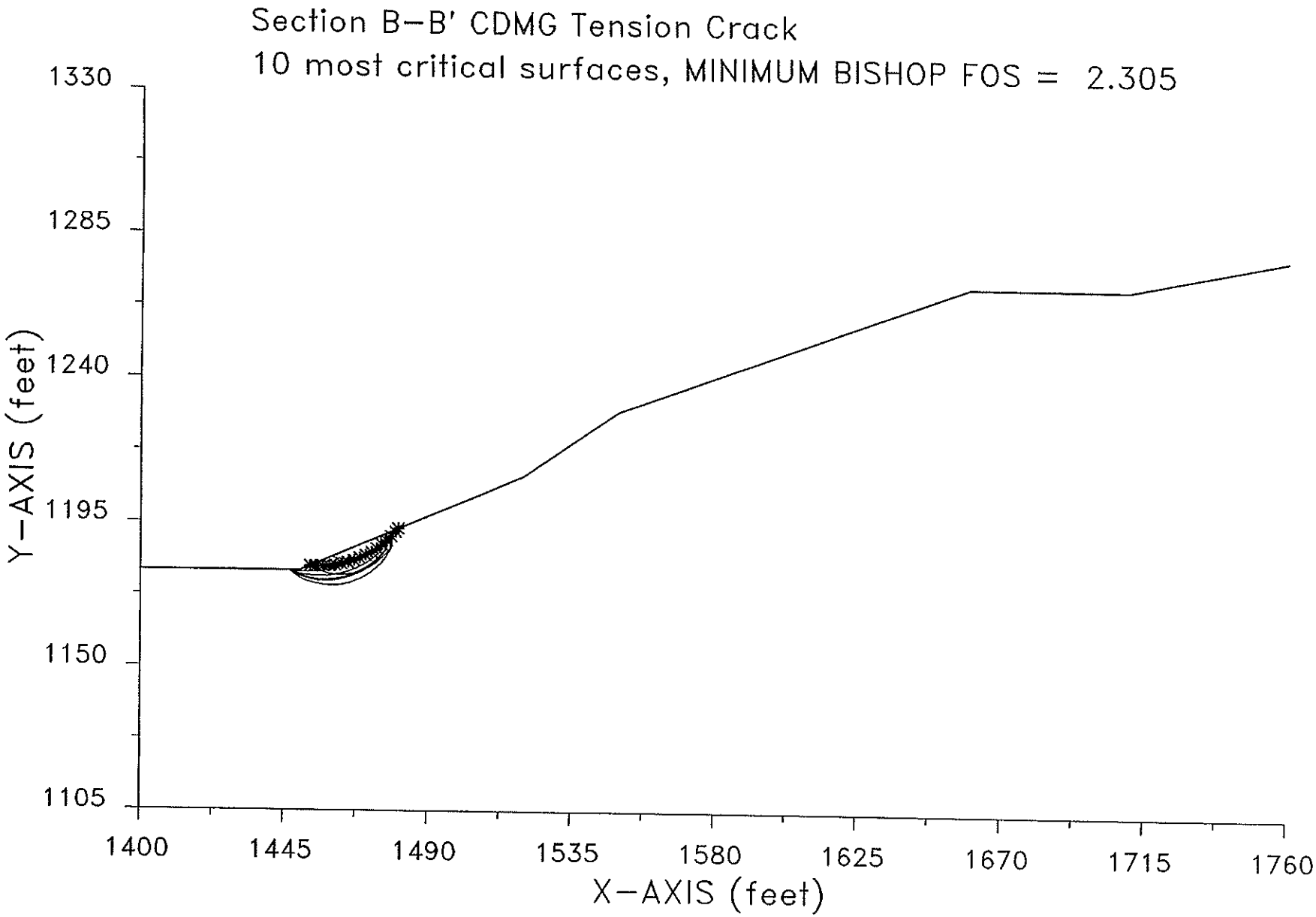

Section A-A' Parallel Bedding
10 most critical surfaces, MINIMUM JANBU FOS = 3.068
1200
1180
1160
1140
1120
1100
Y-AXIS (feet)
1570
1590
1610
1630
1650
1670
1690
1710
1730
X-AXIS (feet)

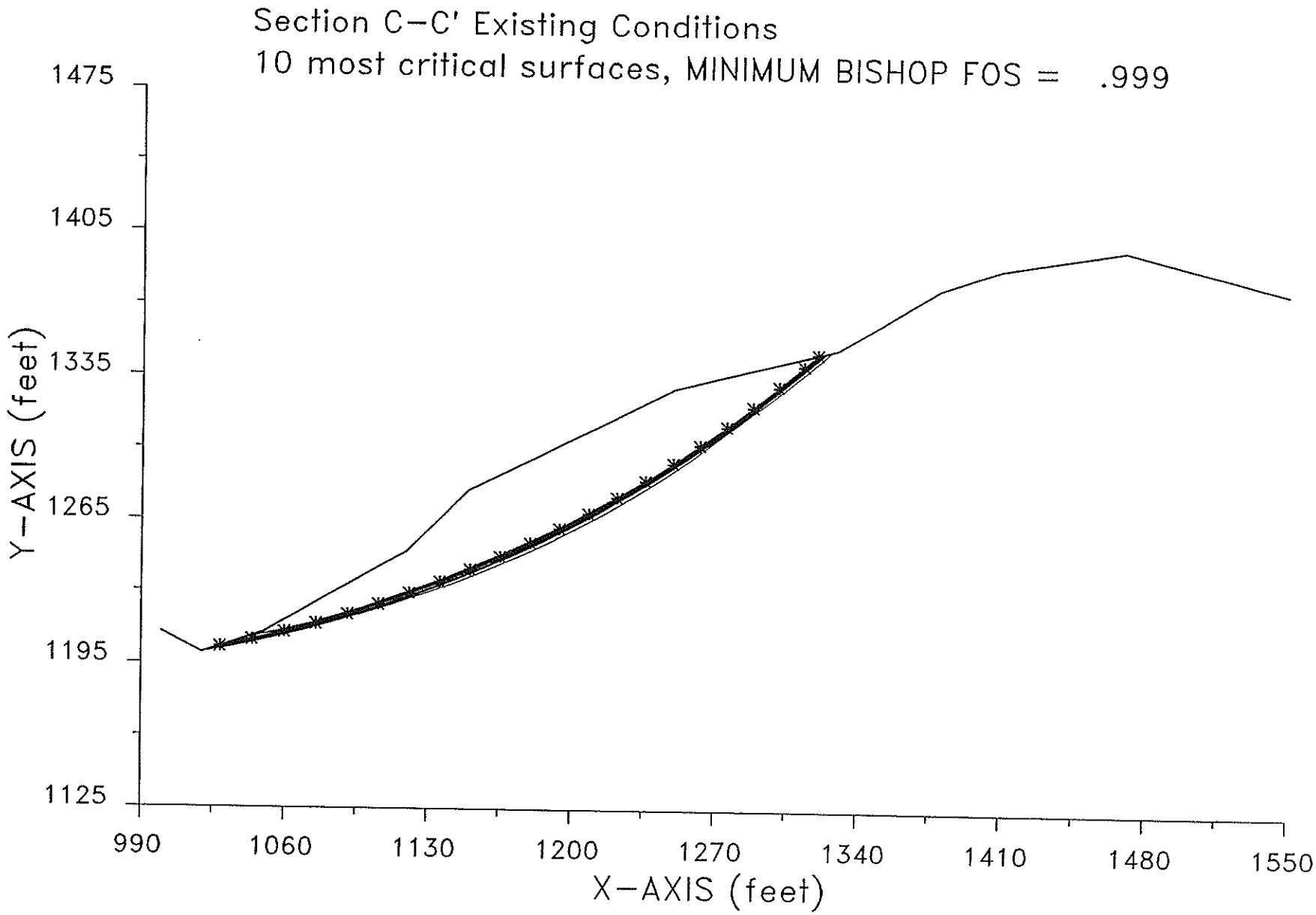

Section A-A' Parallel Bed. (Kh=0.15)
10 most critical surfaces, MINIMUM JANBU FOS = 2.229
1200
1180
1160
1140
1120
1100
Y-AXIS (feet)
1570
1590
1610
1630
1650
1670
1690
1710
1730
X-AXIS (feet)

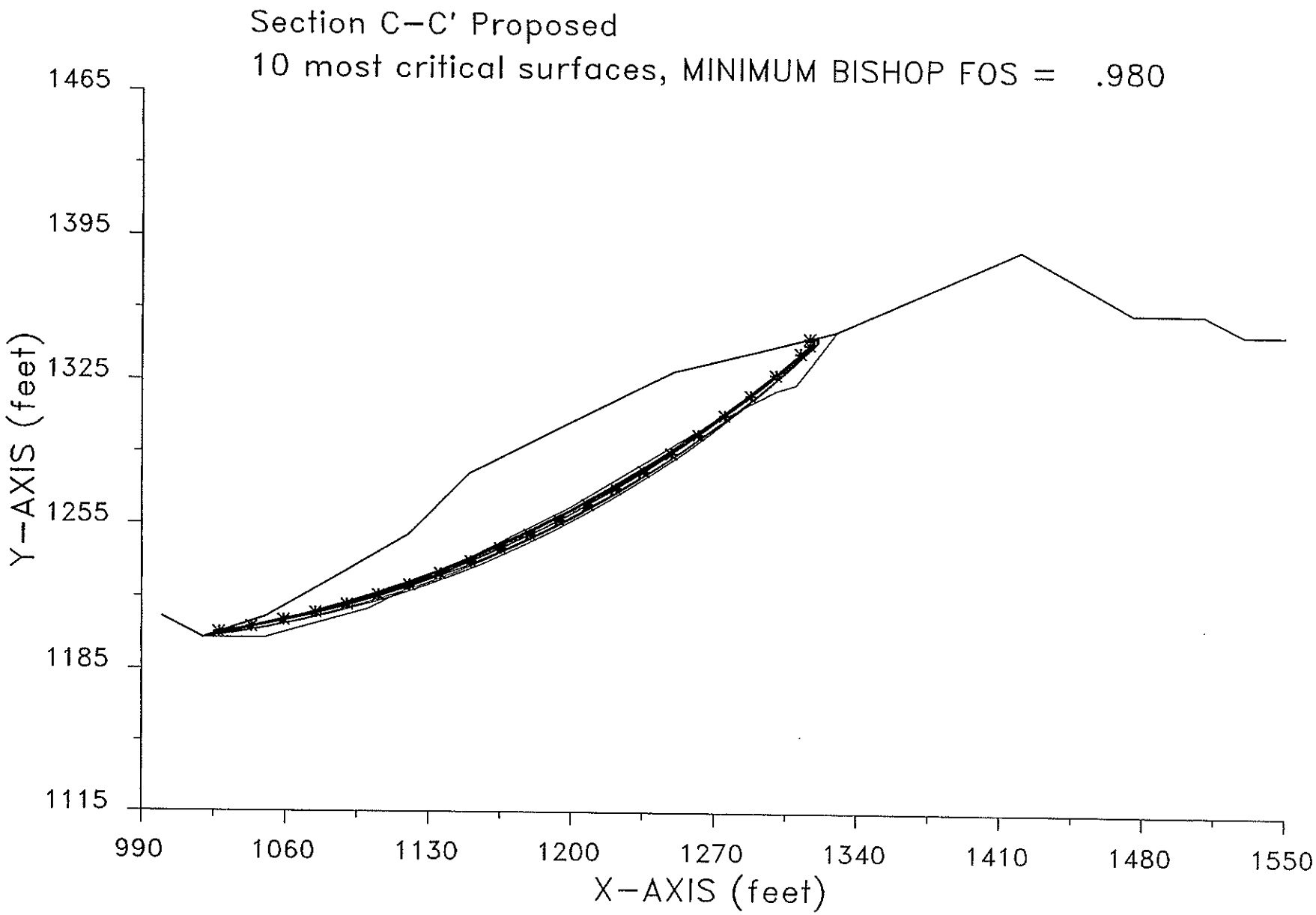
SLOPEB-BX 7-31-** 8:23

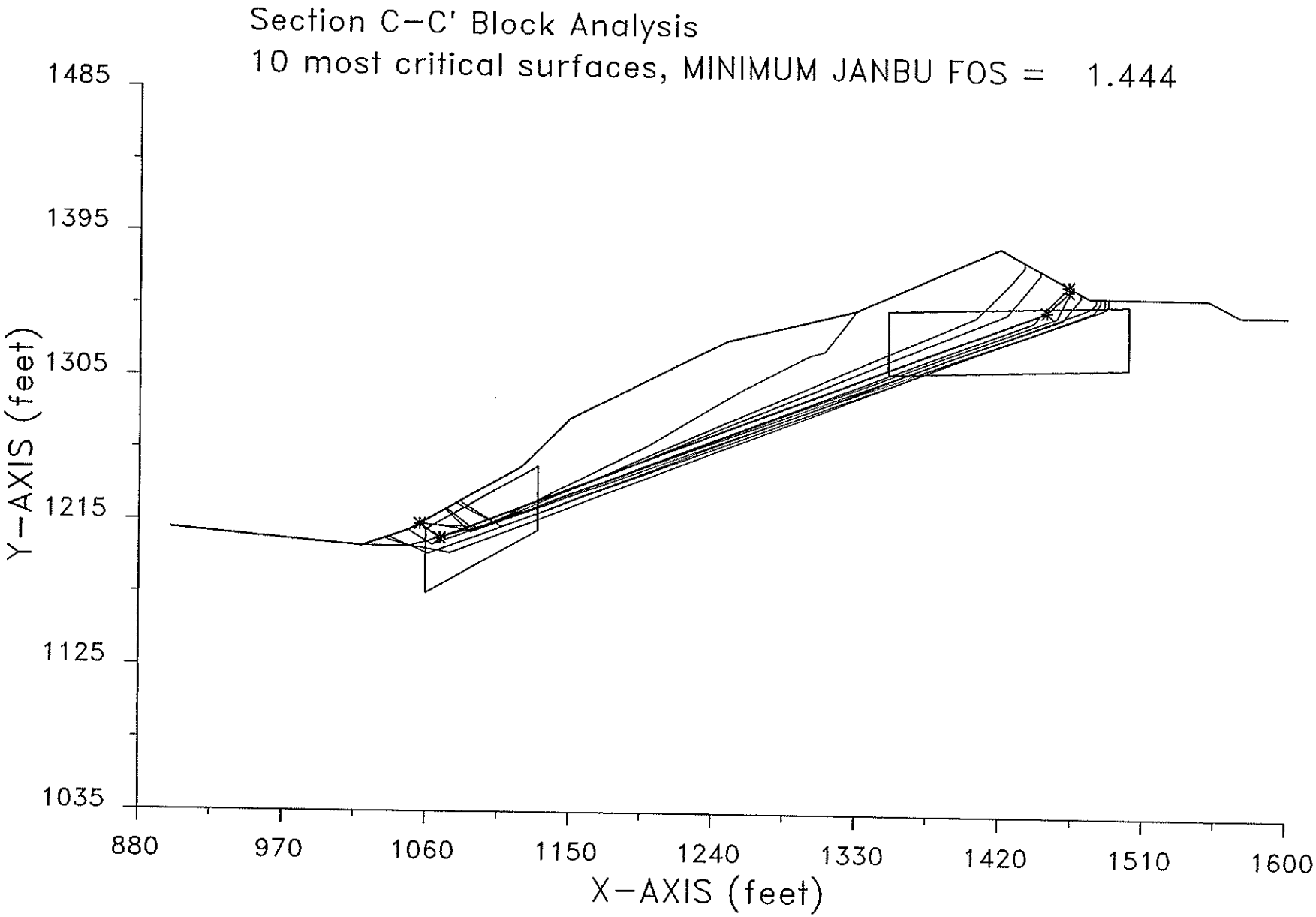



Section B-B' Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.457
1330
1285
1240
1195
1150
1105
Y-AXIS (feet)
1400
1445
1490
1535
1580
1625
1670
1715
1760
X-AXIS (feet)

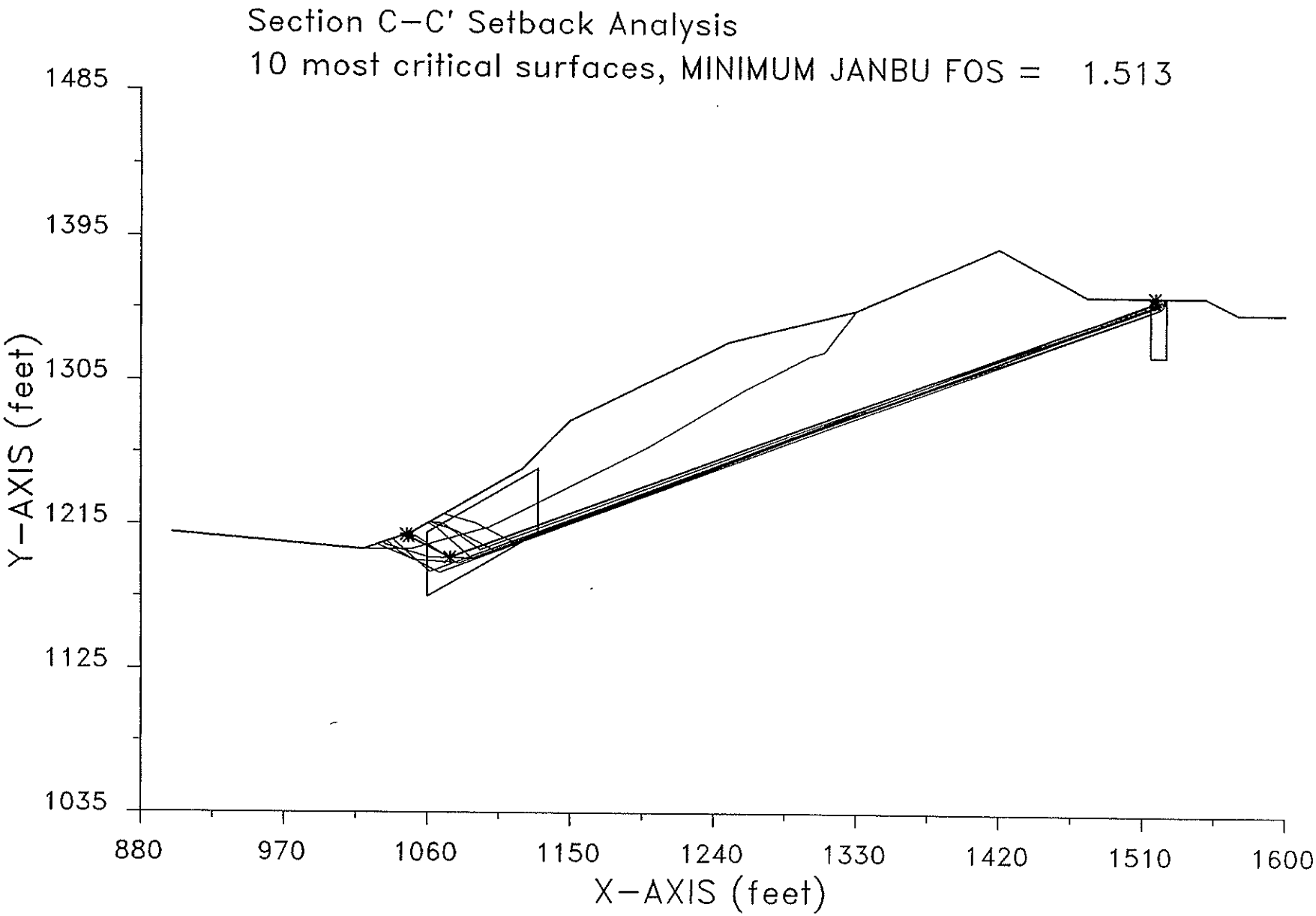

Section B-B' CDMG Tension Crack
10 most critical surfaces, MINIMUM BISHOP FOS = 2.305
1330
1285
1240
1195
1150
1105
Y-AXIS (feet)
1400
1445
1490
1535
1580
1625
1670
1715
1760
X-AXIS (feet)


Section C-C' Existing Conditions
10 most critical surfaces, MINIMUM BISHOP FOS = .999
1475
1405
1335
1265
1195
1125
Y-AXIS (feet)
990
1060
1130
1200
1270
1340
1410
1480
1550
X-AXIS (feet)

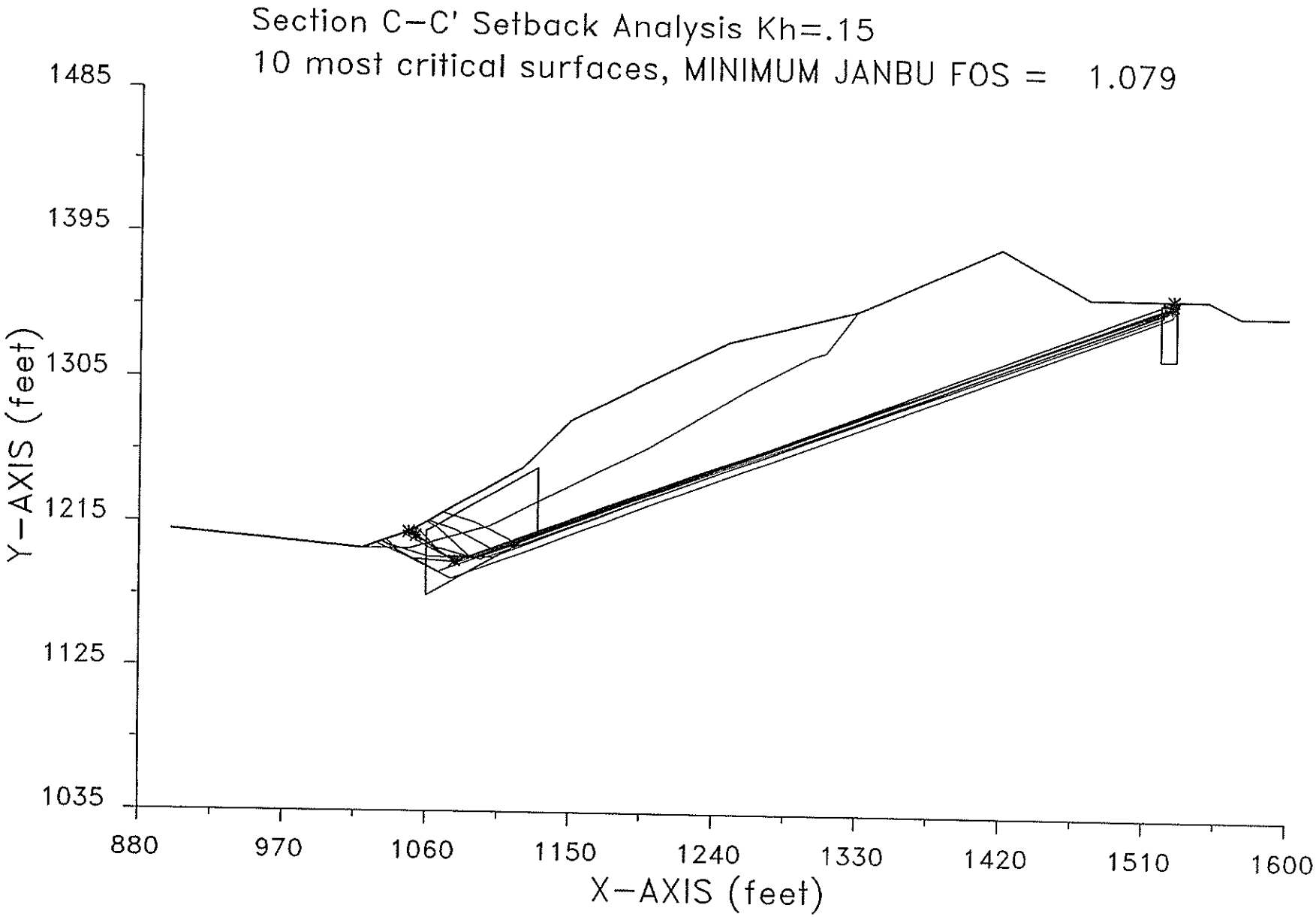

Section C-C' Proposed
10 most critical surfaces, MINIMUM BISHOP FOS = .980
1465
1395
1325
1255
1185
1115
Y-AXIS (feet)
990
1060
1130
1200
1270
1340
1410
1480
1550
X-AXIS (feet)


Section C-C' Block Analysis
10 most critical surfaces, MINIMUM JANBU FOS = 1.444
1485
1395
1305
1215
1125
1035
Y-AXIS (feet)
880
970
1060
1150
1240
1330
1420
1510
1600
X-AXIS (feet)

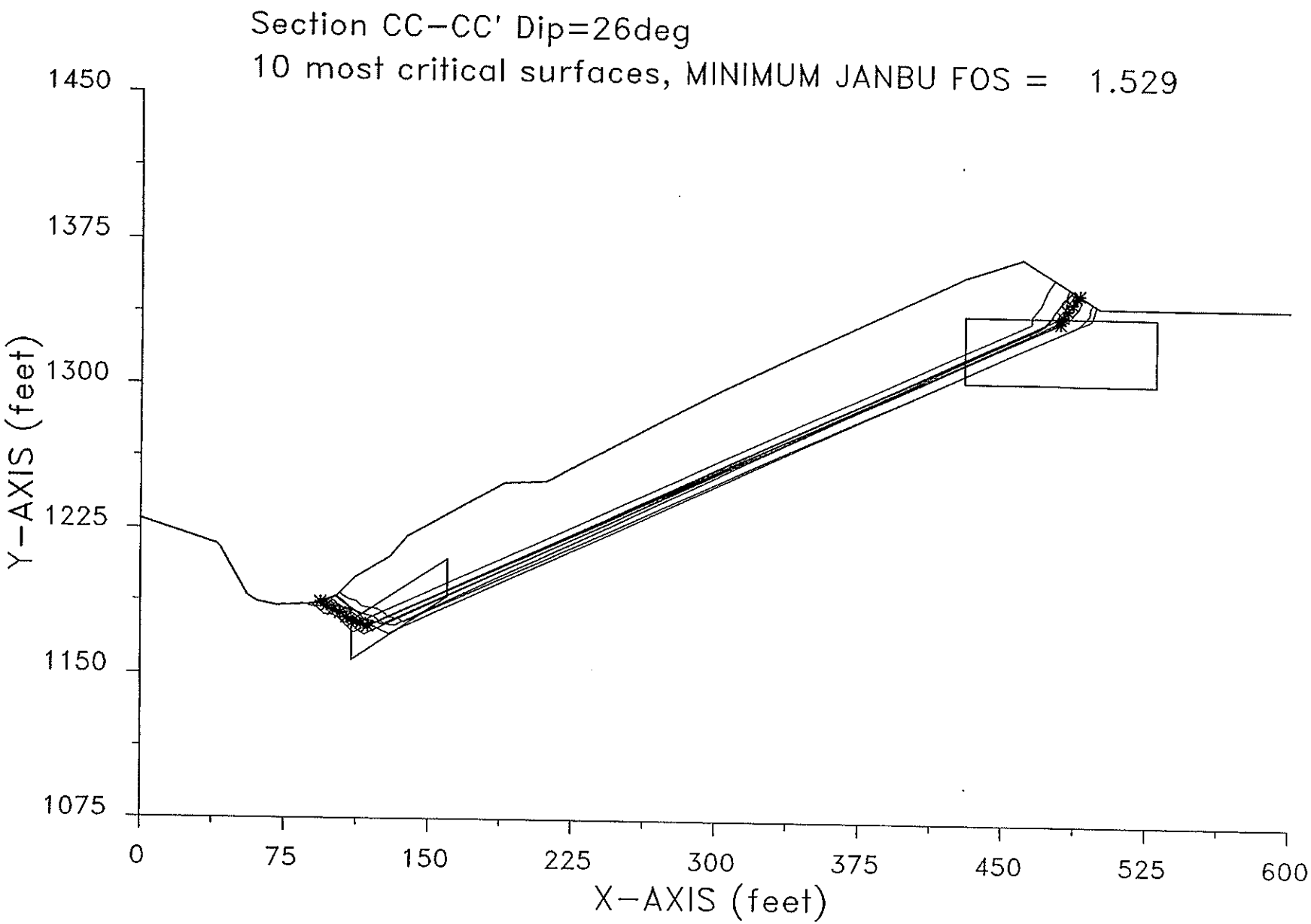
SL..C-C3 7-31-** 8:28



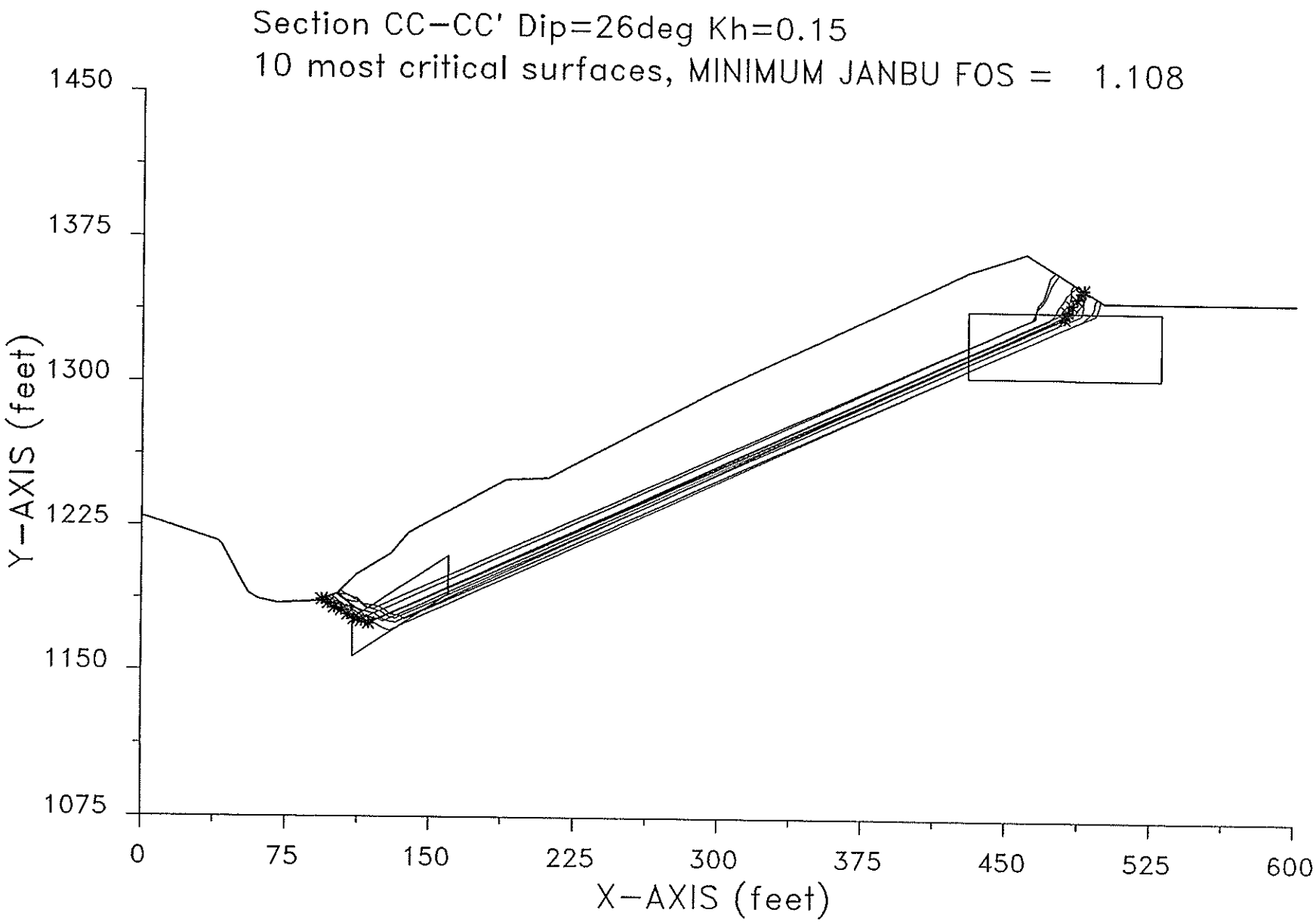
S. .fC-C4 7-31-** 8:46

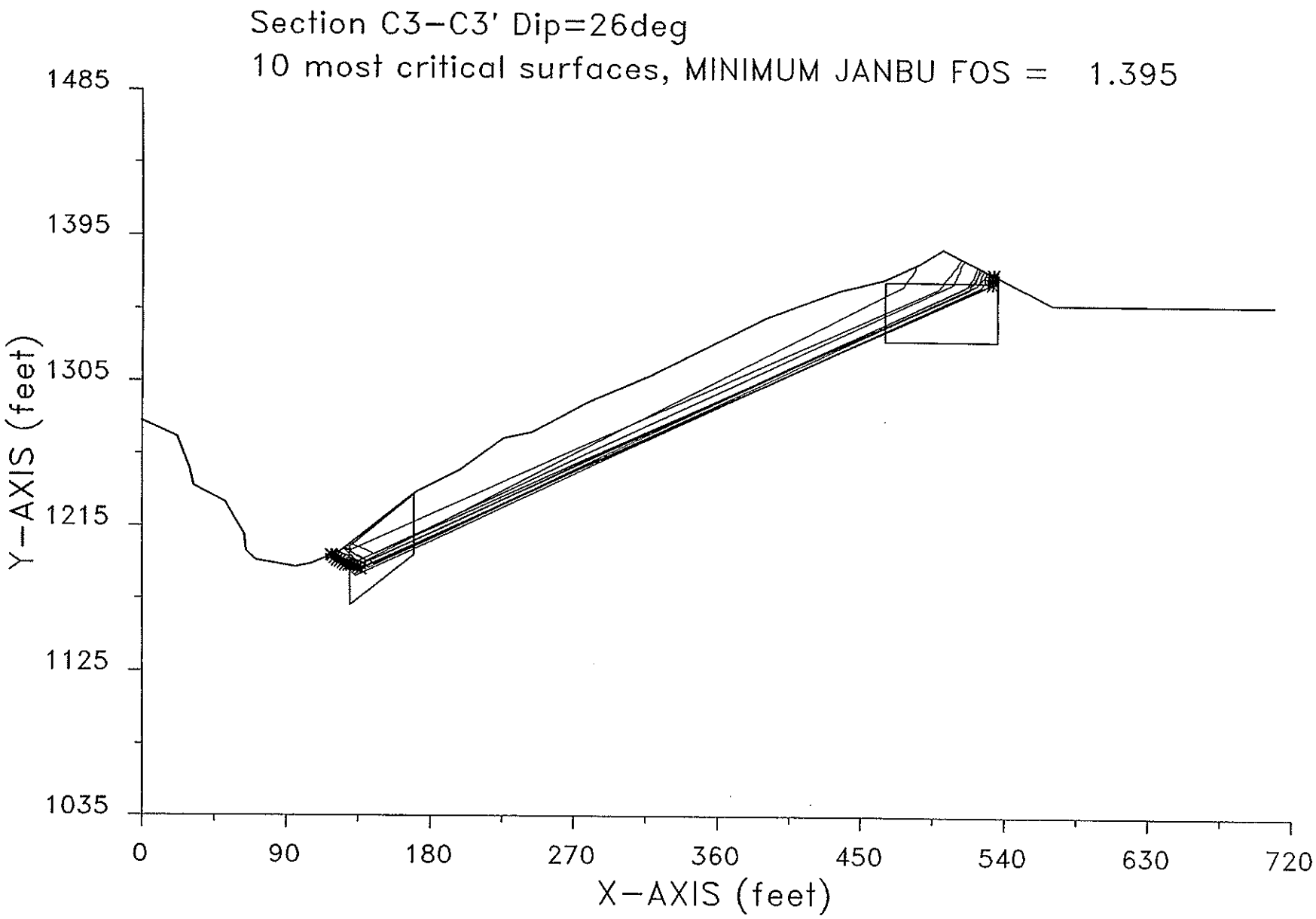


CCC1 7-31-** 16:16

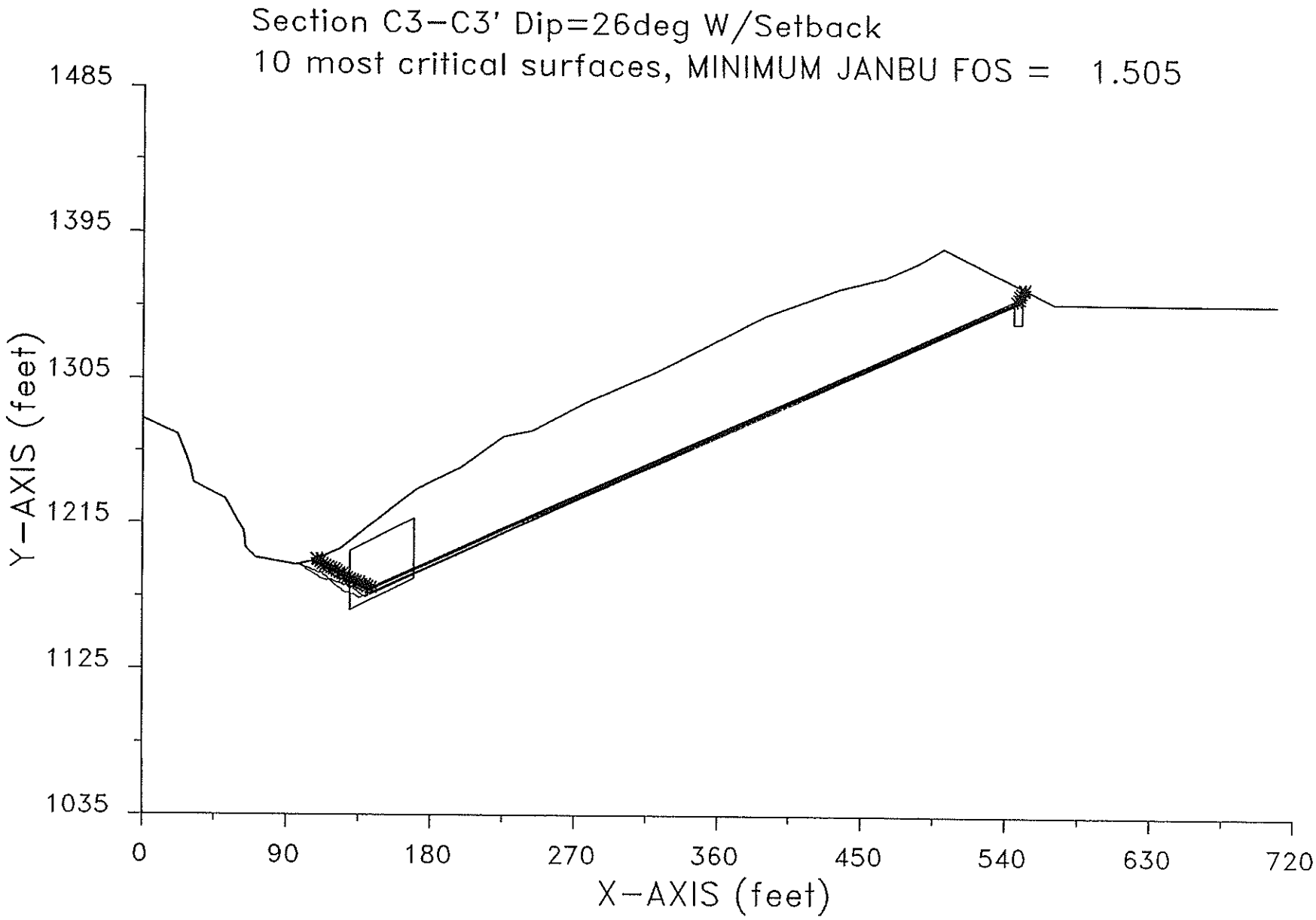


S..CCC2 8-01-** 18:06

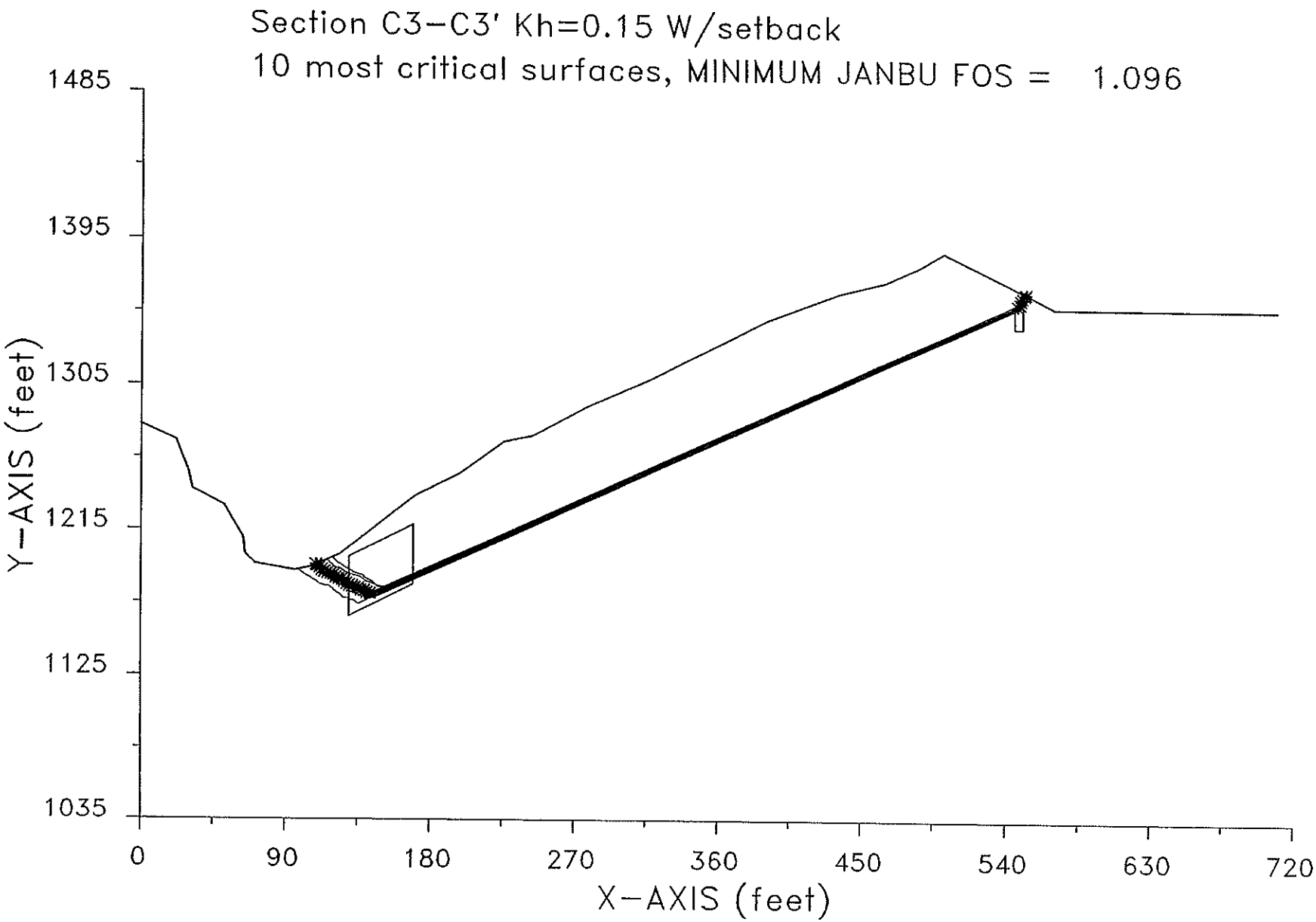



Section C3-C3' Dip=26deg
10 most critical surfaces, MINIMUM JANBU FOS = 1.395
1485
1395
1305
1215
1125
1035
Y-AXIS (feet)
0
90
180
270
360
450
540
630
720
X-AXIS (feet)

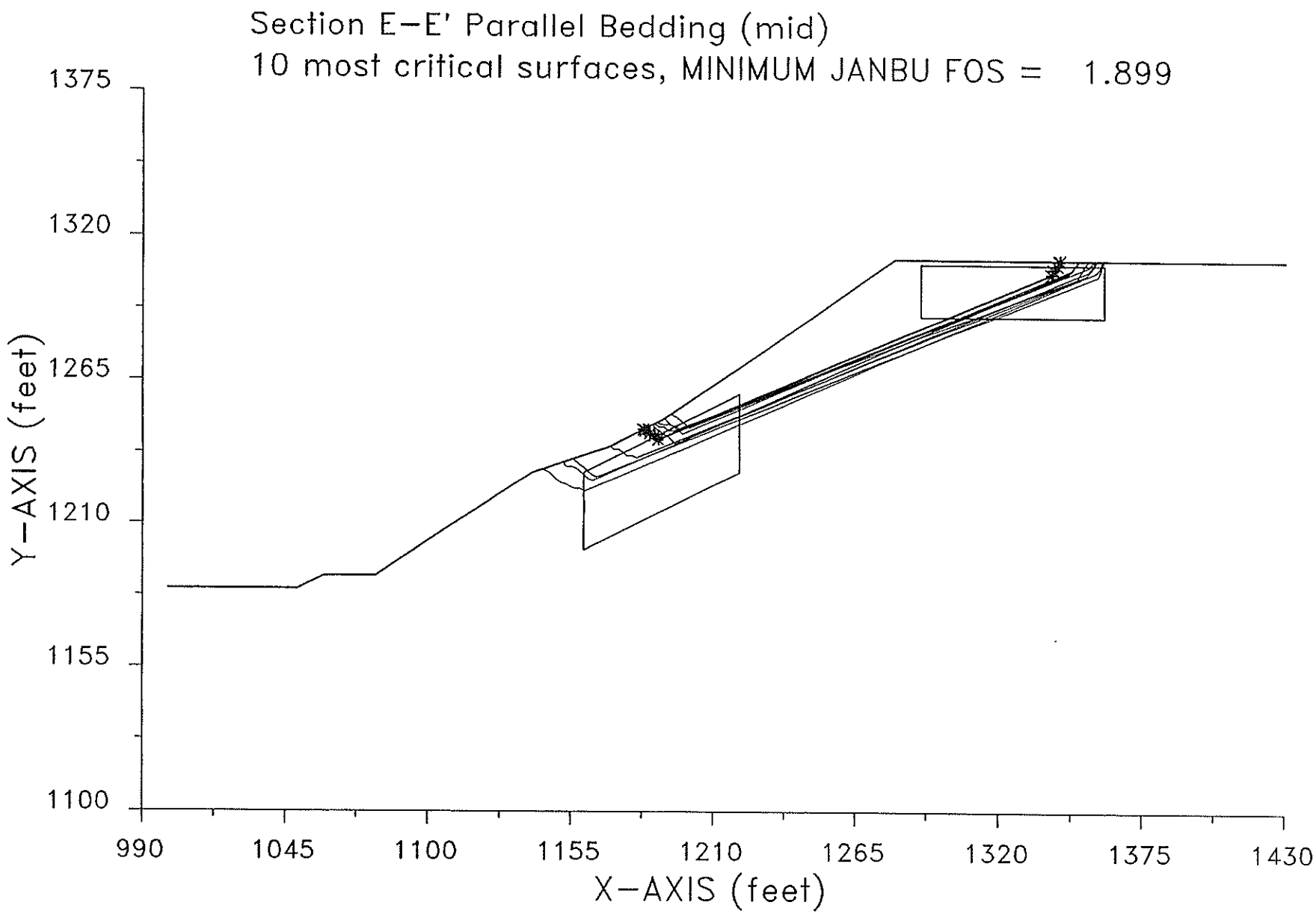
S. _3C3 7-31-** 18:11



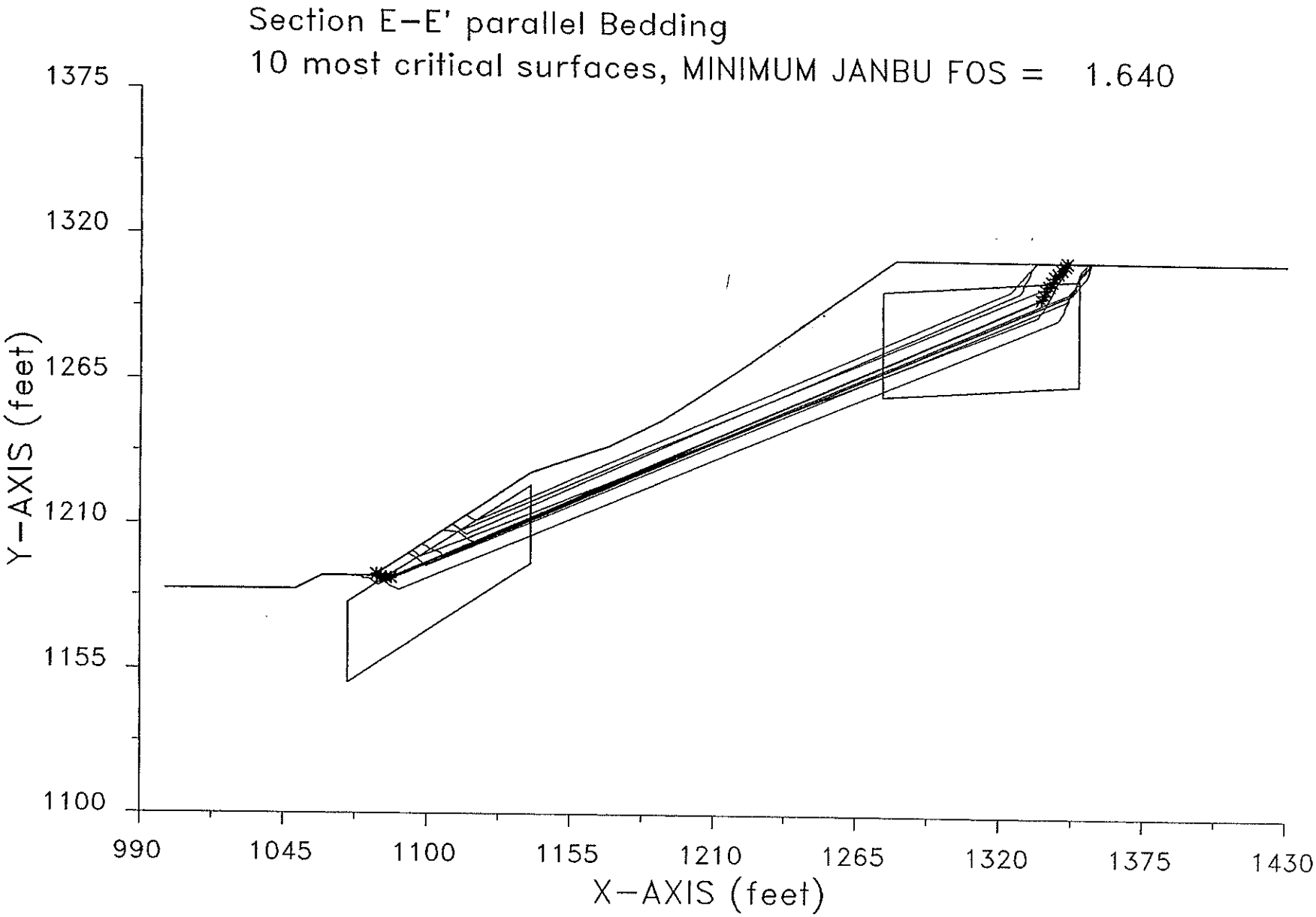
S_3C3E 7-31-** 18:12



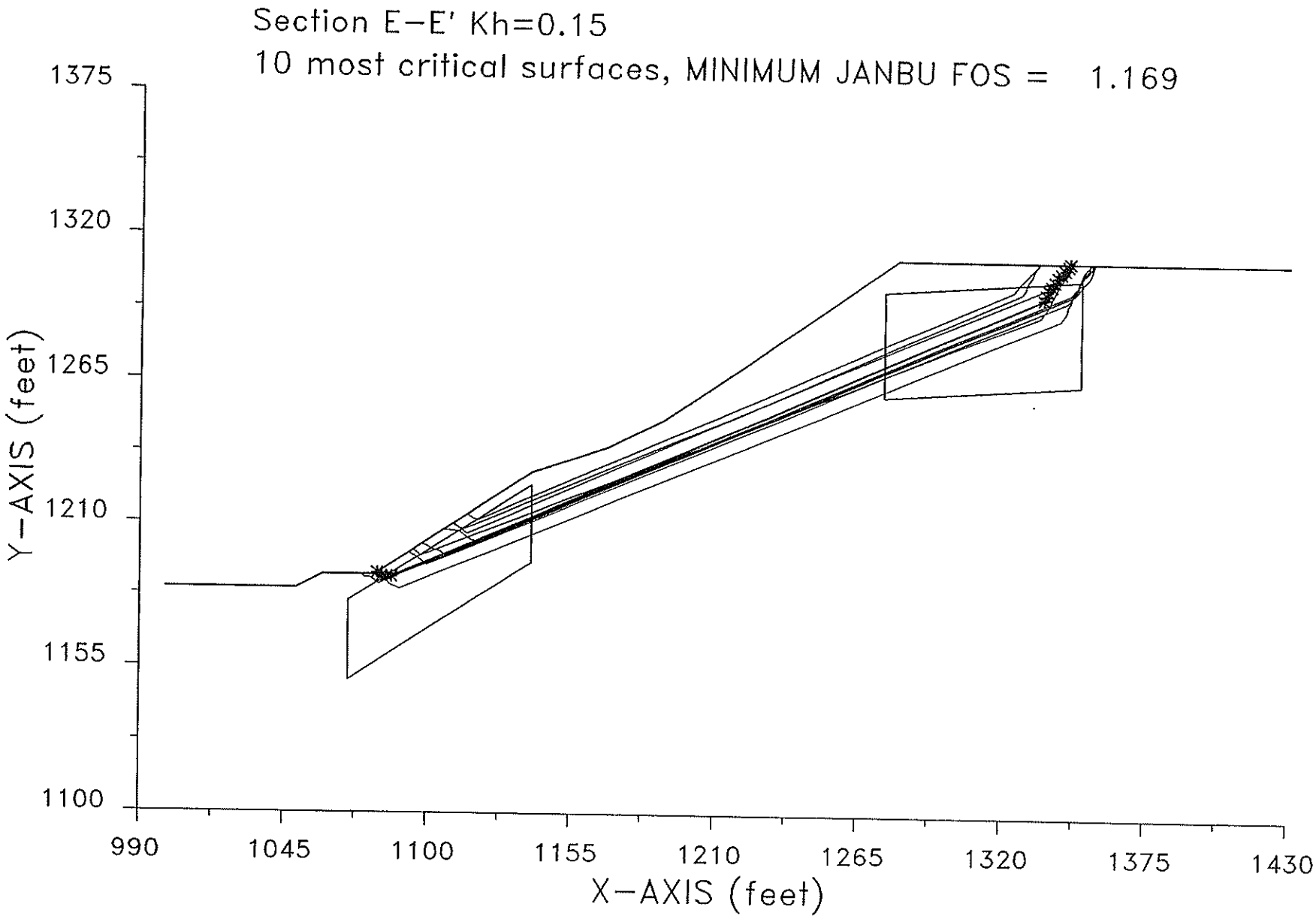
S_ _iE-E1 7-31-** 8:49



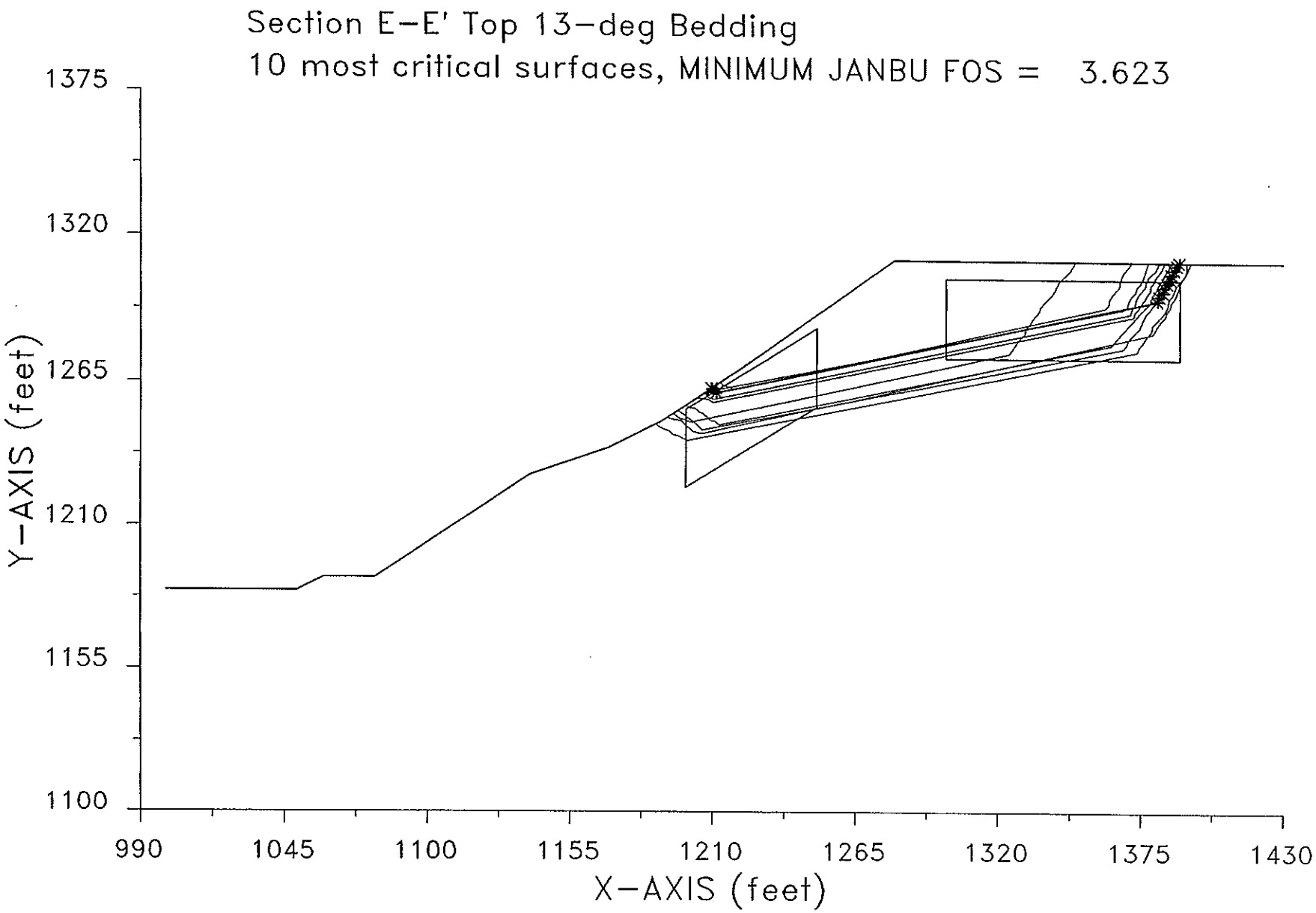
S. iE-E 7-31-** 8:49

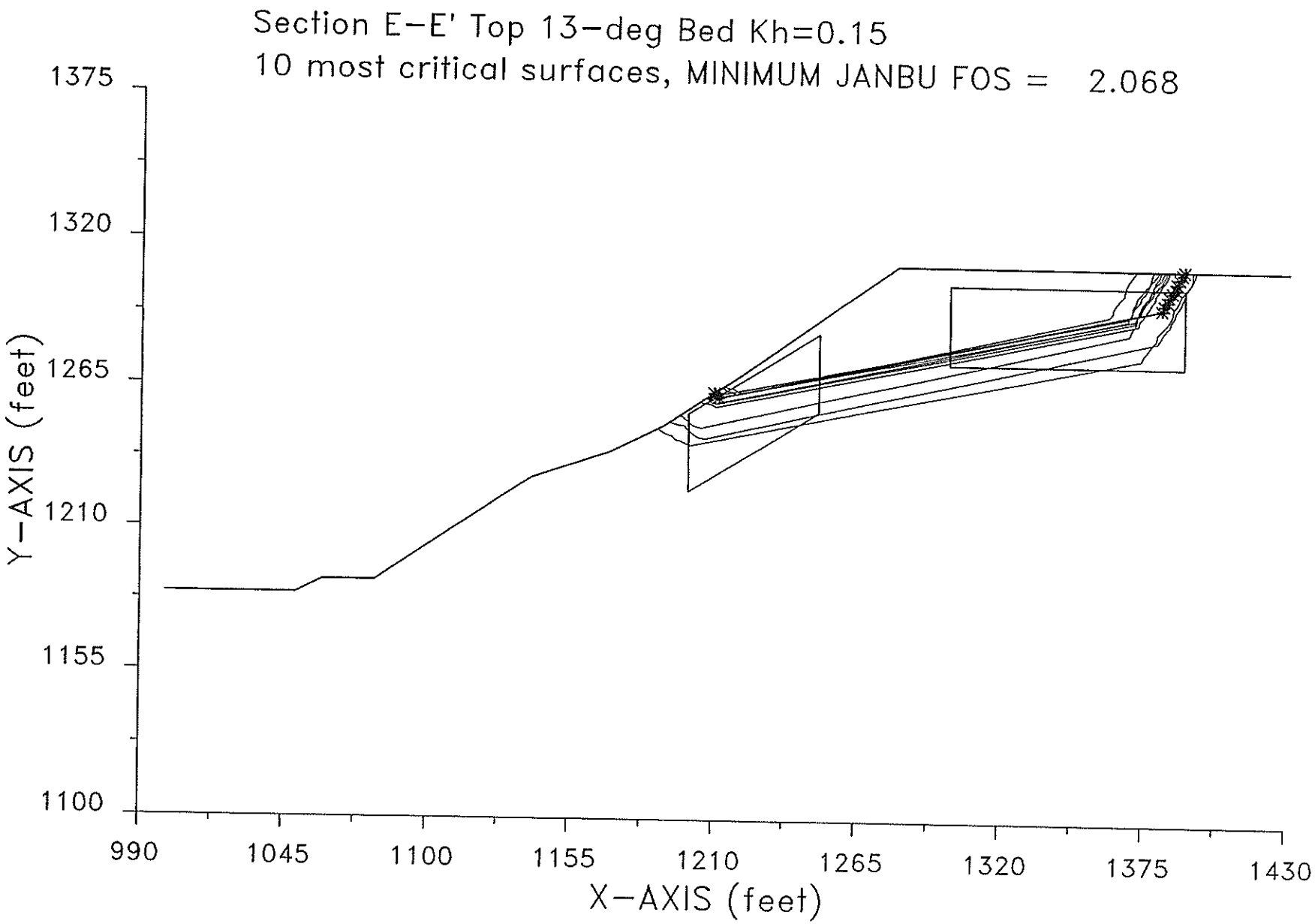

Section E-E' parallel Bedding
10 most critical surfaces, MINIMUM JANBU FOS = 1.640
1375
1320
1265
1210
1155
1100
Y-AXIS (feet)
990
1045
1100
1155
1210
1265
1320
1375
1430
X-AXIS (feet)

S. .E-E8 7-31-** 8:53

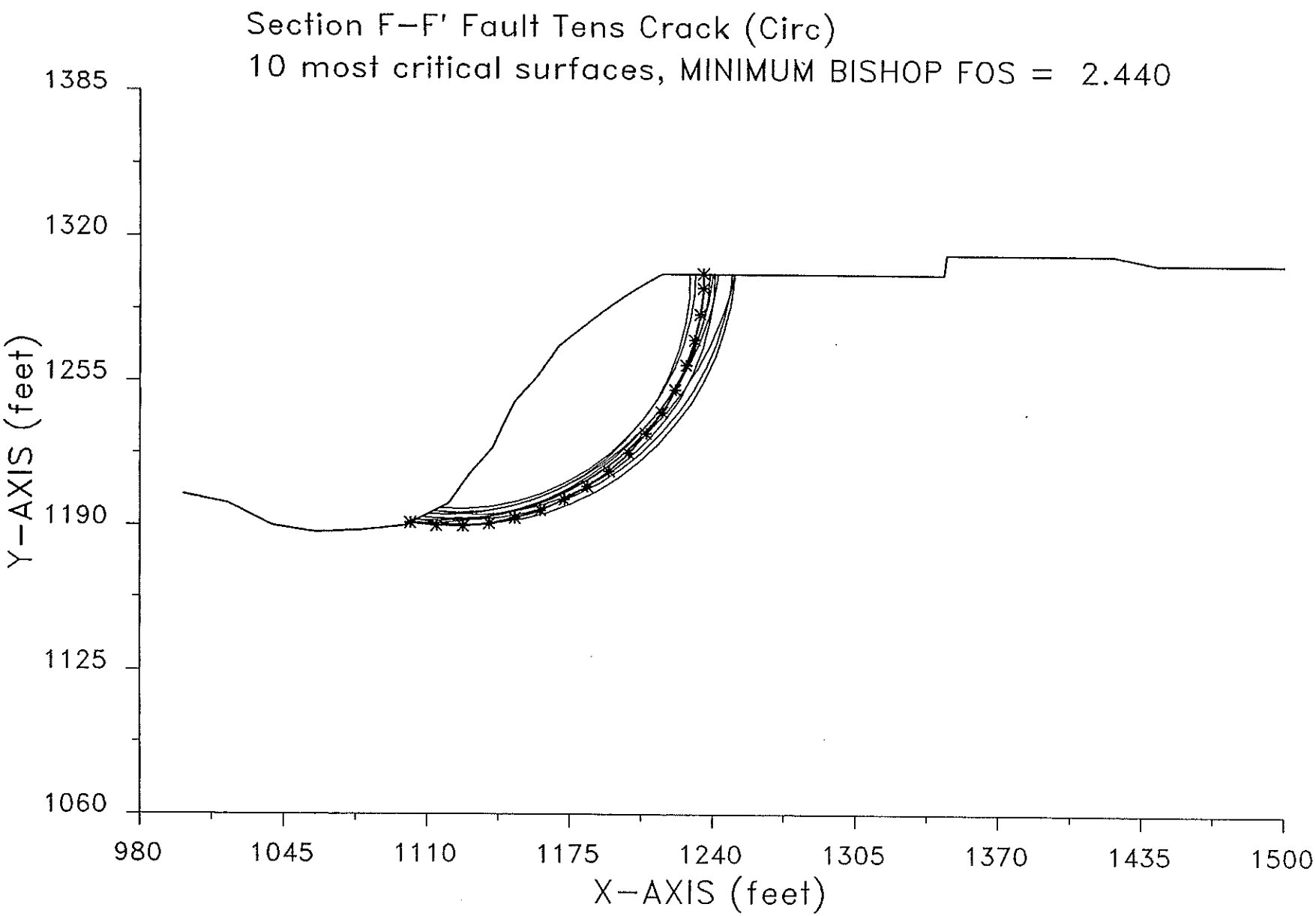

Section E-E' Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.169
1375
1320
1265
1210
1155
1100
Y-AXIS (feet)
990
1045
1100
1155
1210
1265
1320
1375
1430
X-AXIS (feet)

SLOPEEET 7-31-** 16:39

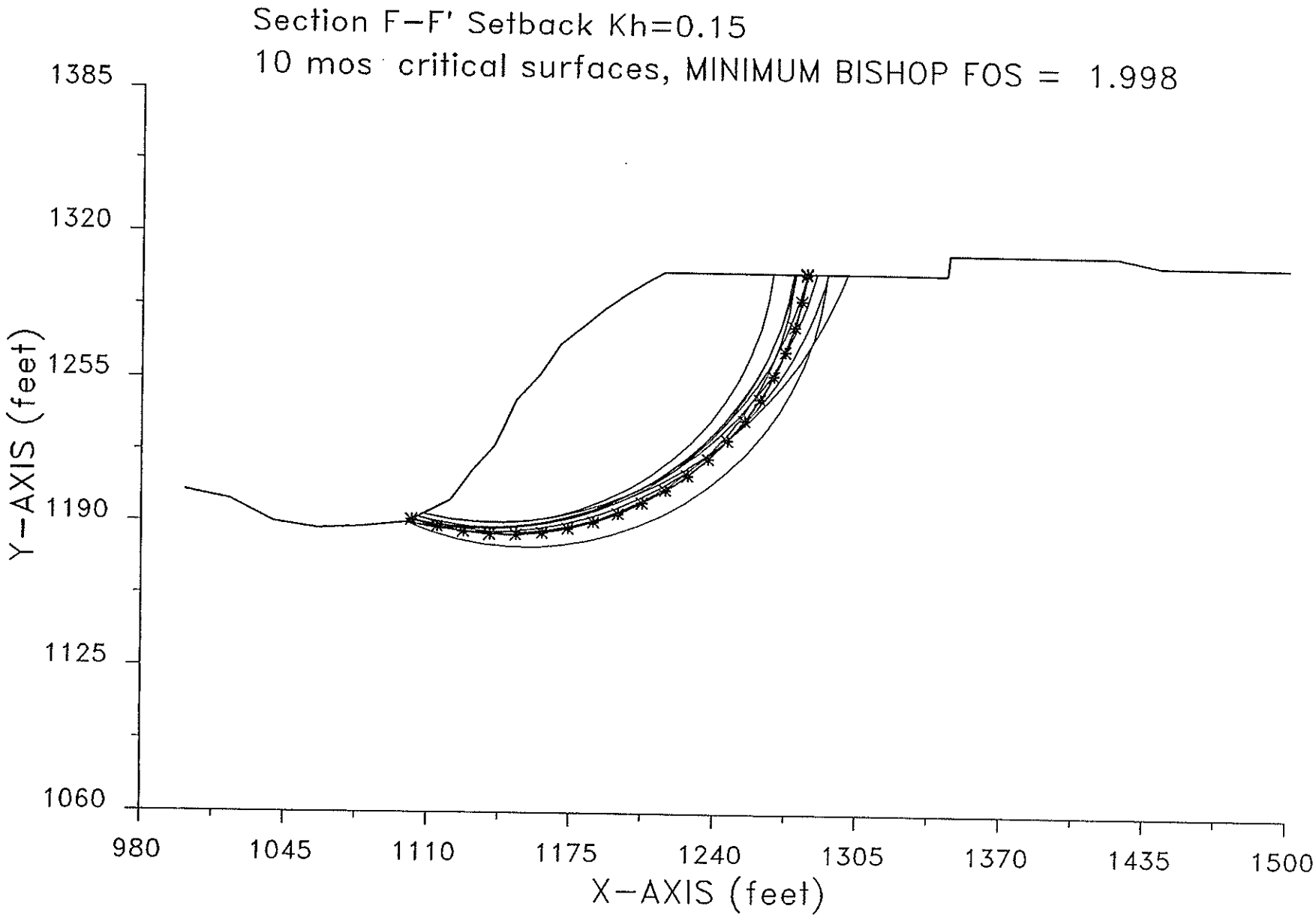



Section E-E' Top 13-deg Bed Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 2.068
1375
1320
1265
1210
1155
1100
Y-AXIS (feet)
990
1045
1100
1155
1210
1265
1320
1375
1430
X-AXIS (feet)

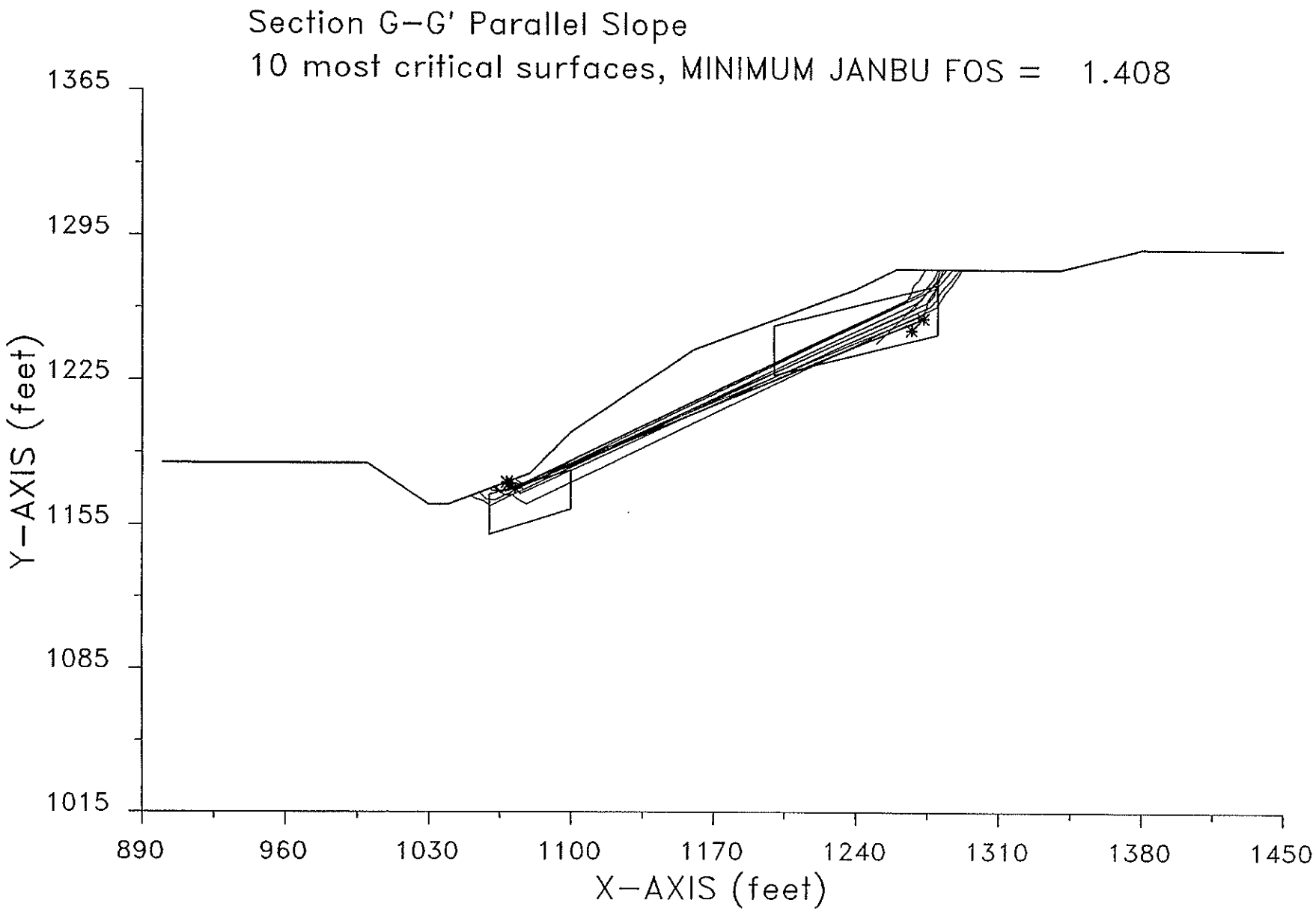
SECTF-F1 7-31-** 8:55



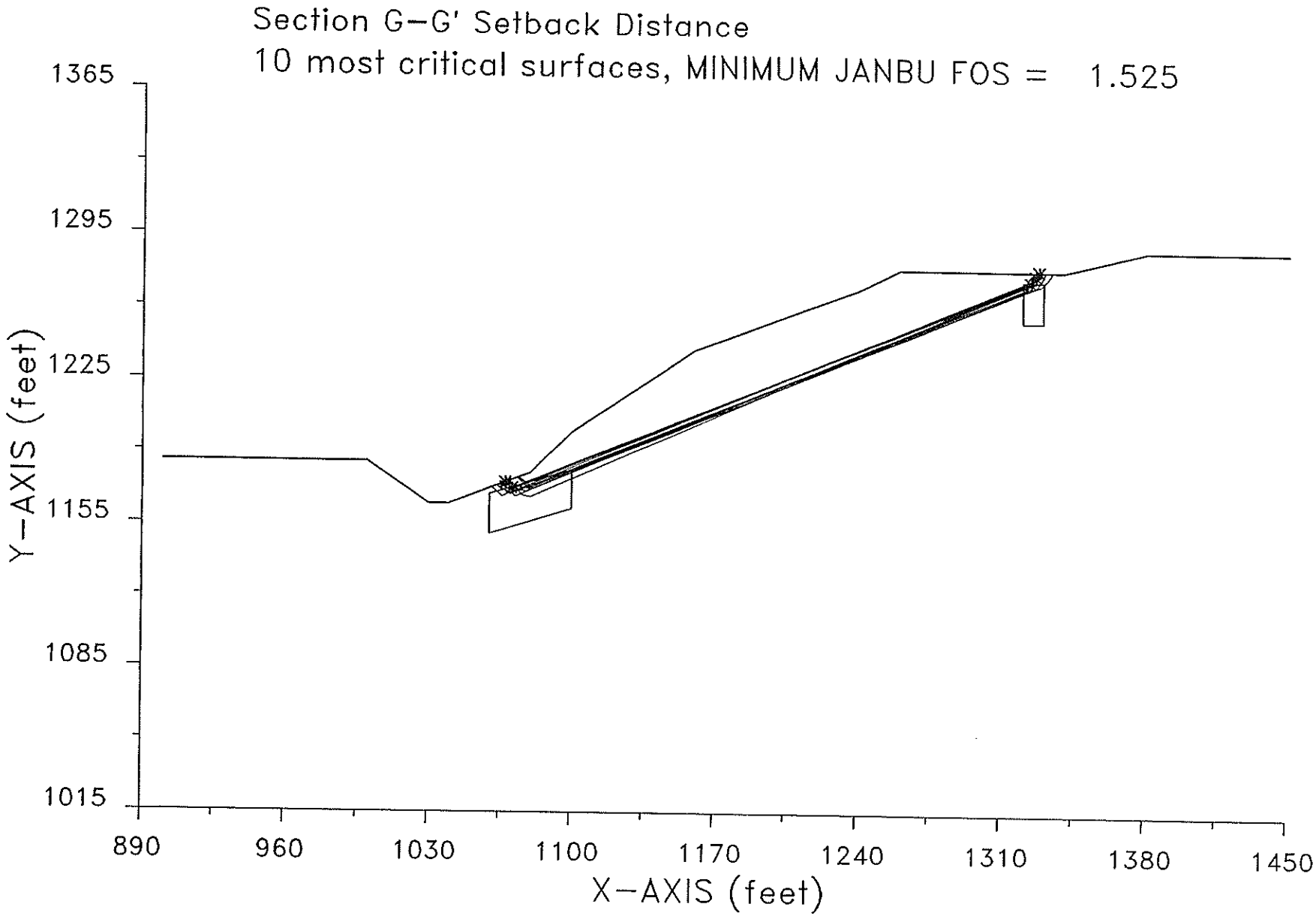
S..TF-F3 7-31-** 8:56



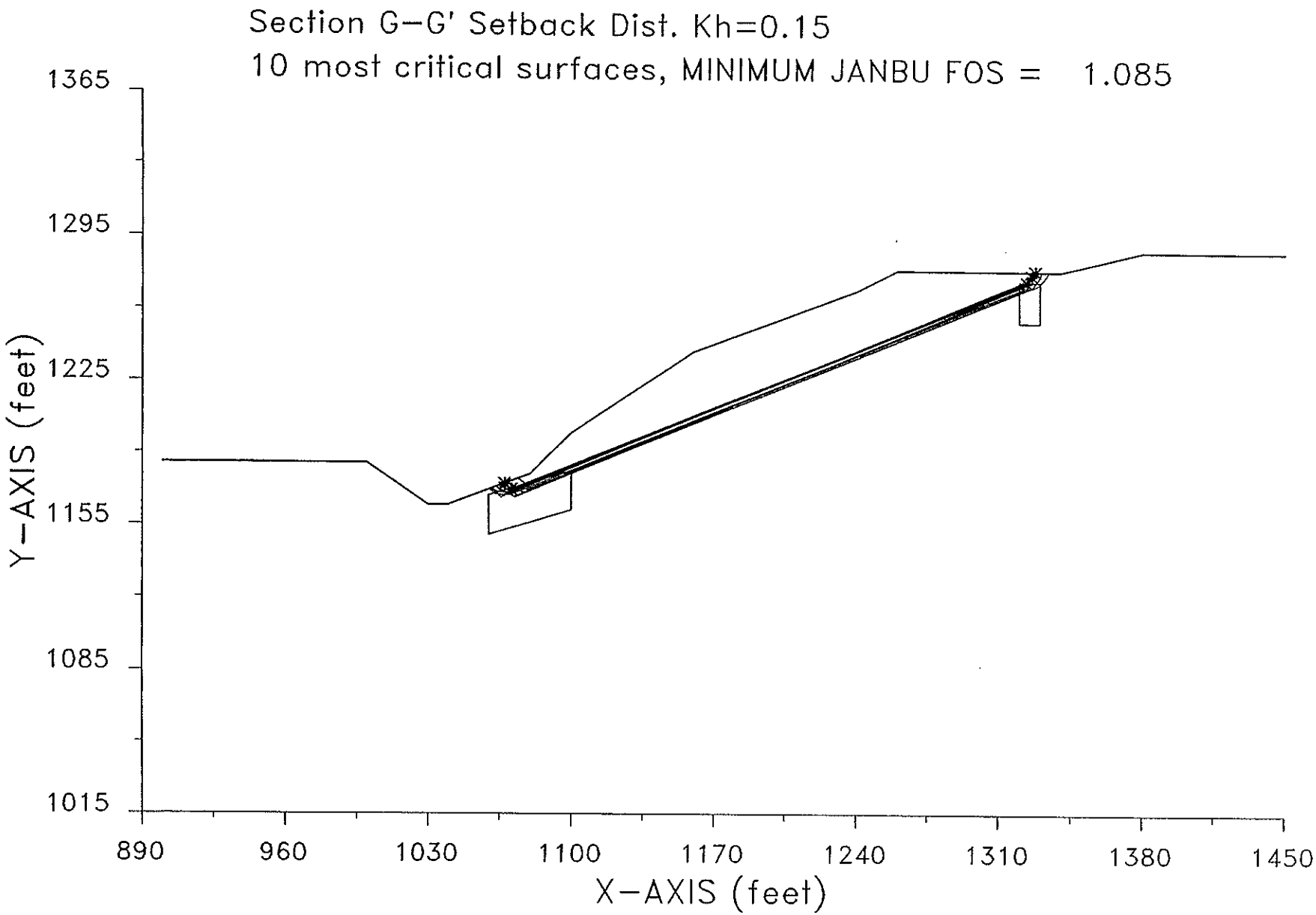
SLOPEG-G 7-31-** 8:57



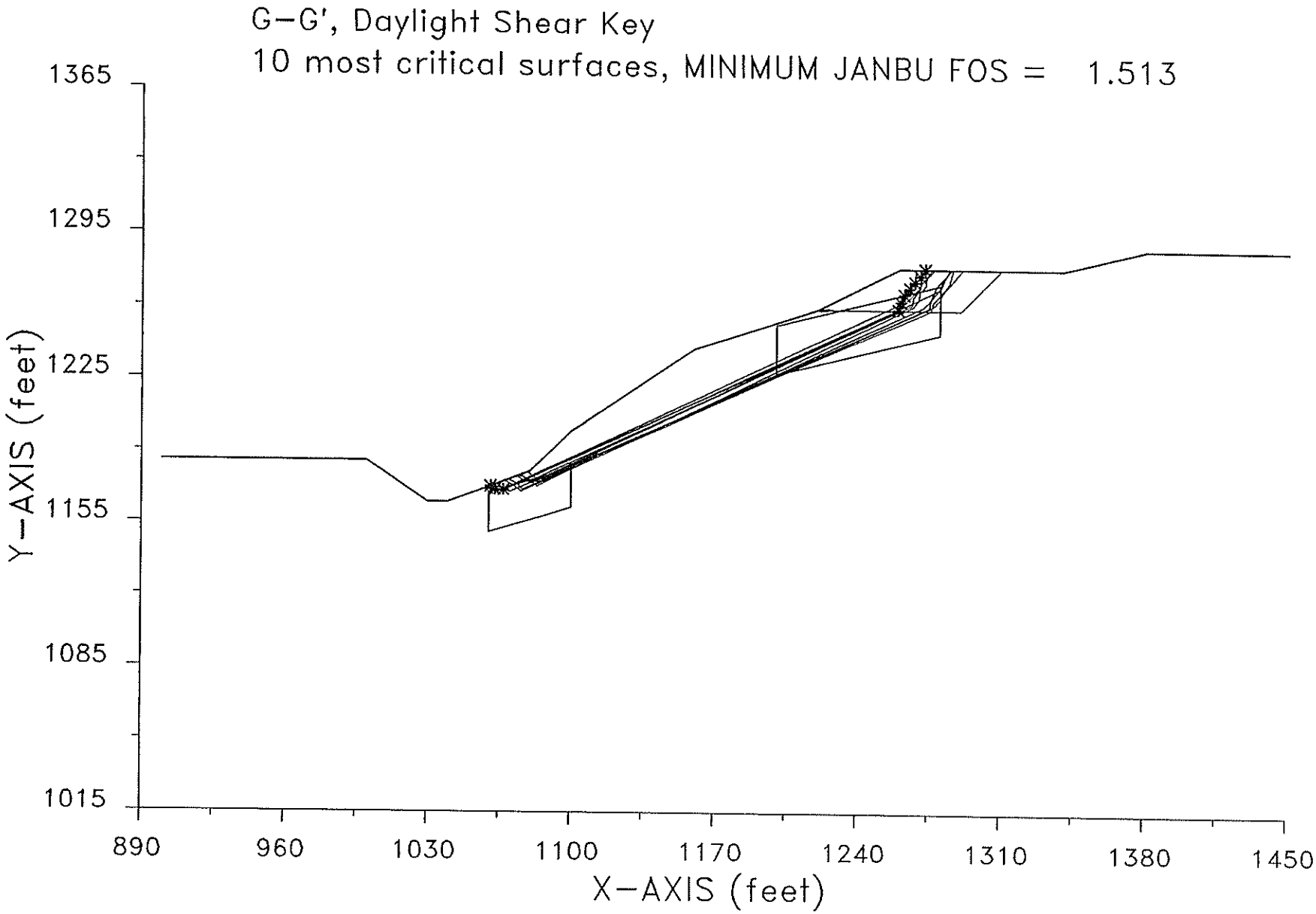
SLOPEG-G1 7-31-** 8:58



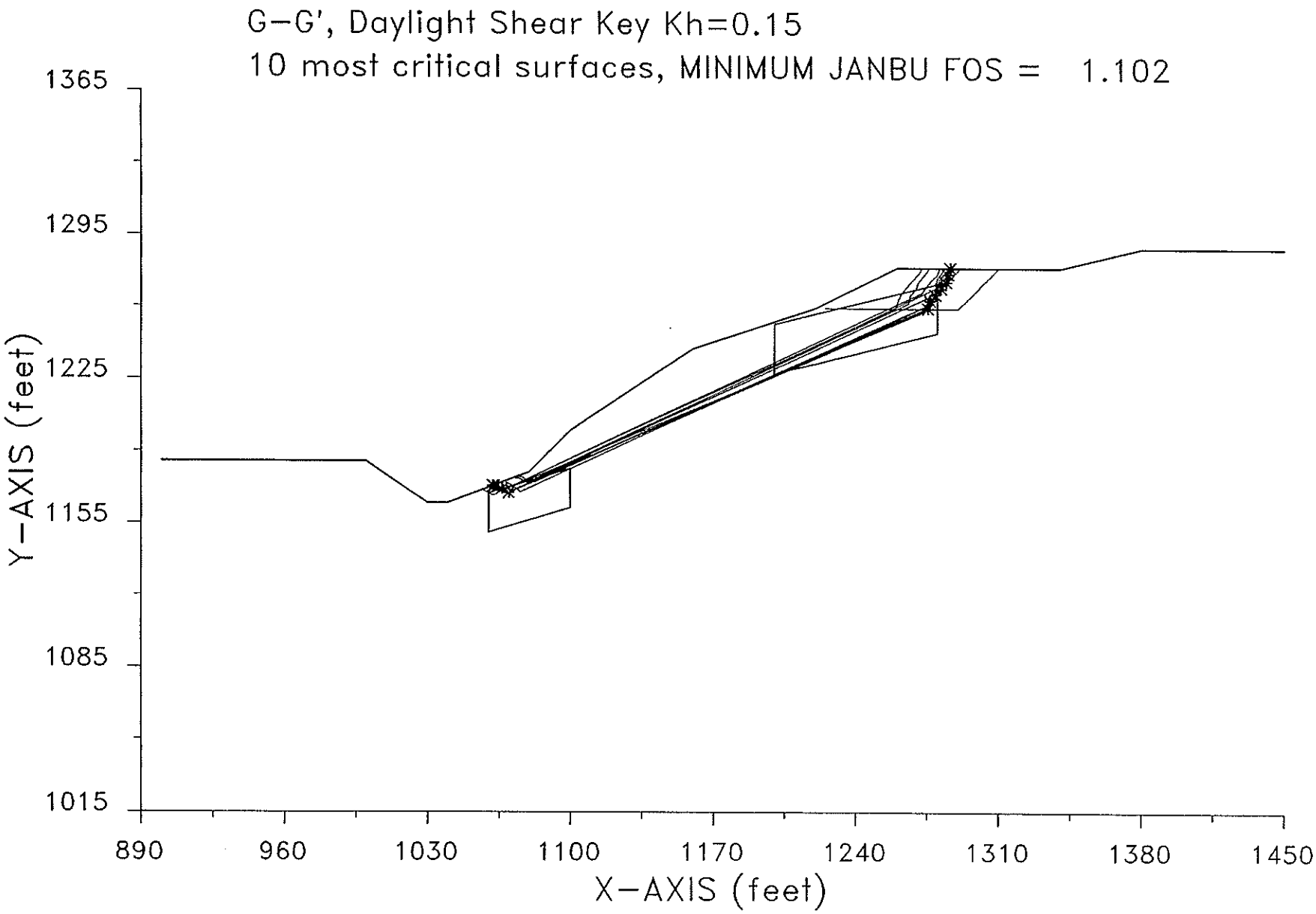
SL.iG-G6 7-31-** 11:00



SLOPE/G-G5 7-31-** 9:00



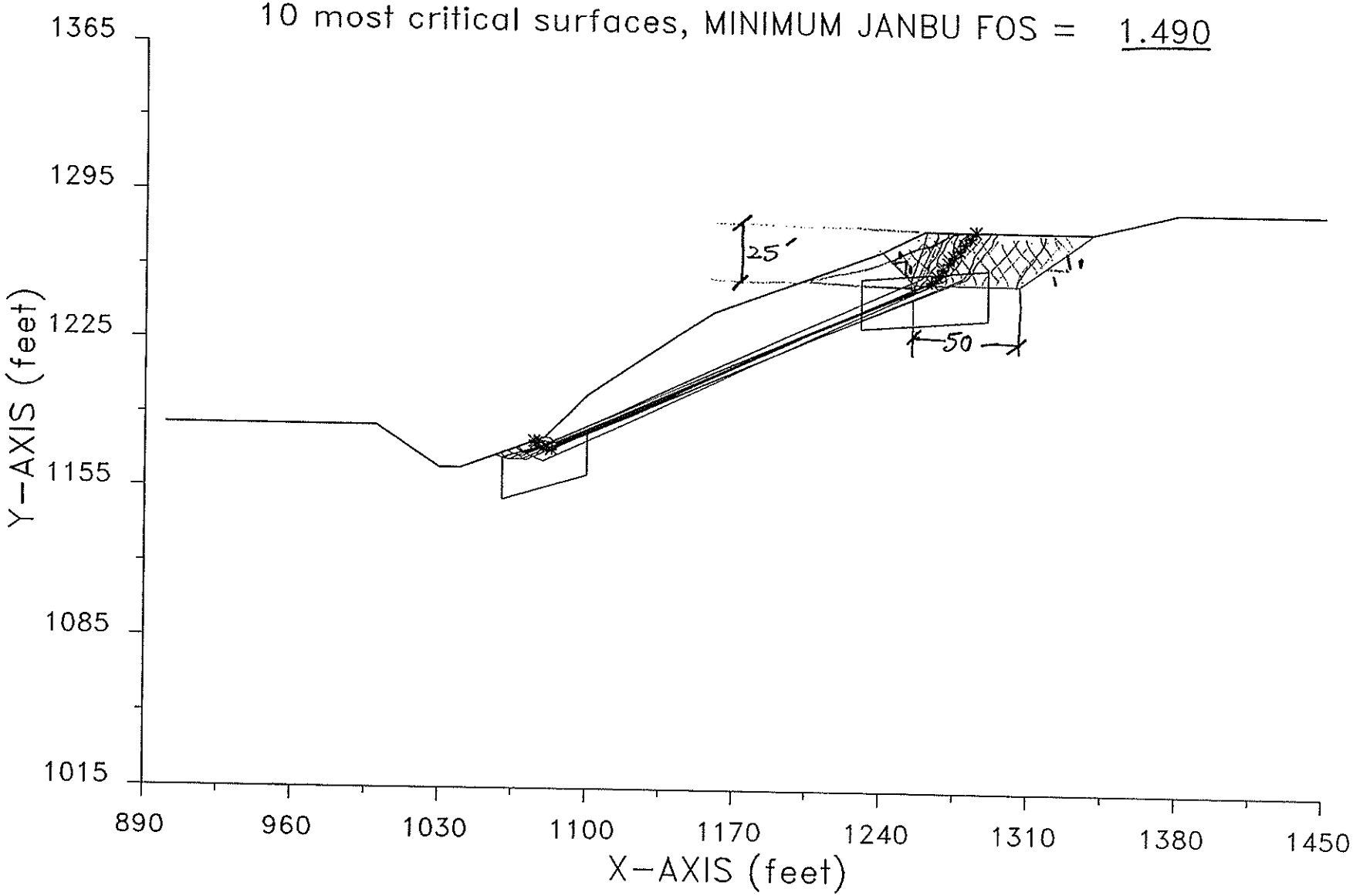
SLOPE/G-G7 7-31-** 9:03



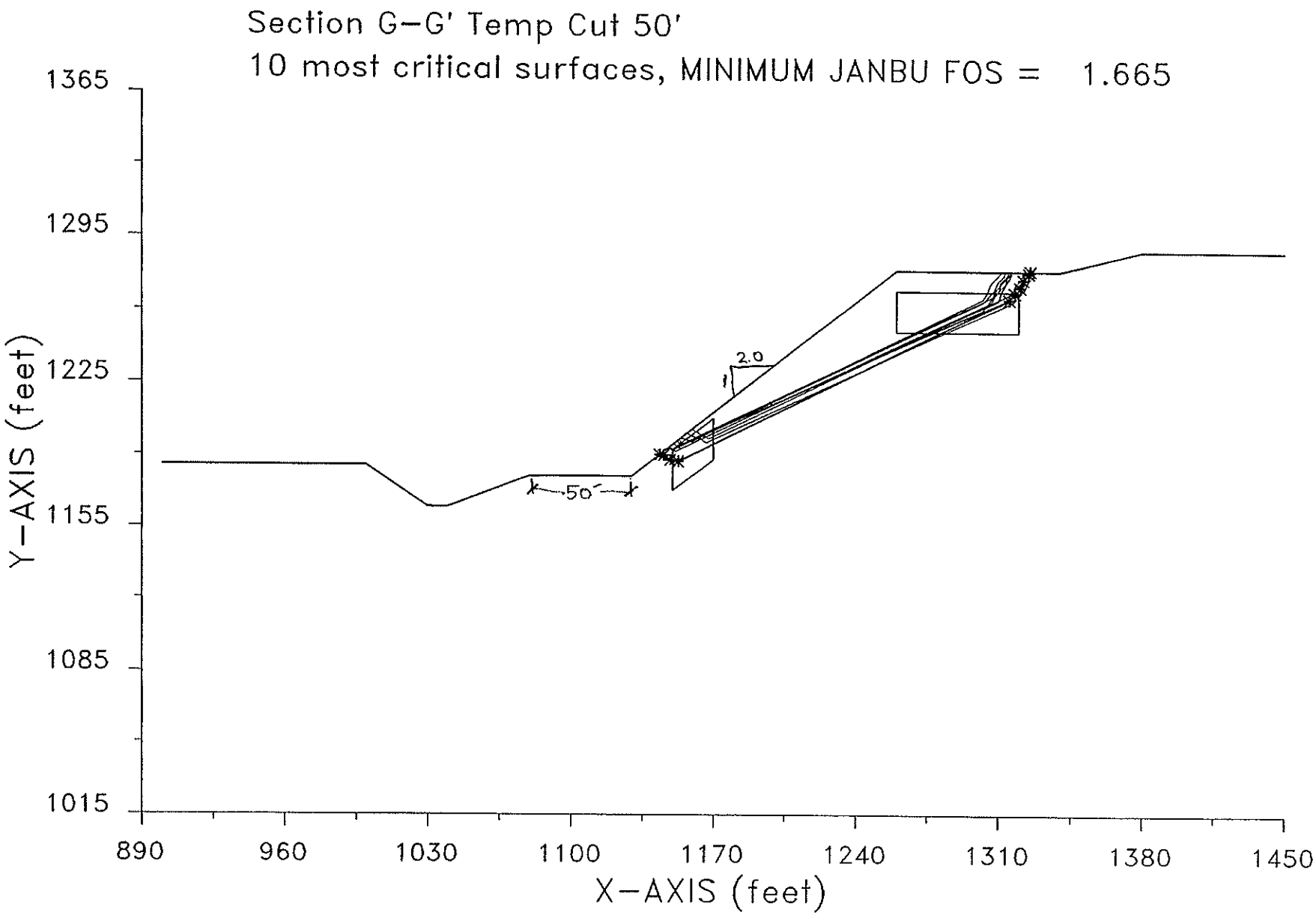
S GG 7-31-** 15:41

Section G-G' Butterss

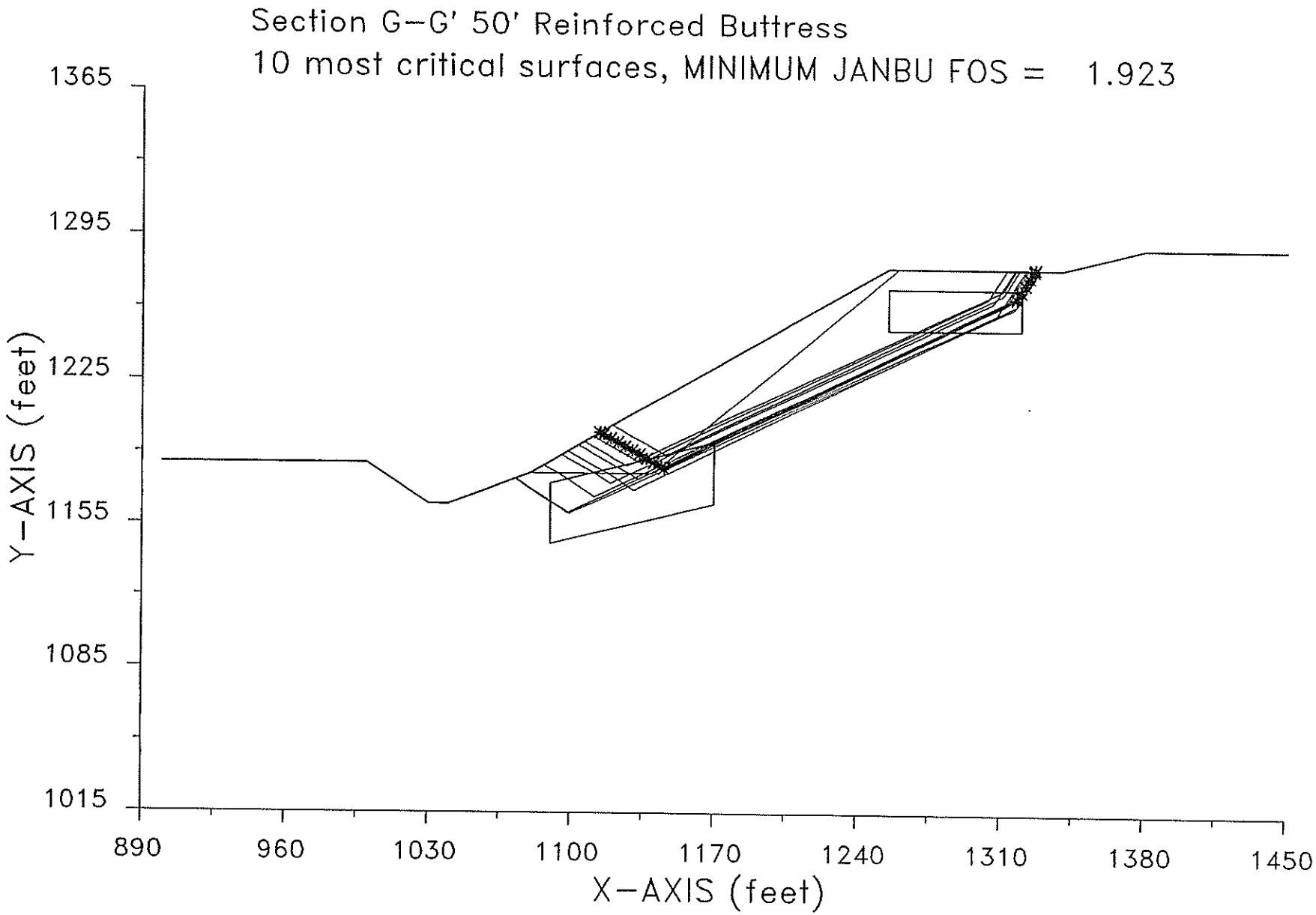
10 most critical surfaces, MINIMUM JANBU FOS = 1.490



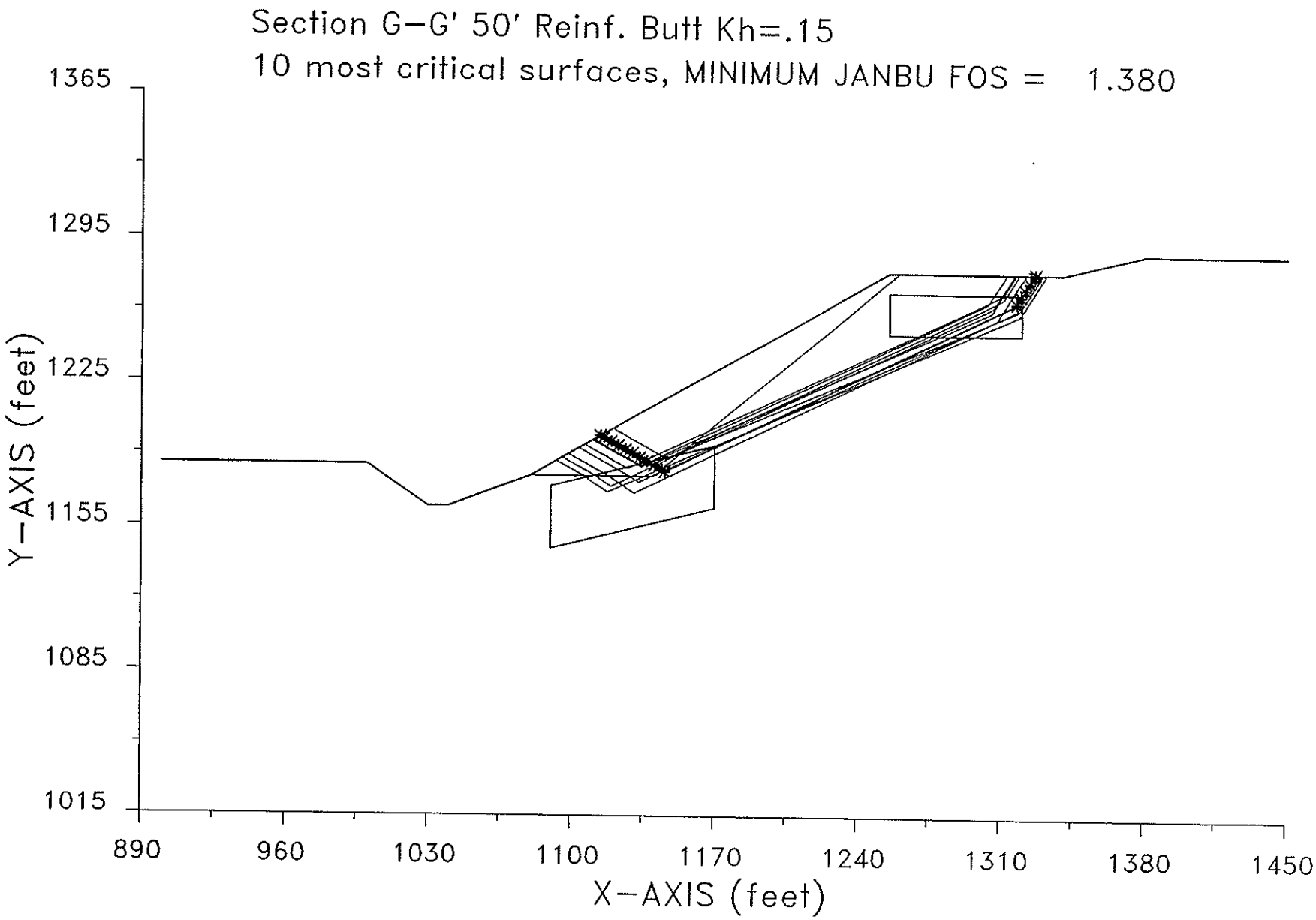
SL .G-G3 7-31-** 8:59



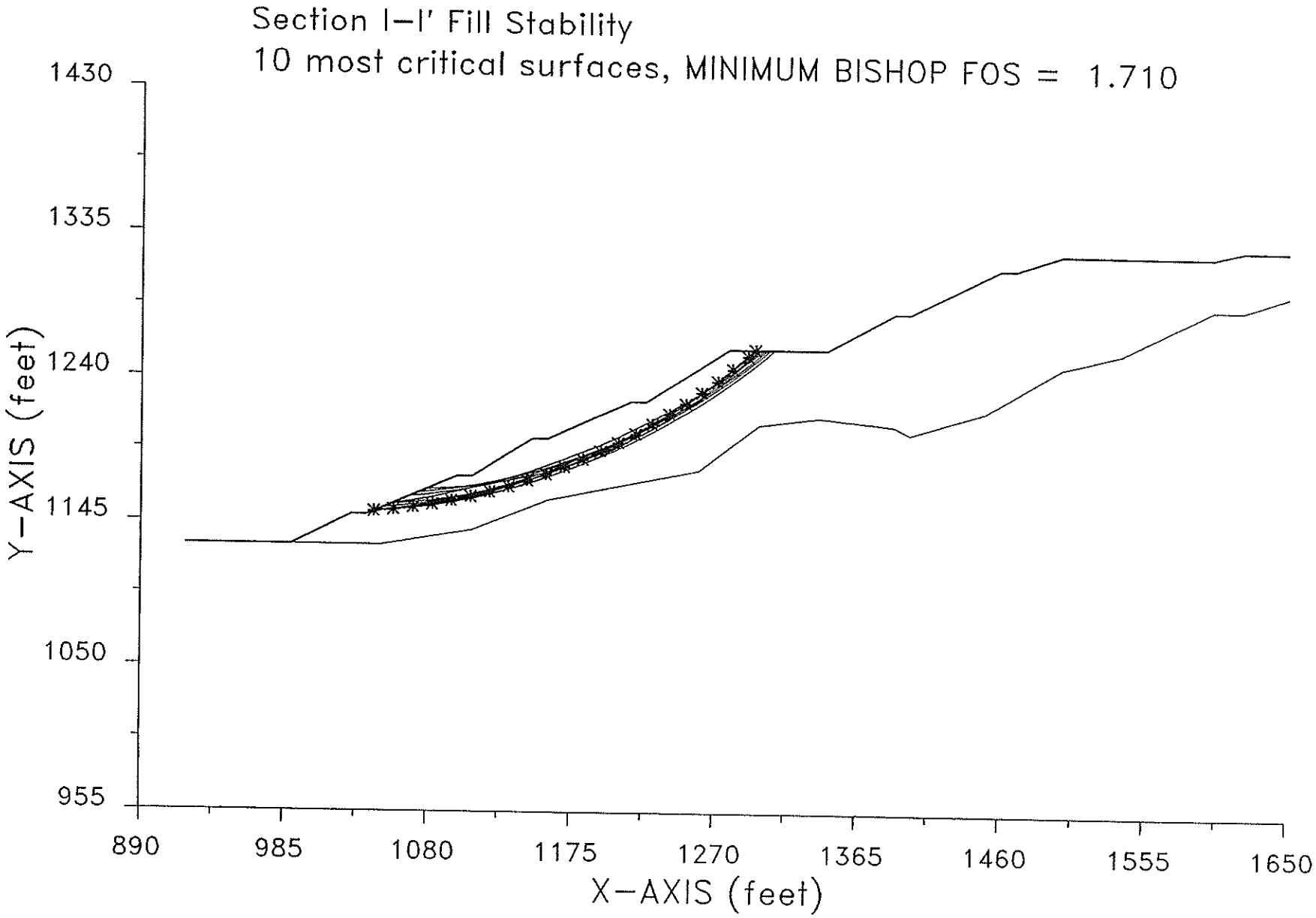
S_JfG-G4 7-31-** 9:00



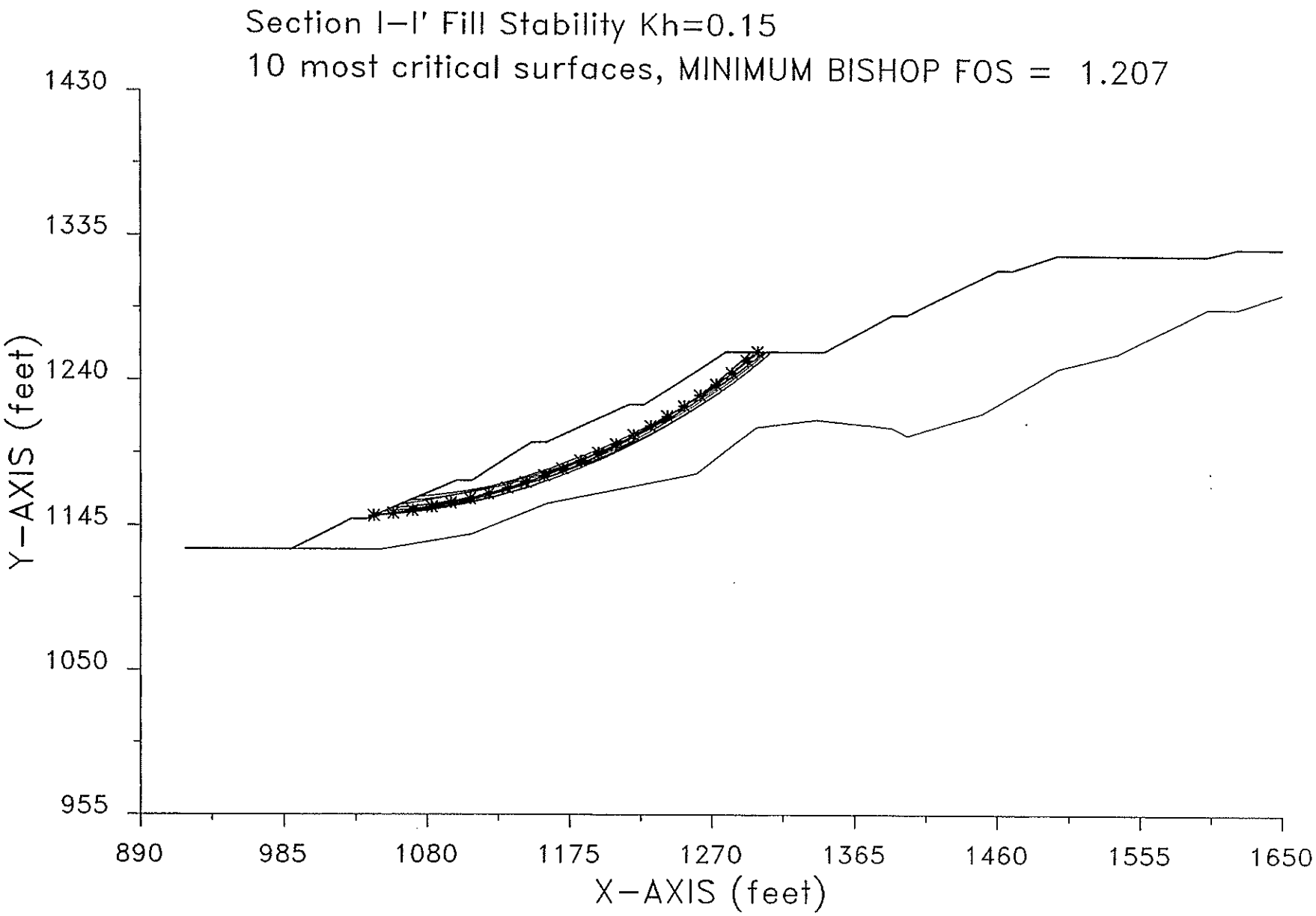
TG-G8 7-31-** 11:10



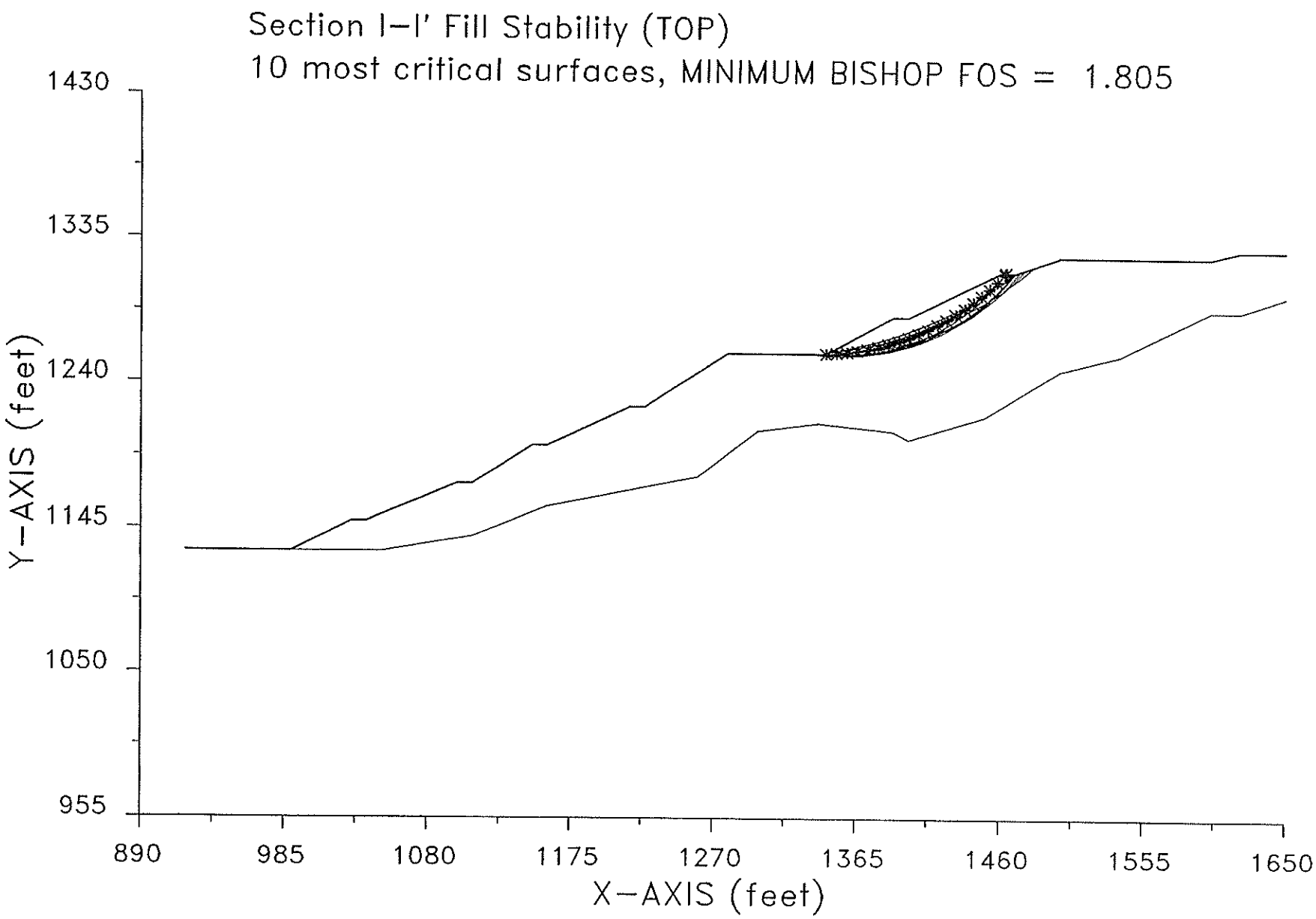
S_ _il-I 7-31-** 9:05

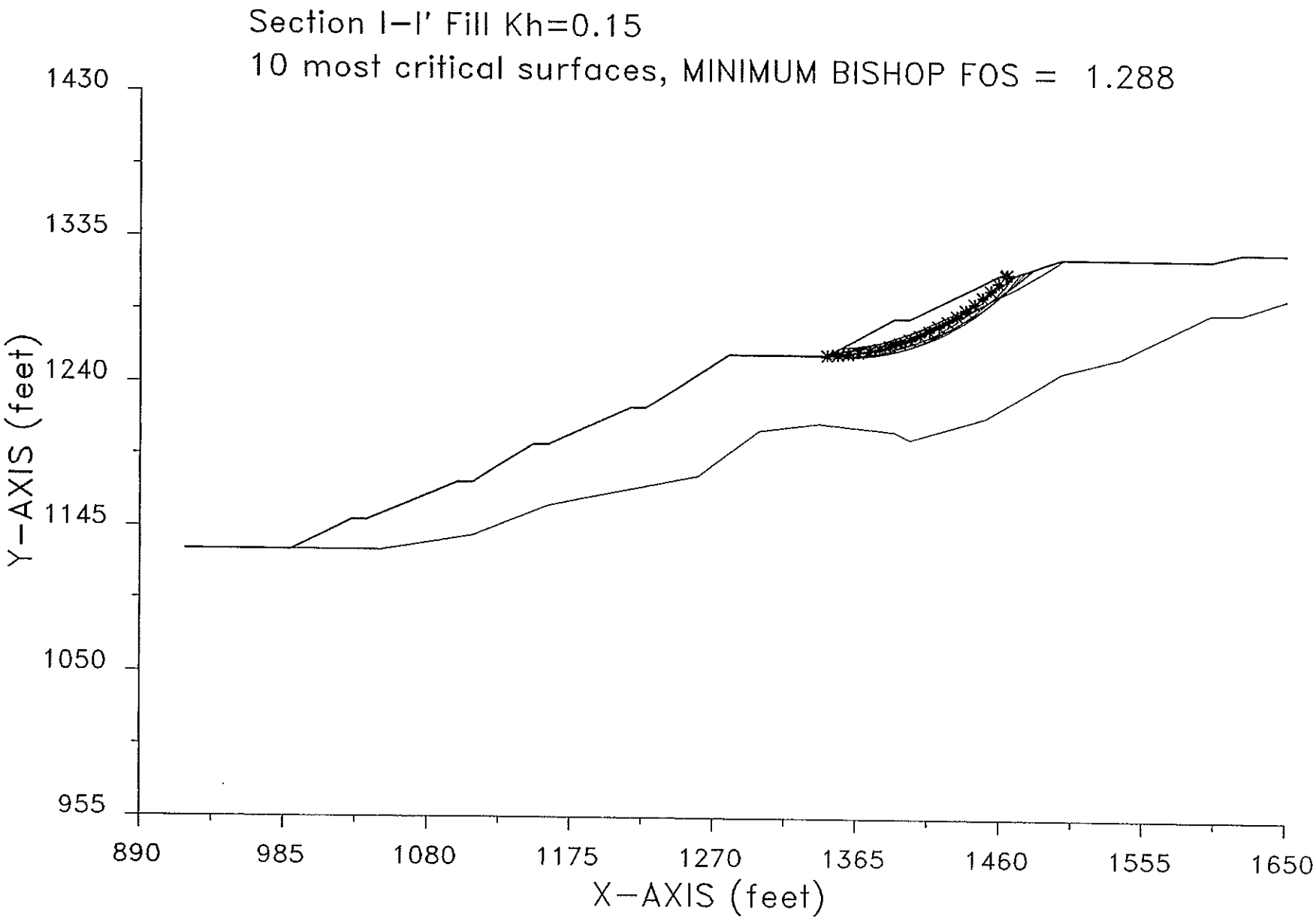

Section I-I' Fill Stability
10 most critical surfaces, MINIMUM BISHOP FOS = 1.710
1430
1335
1240
1145
1050
955
Y-AXIS (feet)
890
985
1080
1175
1270
1365
1460
1555
1650
X-AXIS (feet)

S. ;I-I3 7-31-** 9:07

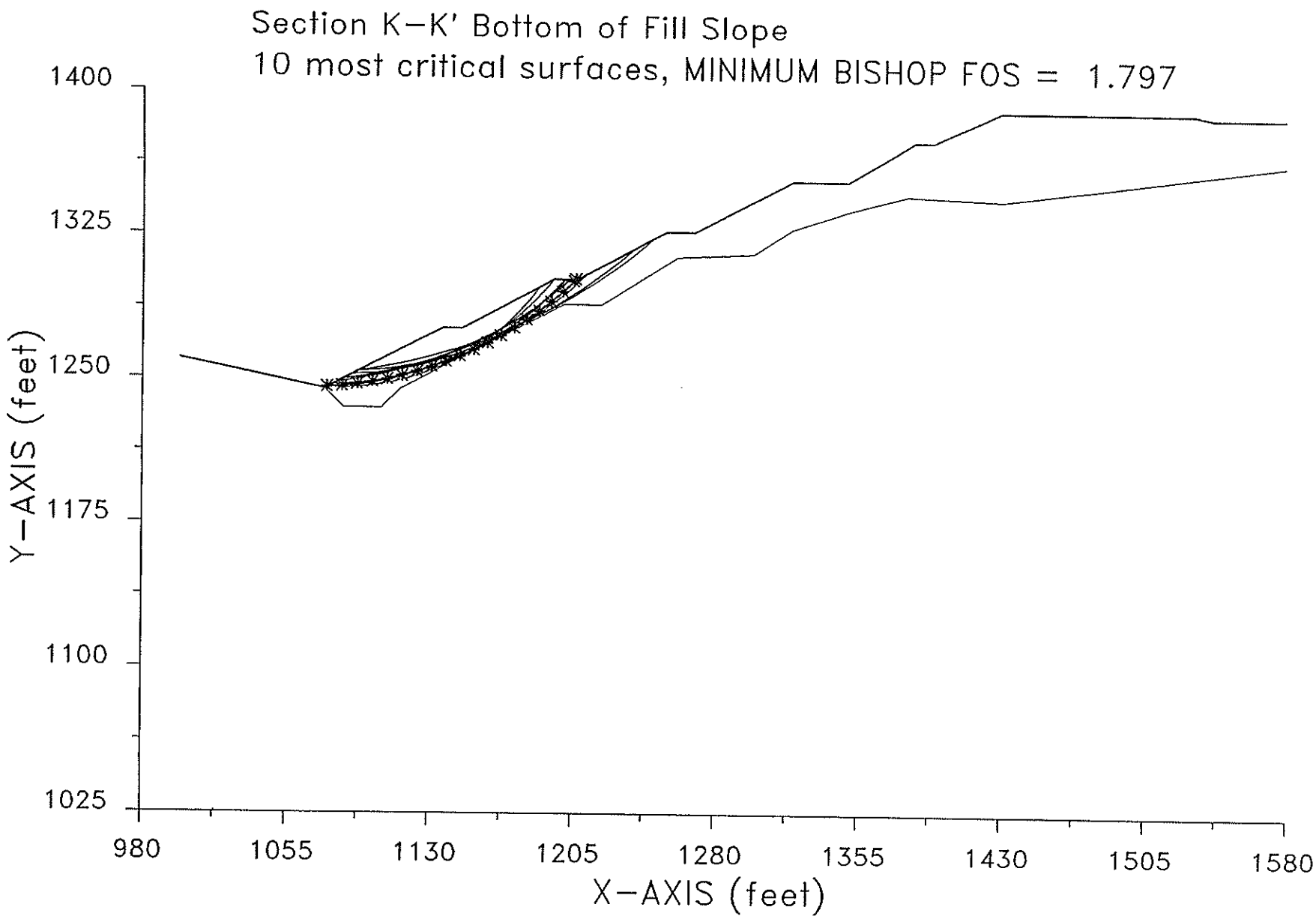

Section I-I' Fill Stability Kh=0.15
10 most critical surfaces, MINIMUM BISHOP FOS = 1.207
1430
1335
1240
1145
1050
955
Y-AXIS (feet)
890
985
1080
1175
1270
1365
1460
1555
1650
X-AXIS (feet)

S. .I-IT 7-31-** 9:06

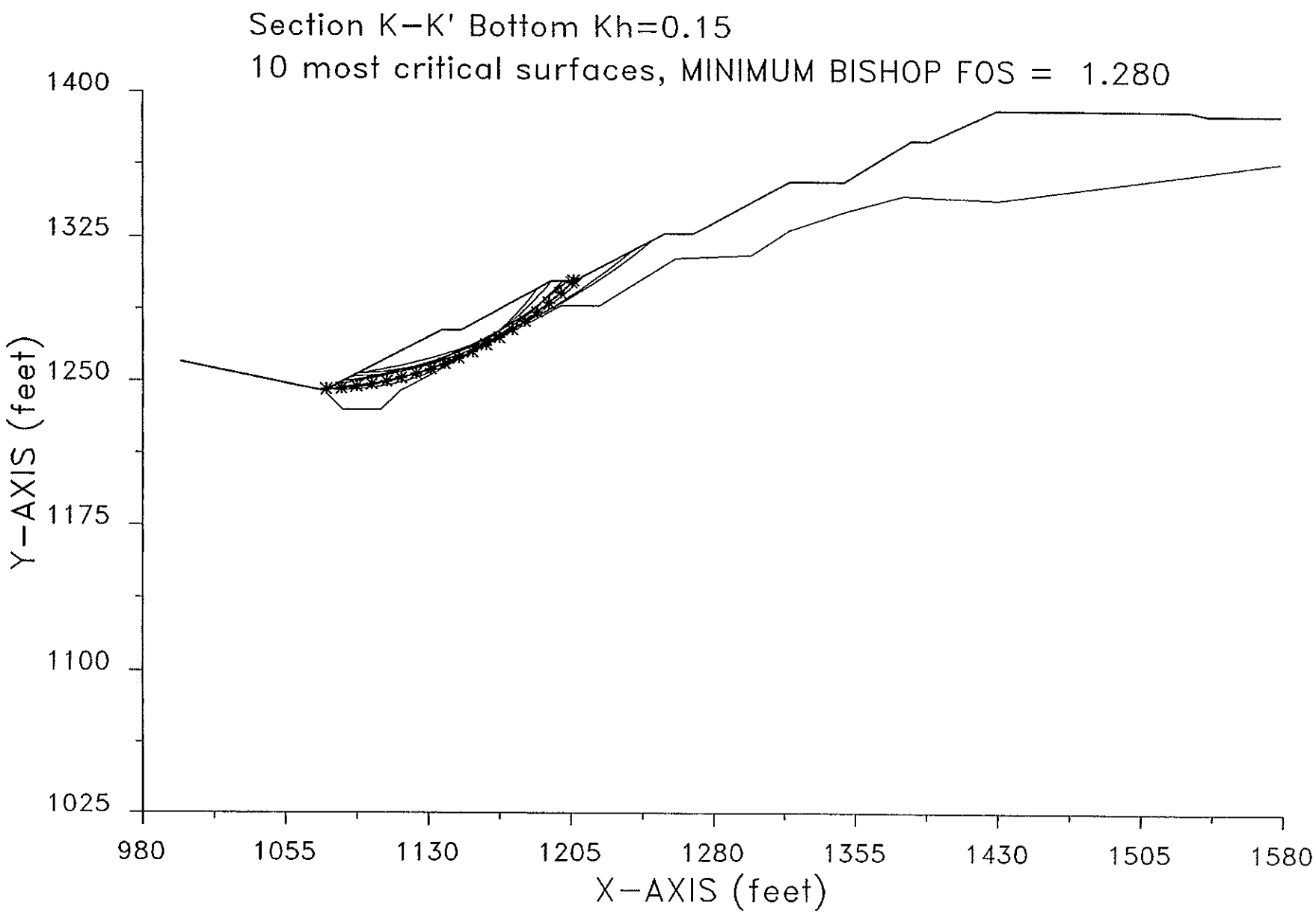

Section I-I' Fill Stability (TOP)
10 most critical surfaces, MINIMUM BISHOP FOS = 1.805
1430
1335
1240
1145
1050
955
Y-AXIS (feet)
890
985
1080
1175
1270
1365
1460
1555
1650
X-AXIS (feet)


Section I-I' Fill Kh=0.15
10 most critical surfaces, MINIMUM BISHOP FOS = 1.288
1430
1335
1240
1145
1050
955
Y-AXIS (feet)
890
985
1080
1175
1270
1365
1460
1555
1650
X-AXIS (feet)

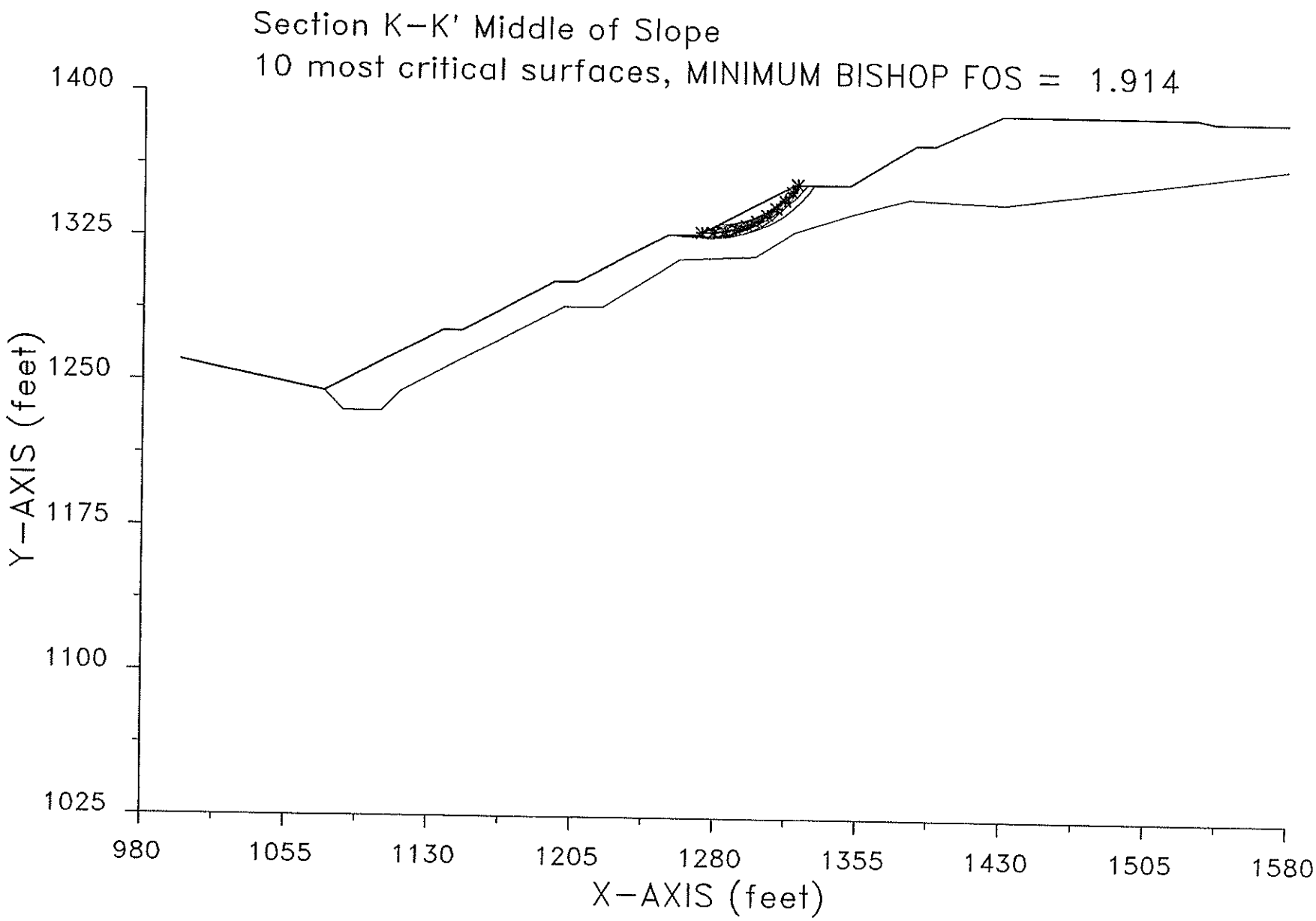
S. .TK-K1 7-31-** 9:09



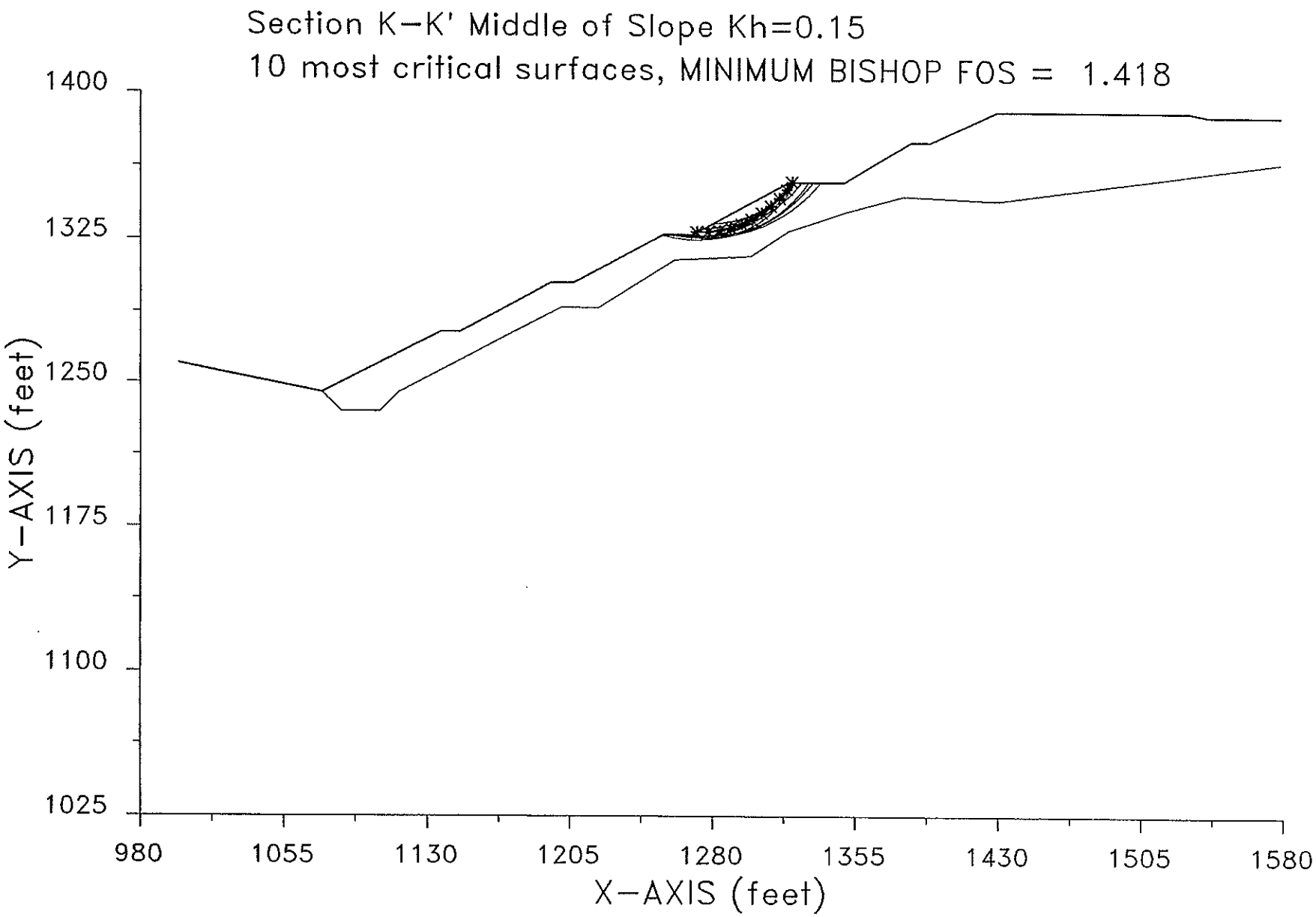
S..iK-K5 7-31-** 9:18



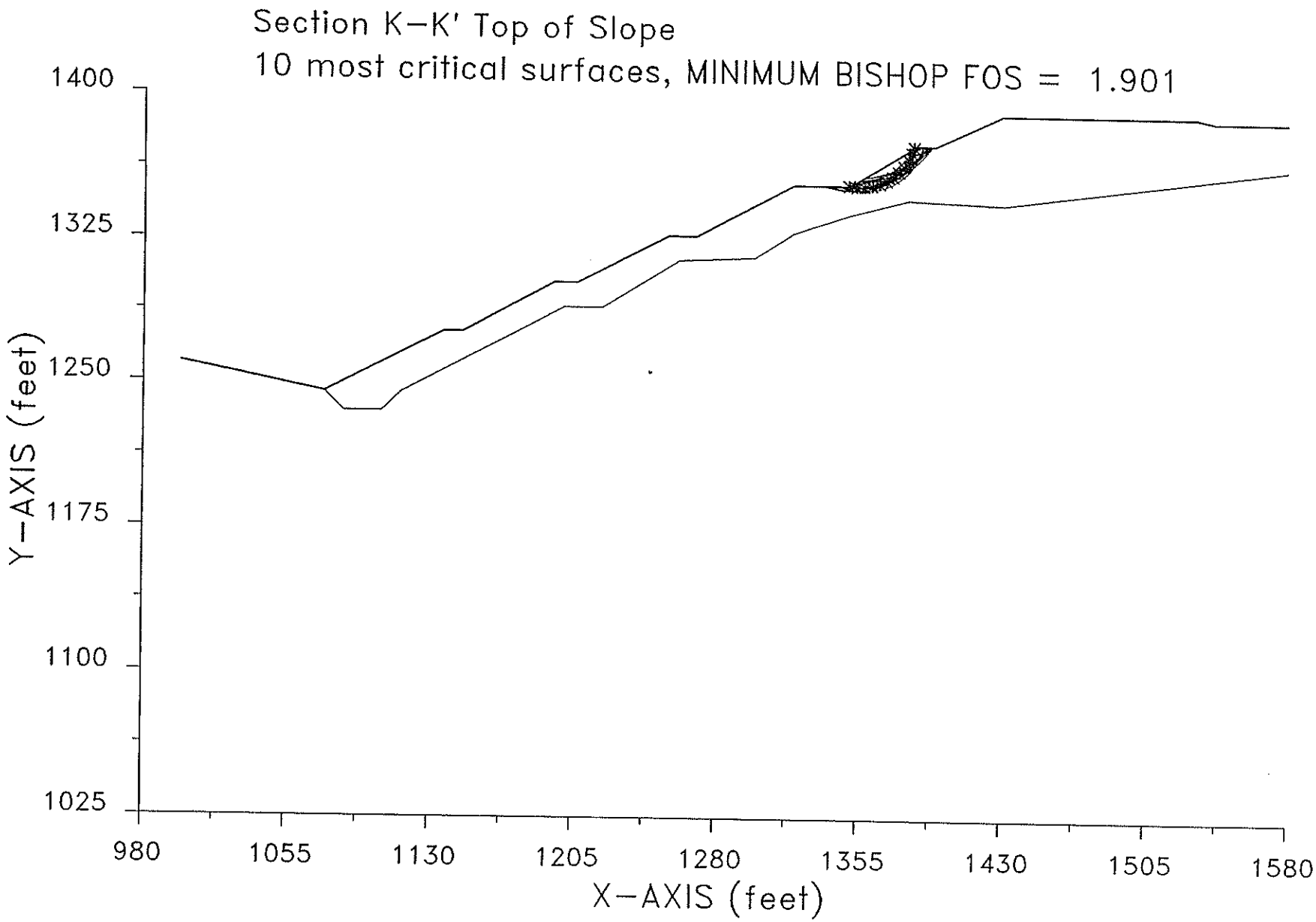
S. ;K-K2 7-31-** 9:09


Section K-K' Middle of Slope
10 most critical surfaces, MINIMUM BISHOP FOS = 1.914
1400
1325
1250
1175
1100
1025
Y-AXIS (feet)
980
1055
1130
1205
1280
1355
1430
1505
1580
X-AXIS (feet)

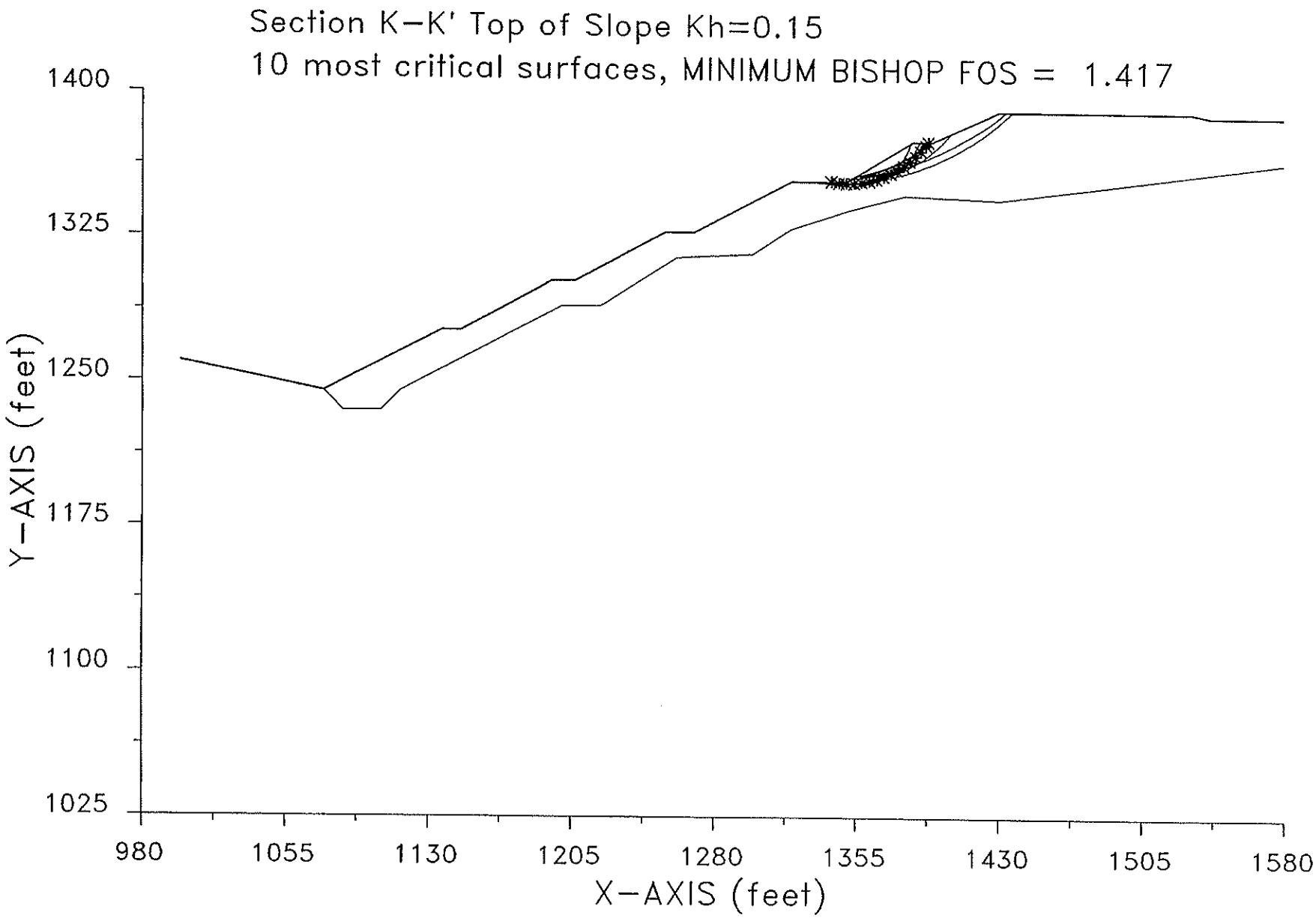
S iK-K6 7-31-** 9:19



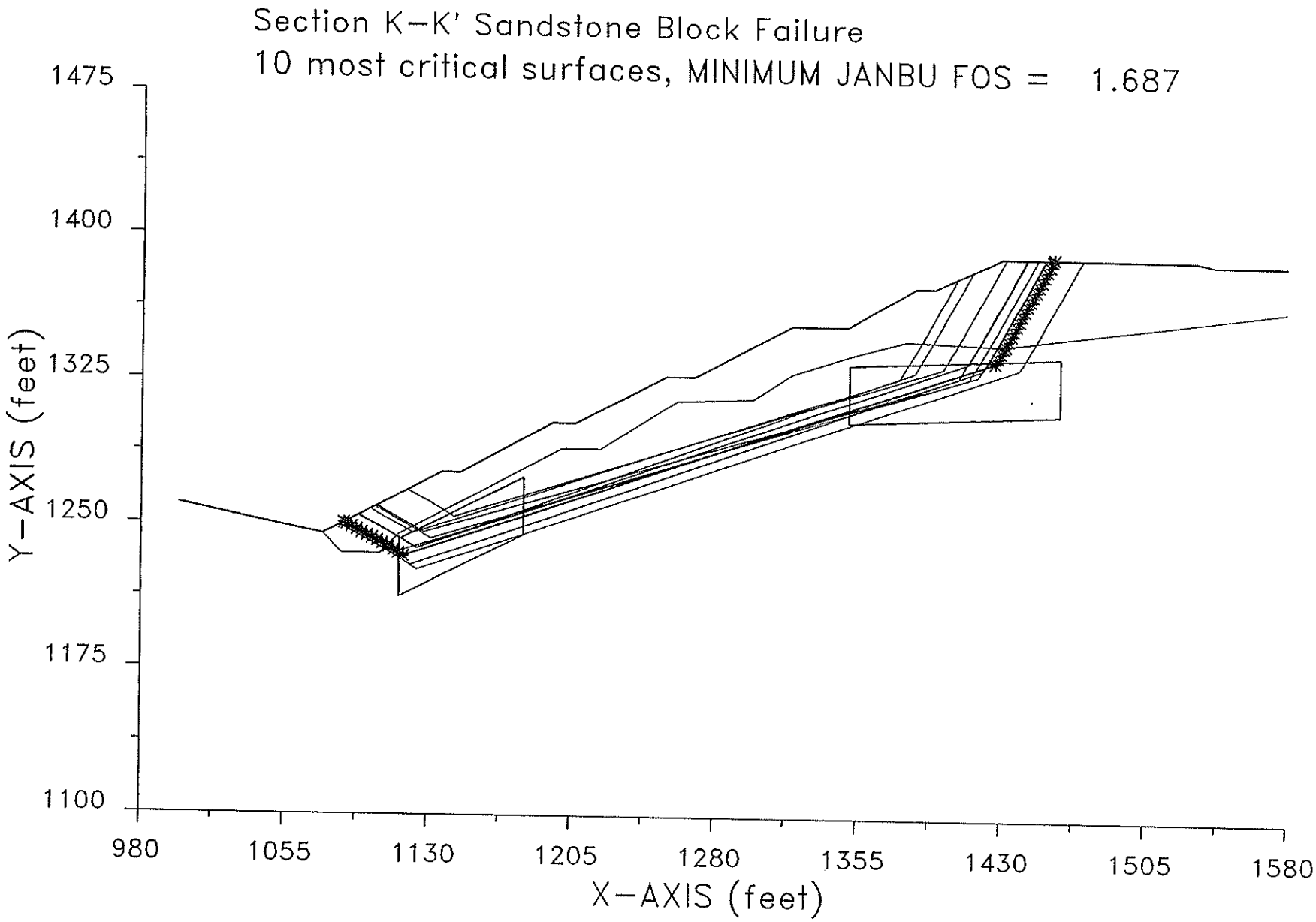
S. iK-K3 7-31-** 11:18



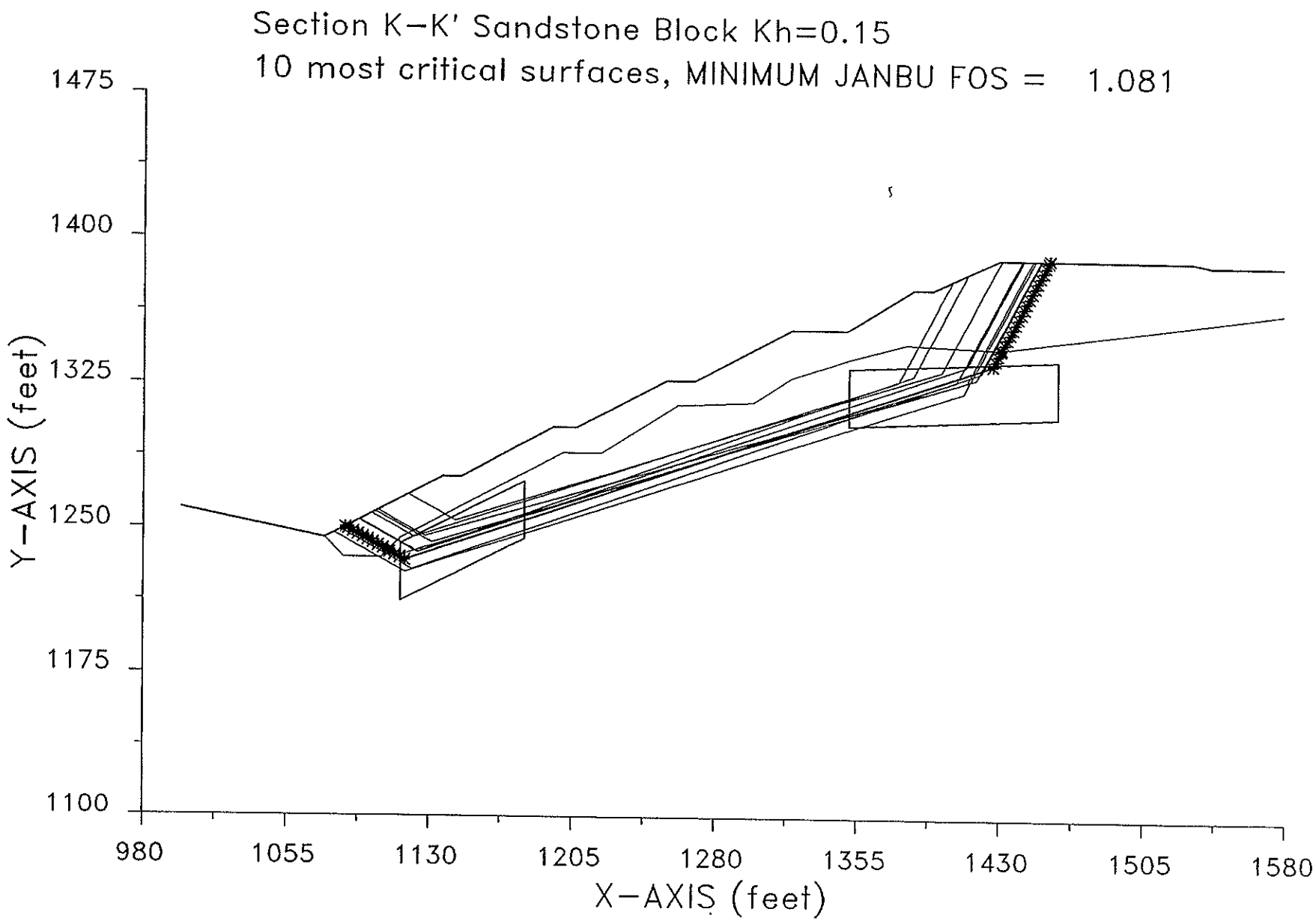
S. fK-K7 7-31-** 9:19

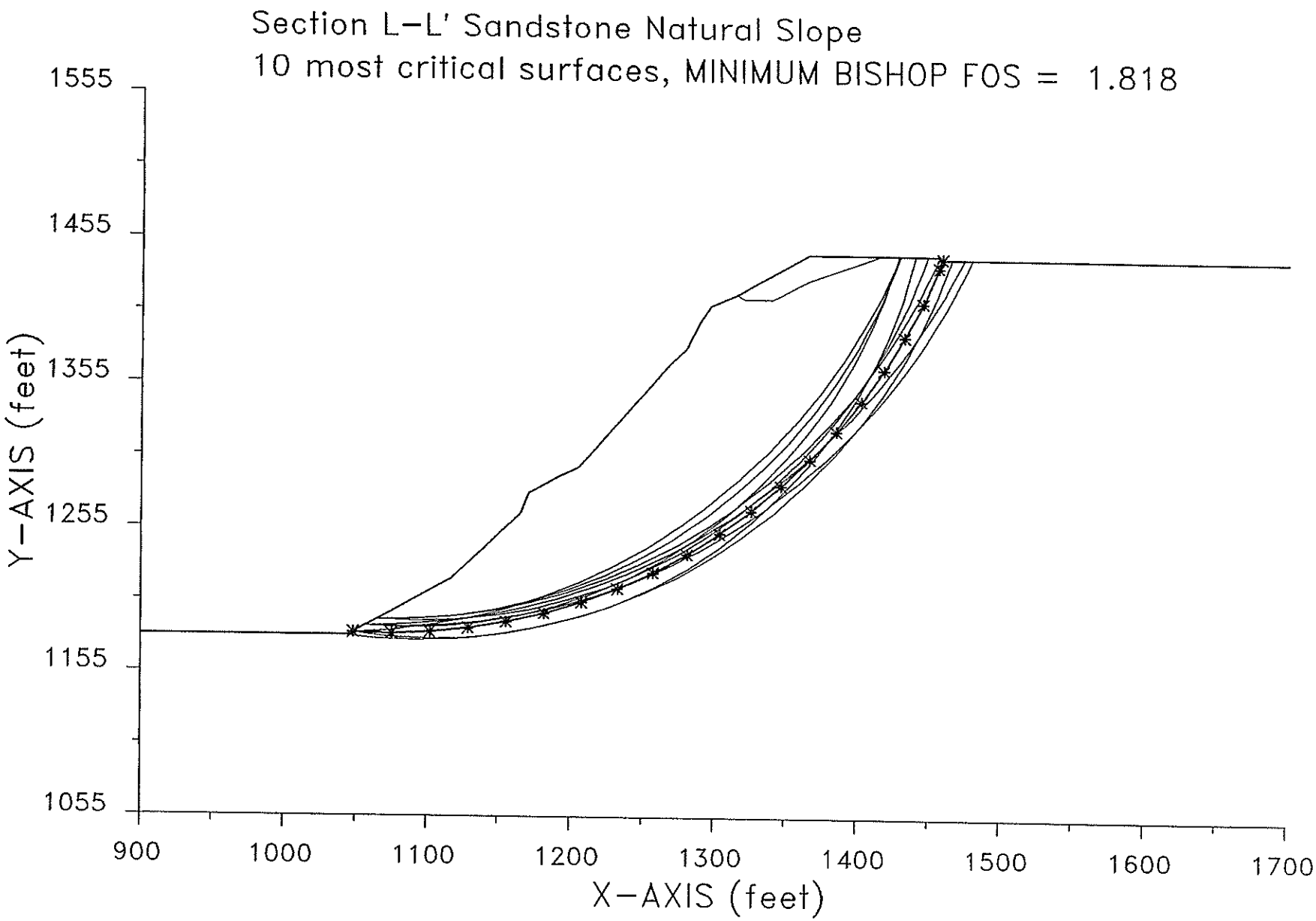


S_ _fK-K4 7-31-** 9:18

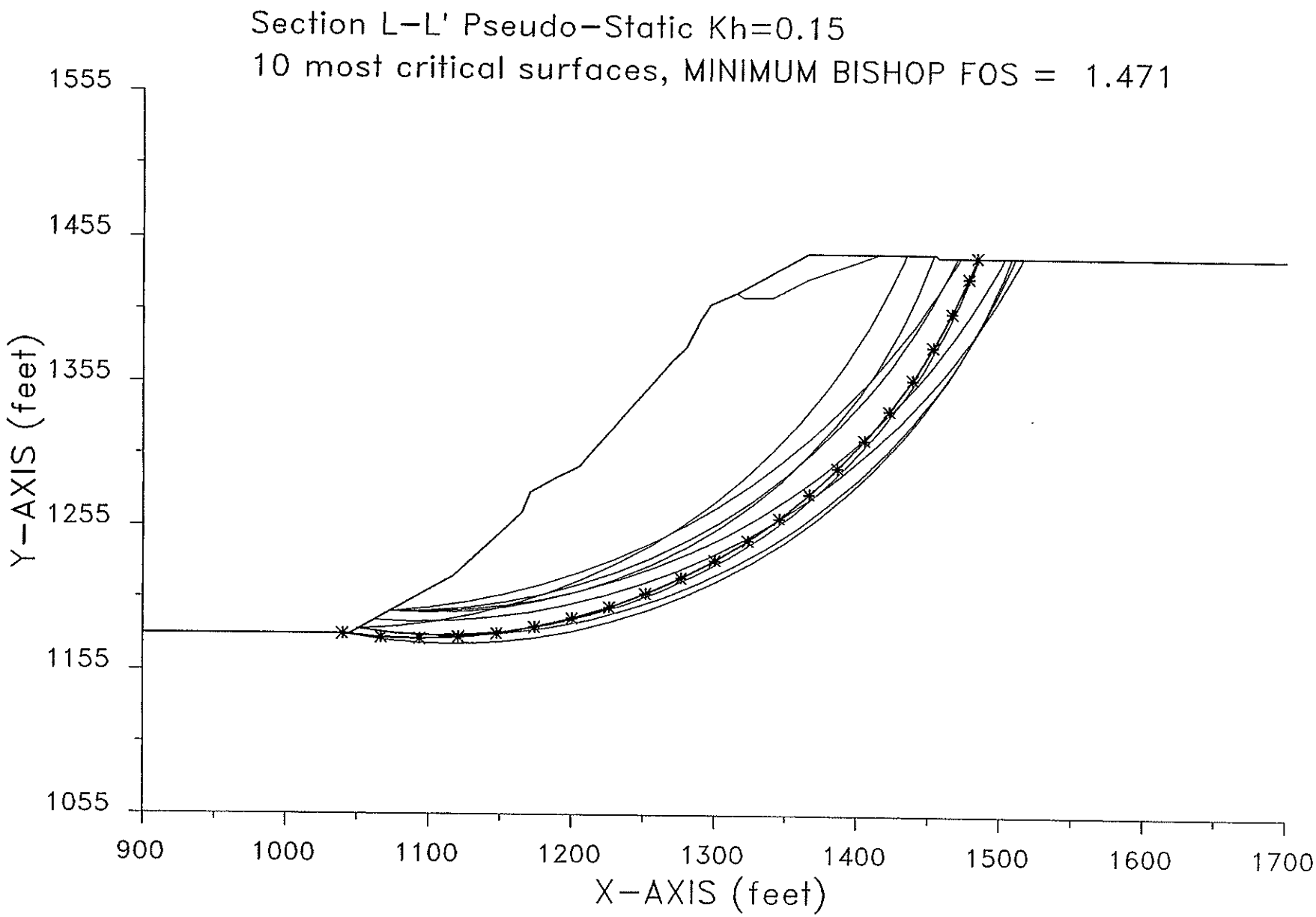


S .K-K8 7-31-** 9:20

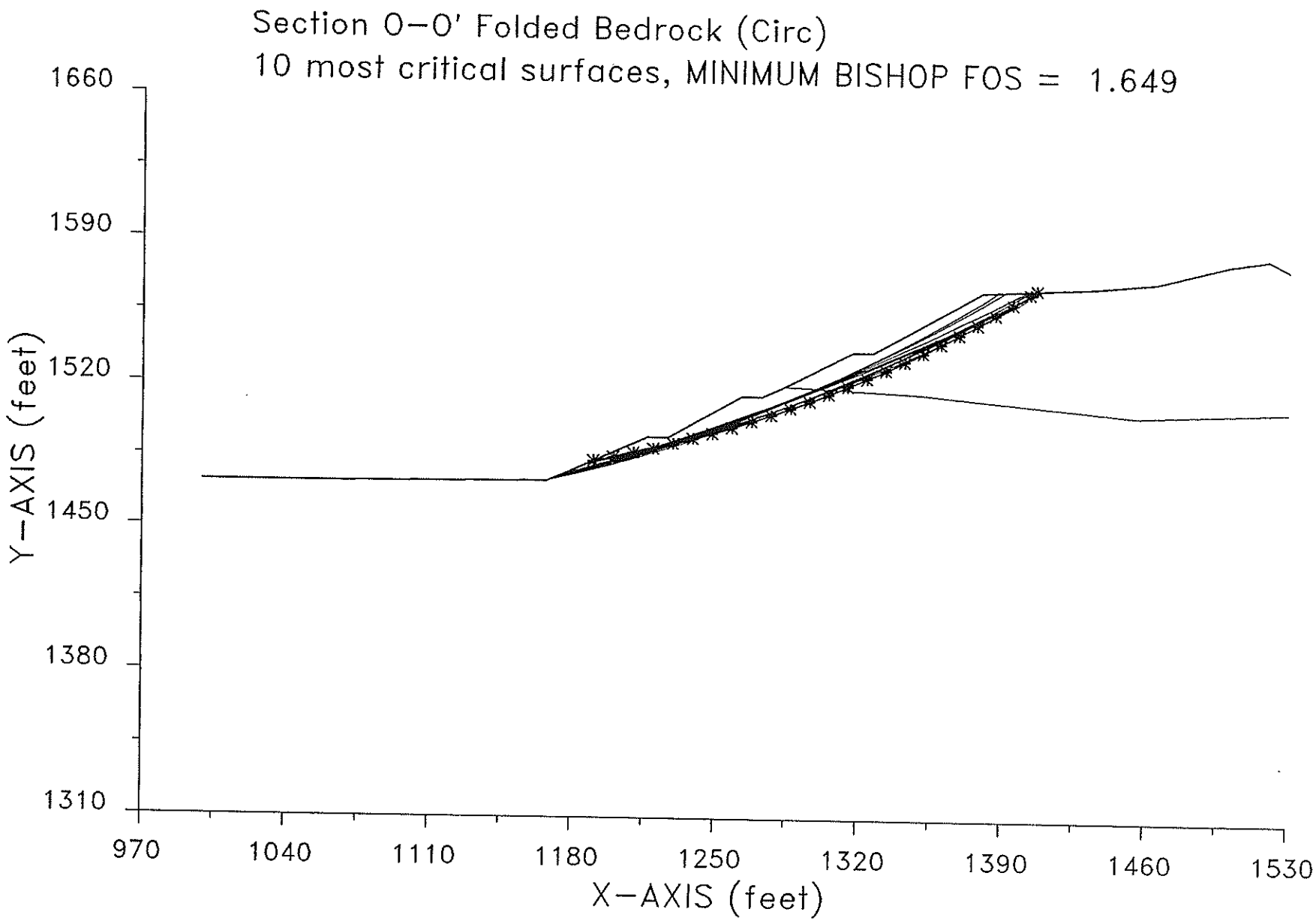

Section K-K' Sandstone Block Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.081
1475
1400
1325
1250
1175
1100
Y-AXIS (feet)
980
1055
1130
1205
1280
1355
1430
1505
1580
X-AXIS (feet)


Section L-L' Sandstone Natural Slope
10 most critical surfaces, MINIMUM BISHOP FOS = 1.818
1555
1455
1355
1255
1155
1055
Y-AXIS (feet)
900
1000
1100
1200
1300
1400
1500
1600
1700
X-AXIS (feet)

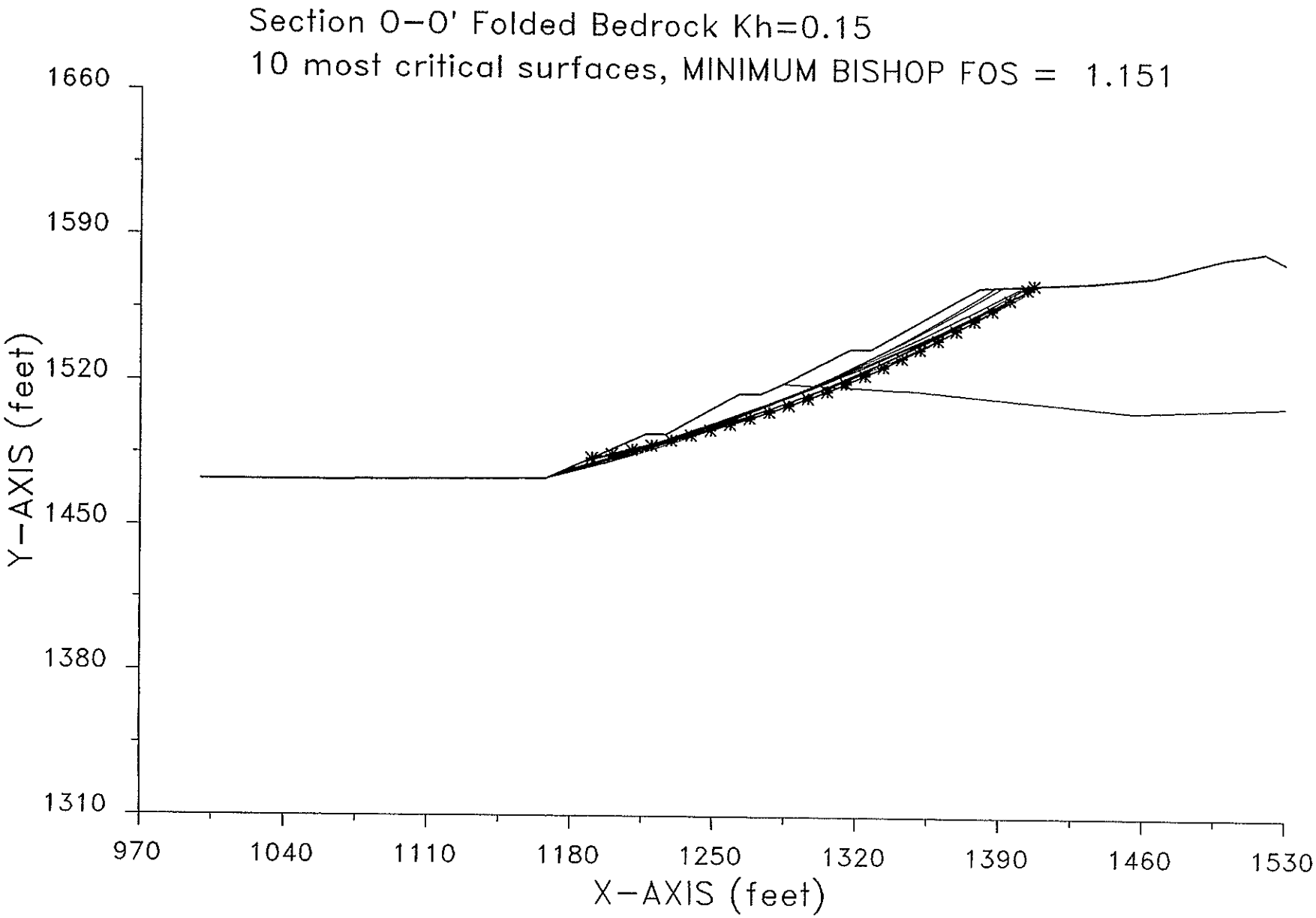
S. .L-L2 7-31-** 9:22


Section L-L' Pseudo-Static Kh=0.15
10 most critical surfaces, MINIMUM BISHOP FOS = 1.471
1555
1455
1355
1255
1155
1055
Y-AXIS (feet)
900
1000
1100
1200
1300
1400
1500
1600
1700
X-AXIS (feet)

S. .0-01 7-31-** 9:24

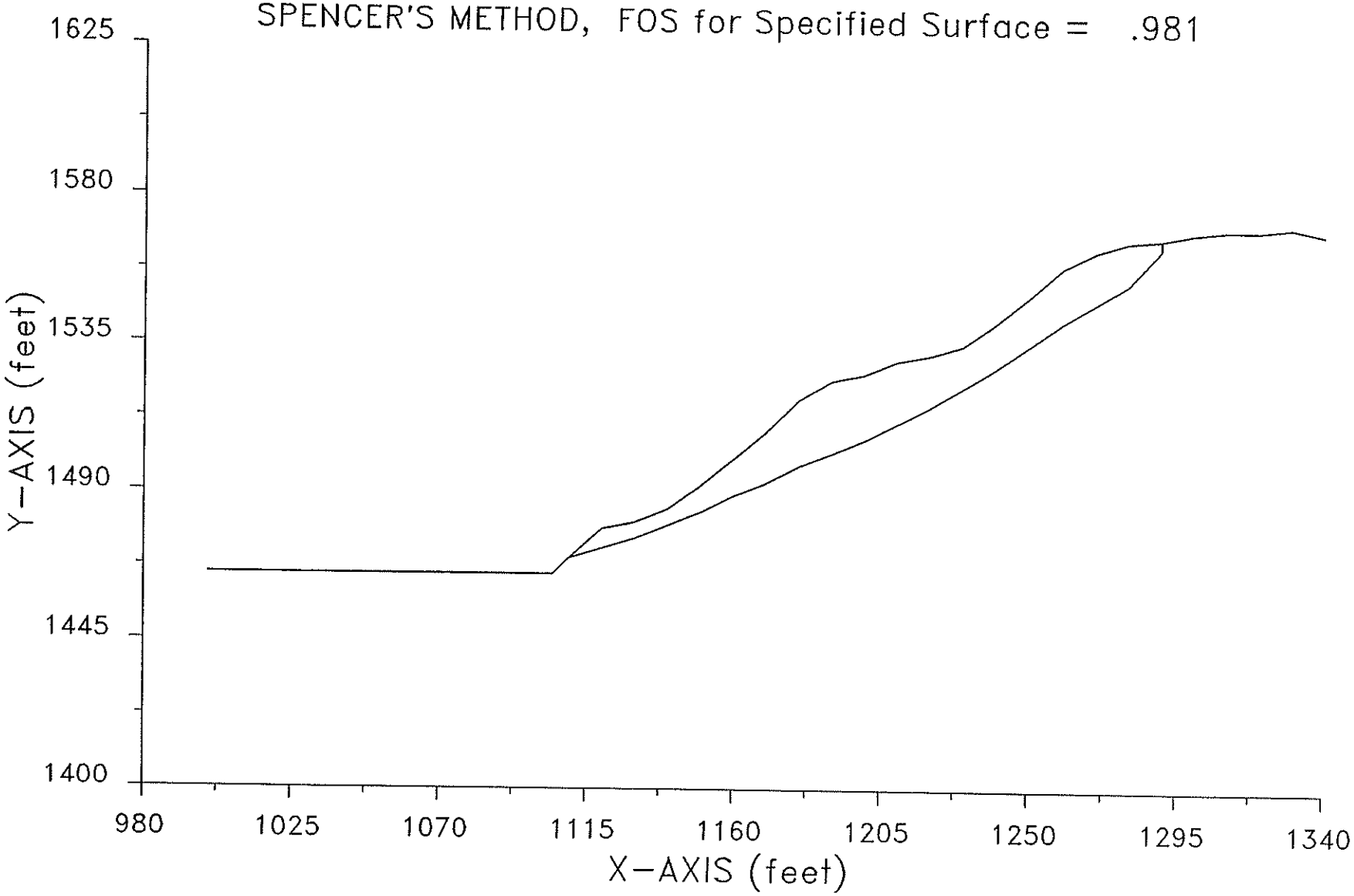

Section O-O' Folded Bedrock (Circ)
10 most critical surfaces, MINIMUM BISHOP FOS = 1.649
1660
1590
1520
1450
1380
1310
Y-AXIS (feet)
970
1040
1110
1180
1250
1320
1390
1460
1530
X-AXIS (feet)

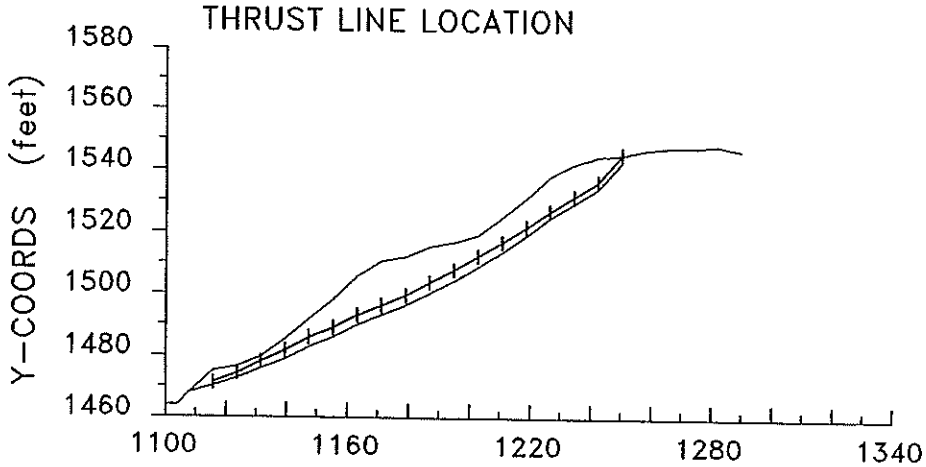
S. .0-02 7-31-** 9:24

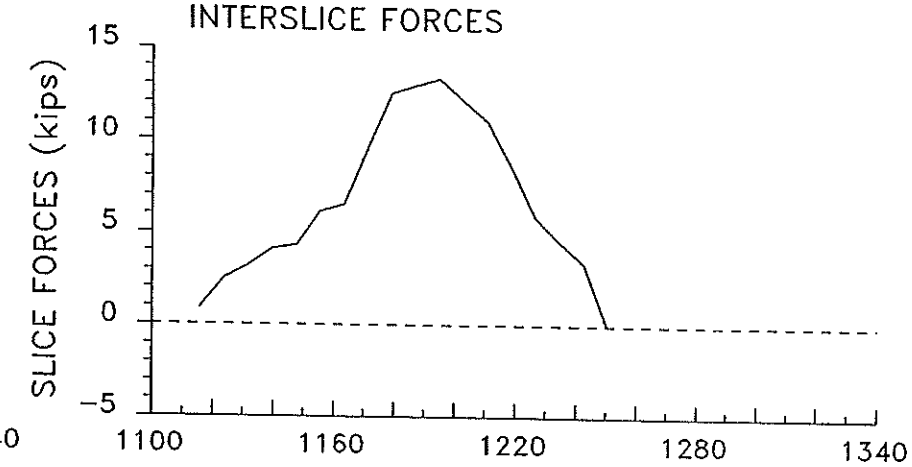

Section O-O' Folded Bedrock Kh=0.15
10 most critical surfaces, MINIMUM BISHOP FOS = 1.151
1660
1590
1520
1450
1380
1310
Y-AXIS (feet)
970
1040
1110
1180
1250
1320
1390
1460
1530
X-AXIS (feet)

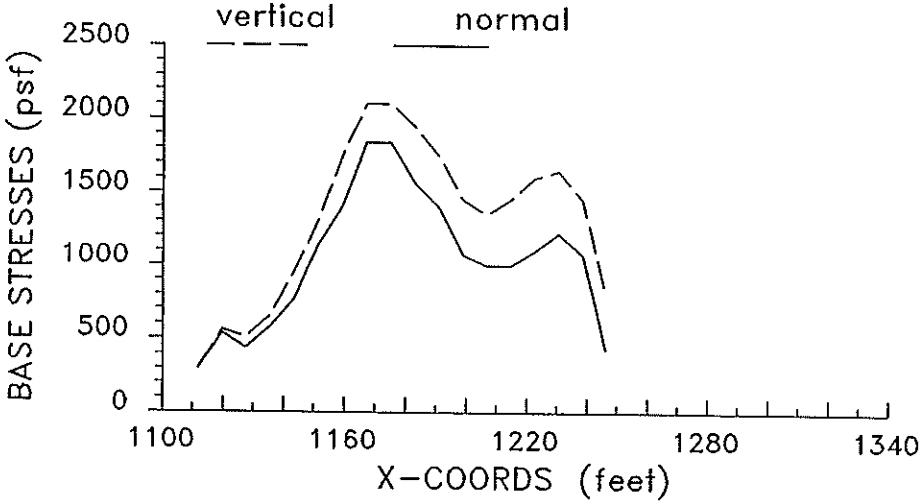
S. P-P 7-31-** 9:25

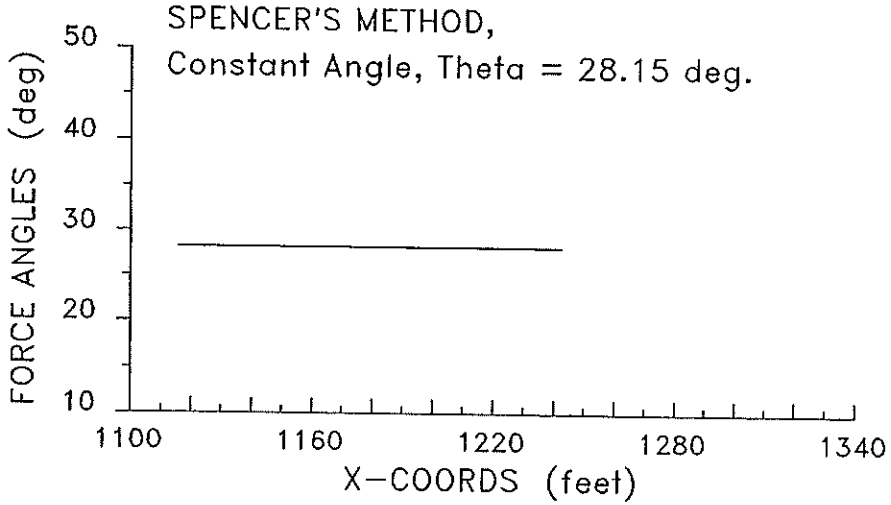
Section P-P' Qts Slide (Spec Surf)
SPENCER'S METHOD, FOS for Specified Surface = .981



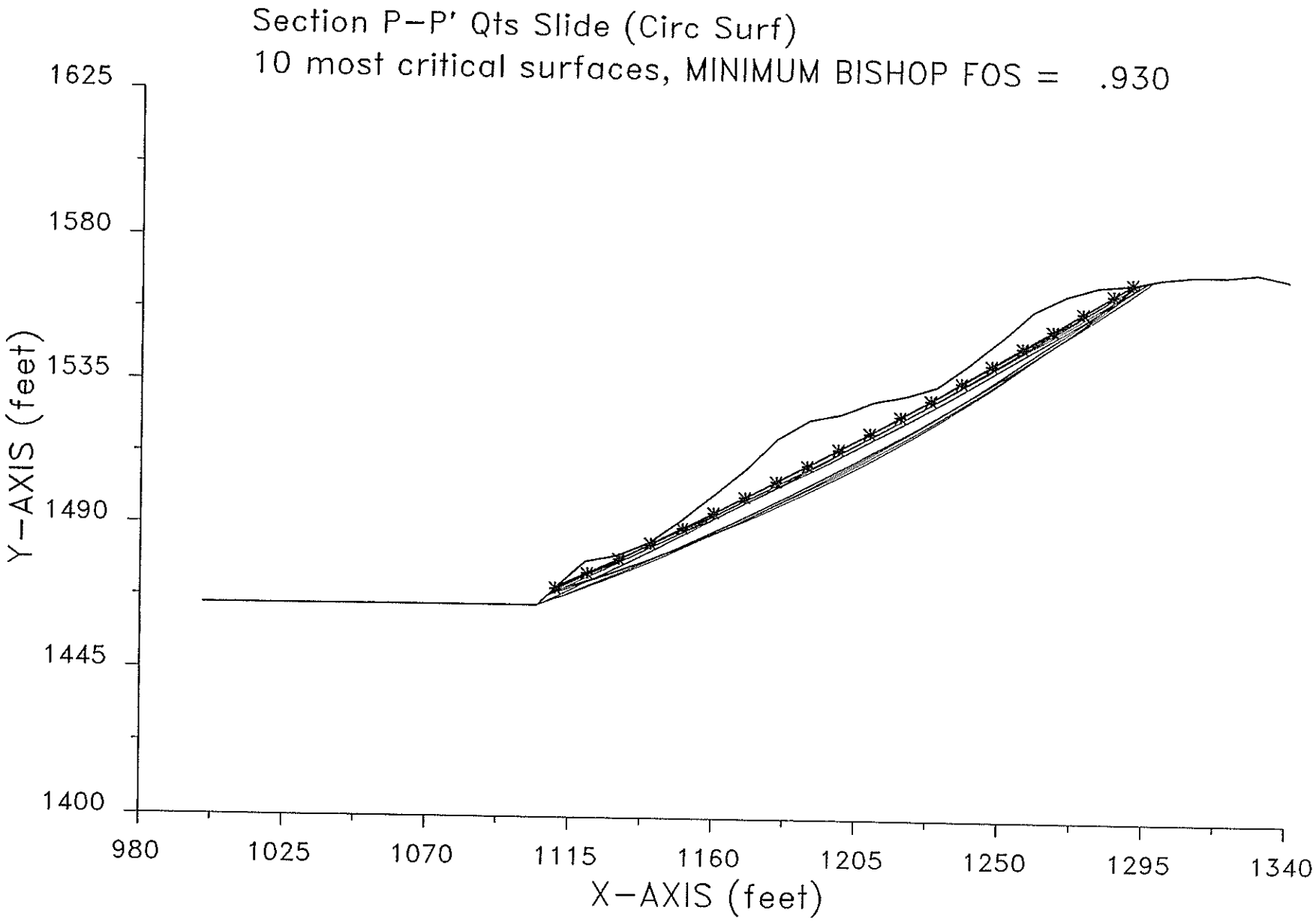


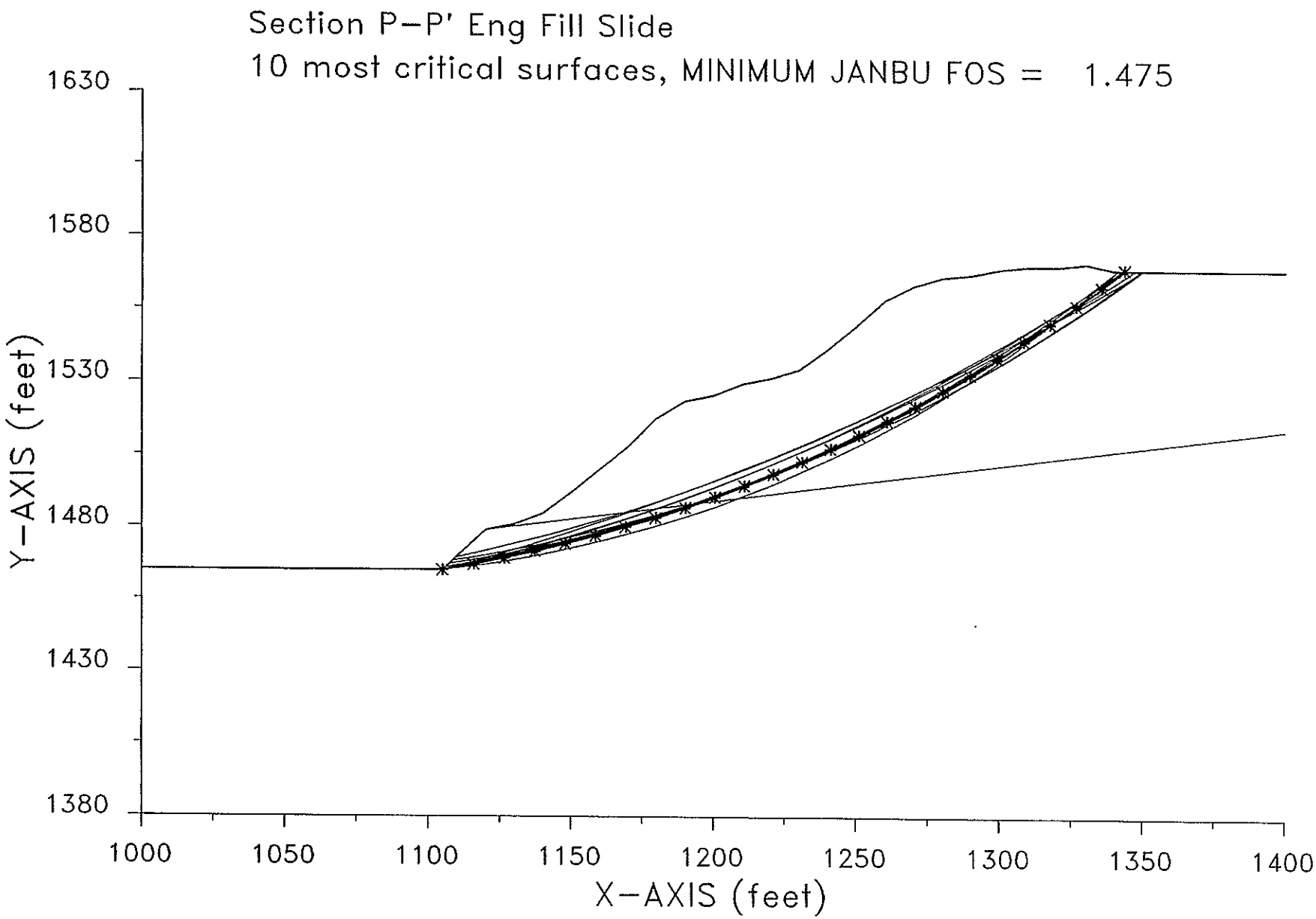




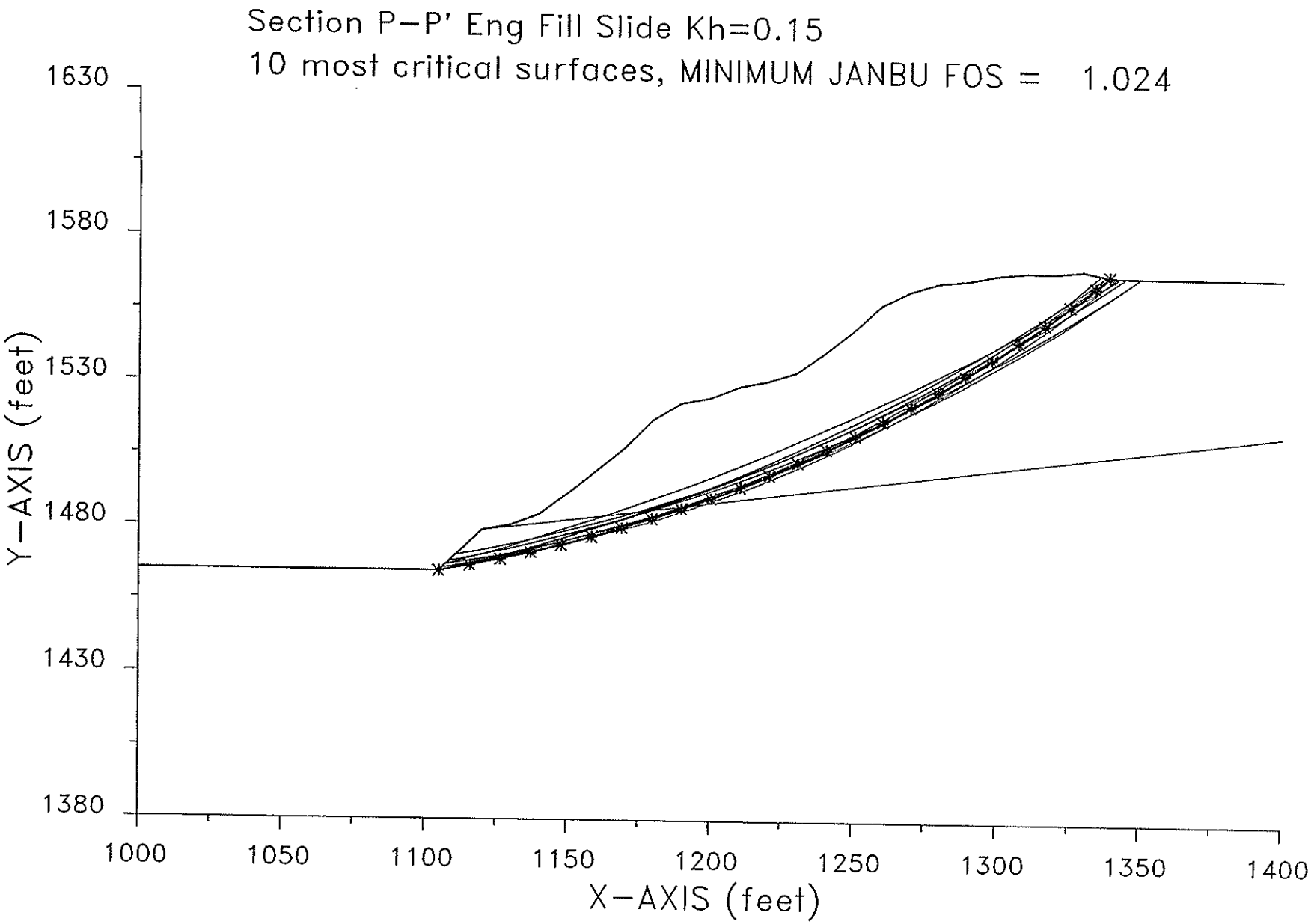


Section P-P' Qts Slide (Spec Surf)
SPENCER'S METHOD, FOS for Specified Surface = .981

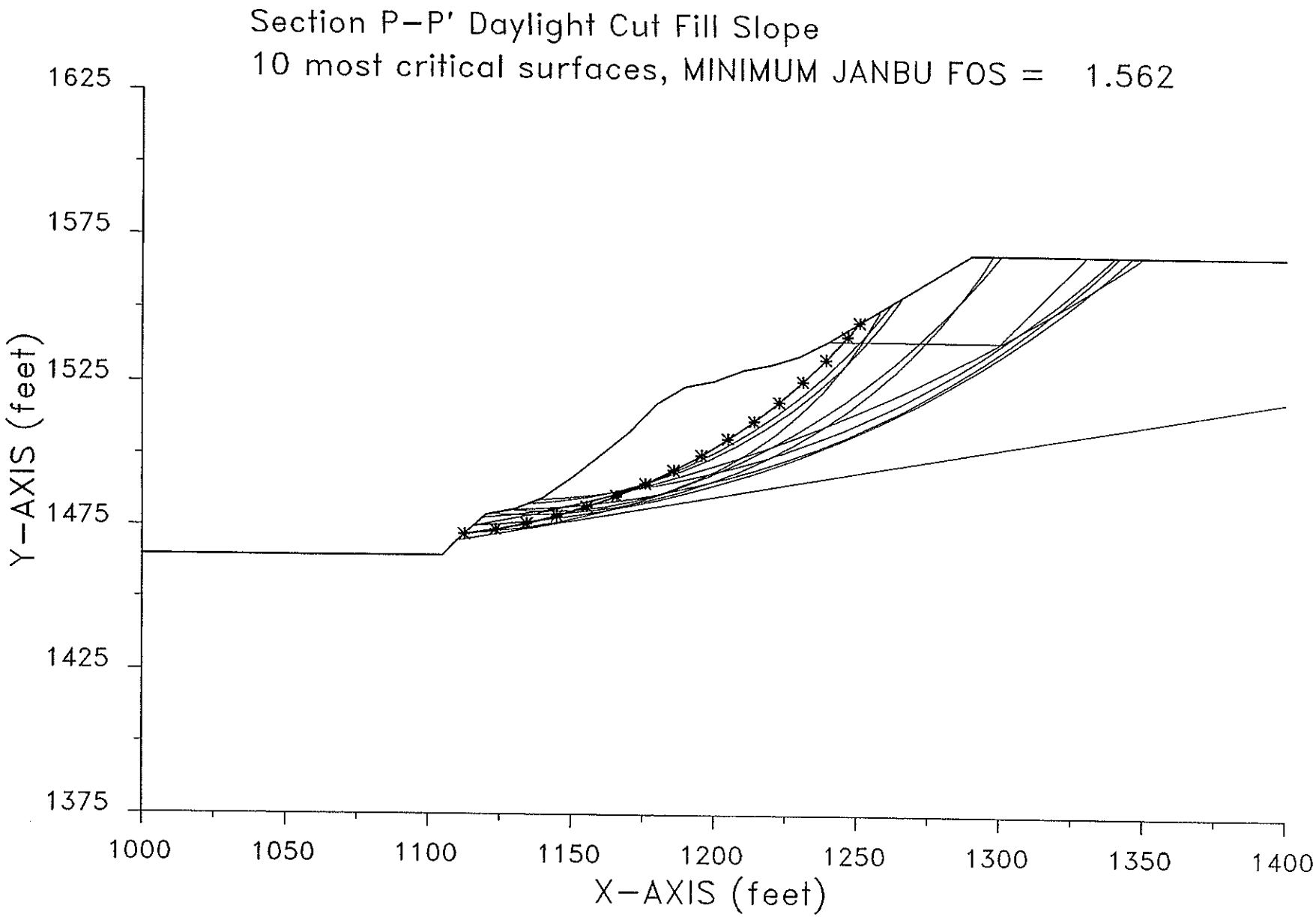

Section P-P' Qts Slide (Circ Surf)
10 most critical surfaces, MINIMUM BISHOP FOS = .930
1625
1580
1535
1490
1445
1400
Y-AXIS (feet)
980
1025
1070
1115
1160
1205
1250
1295
1340
X-AXIS (feet)


Section P-P' Eng Fill Slide
10 most critical surfaces, MINIMUM JANBU FOS = 1.475
1630
1580
1530
1480
1430
1380
Y-AXIS (feet)
1000
1050
1100
1150
1200
1250
1300
1350
1400
X-AXIS (feet)

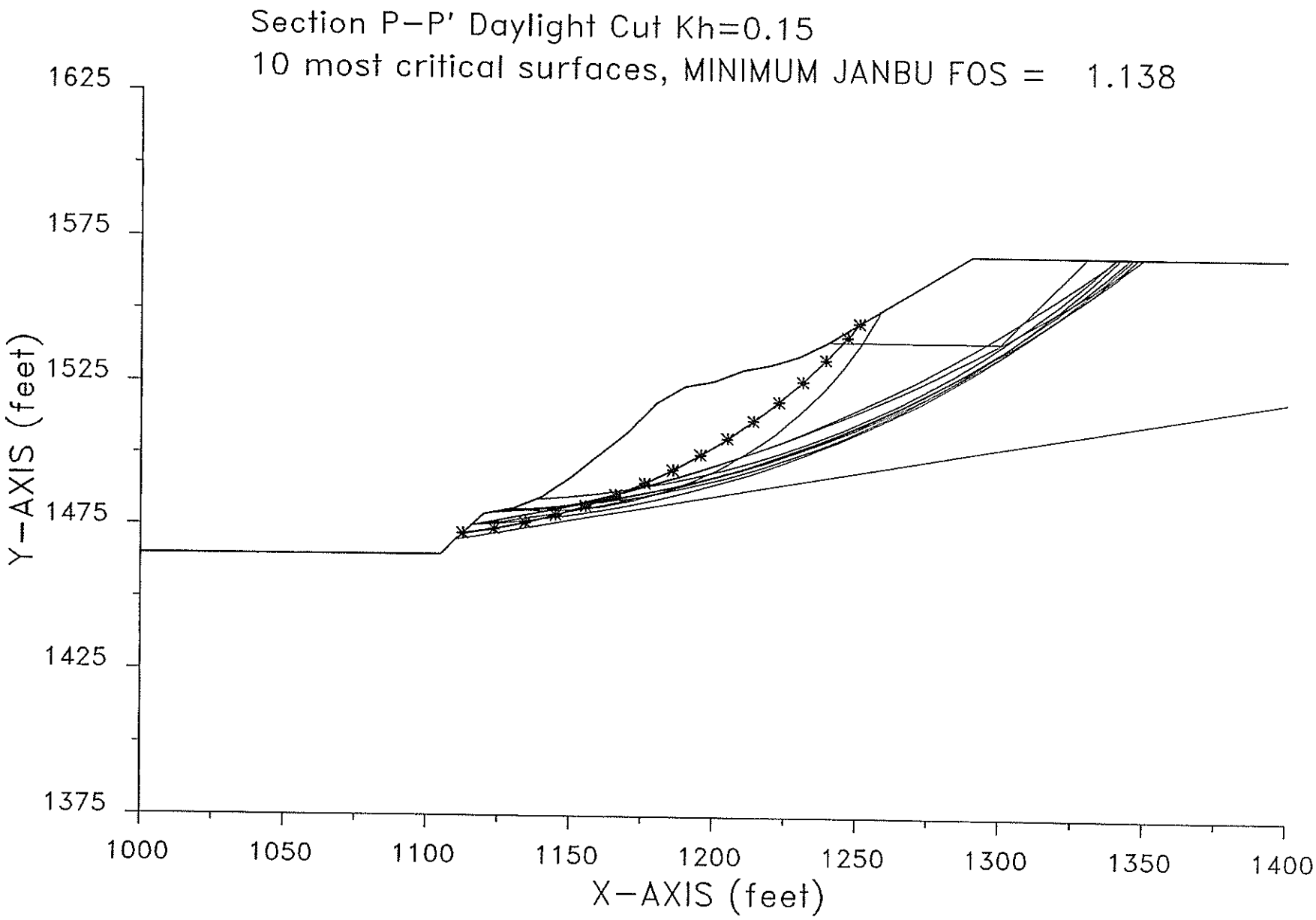
S ,P-P4 7-31-** 9:28


Section P-P' Eng Fill Slide Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.024
1630
1580
1530
1480
1430
1380
Y-AXIS (feet)
1000
1050
1100
1150
1200
1250
1300
1350
1400
X-AXIS (feet)

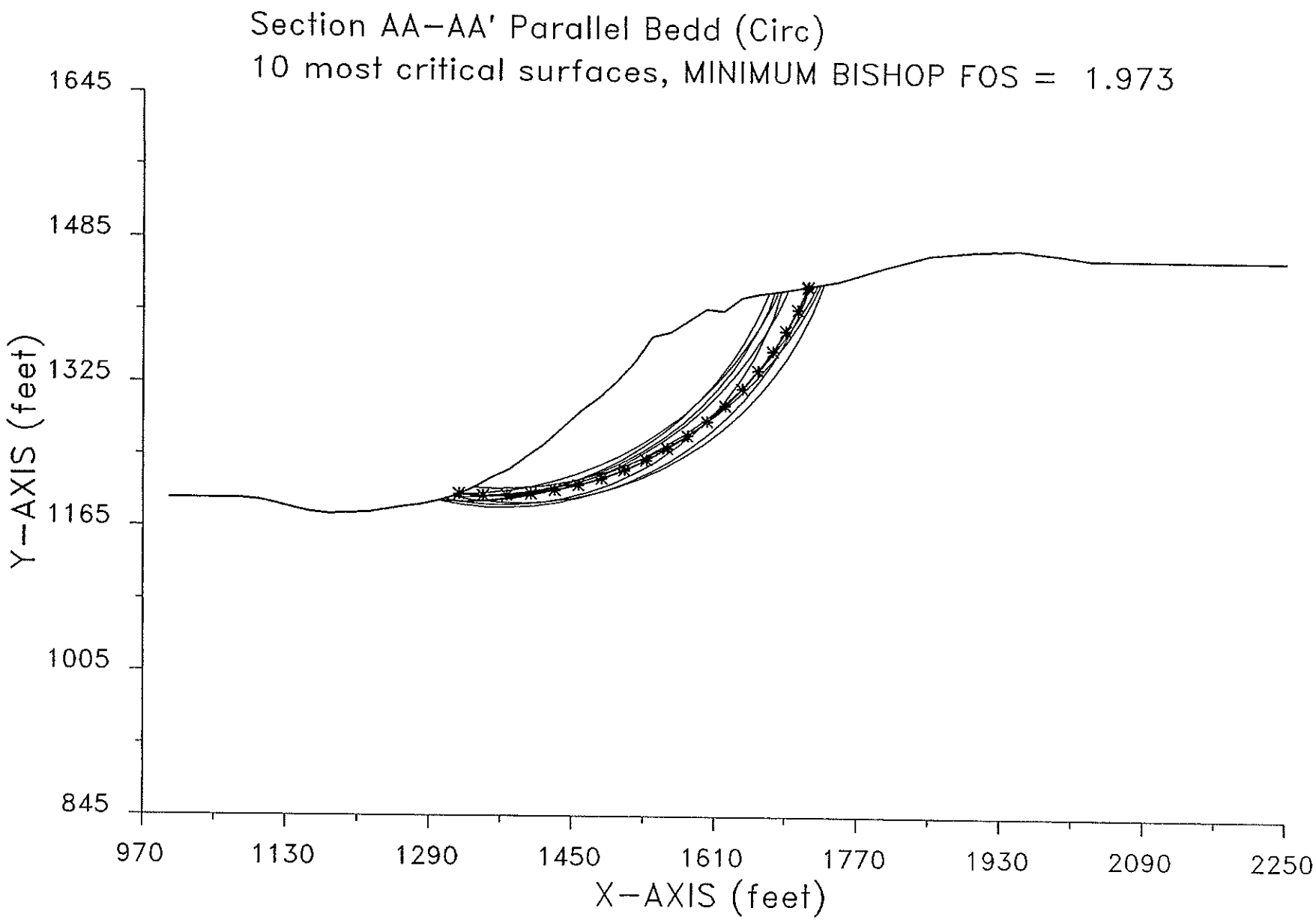
S ,P-P3 7-31-** 9:28


Section P-P' Daylight Cut Fill Slope
10 most critical surfaces, MINIMUM JANBU FOS = 1.562
1625
1575
1525
1475
1425
1375
Y-AXIS (feet)
1000
1050
1100
1150
1200
1250
1300
1350
1400
X-AXIS (feet)

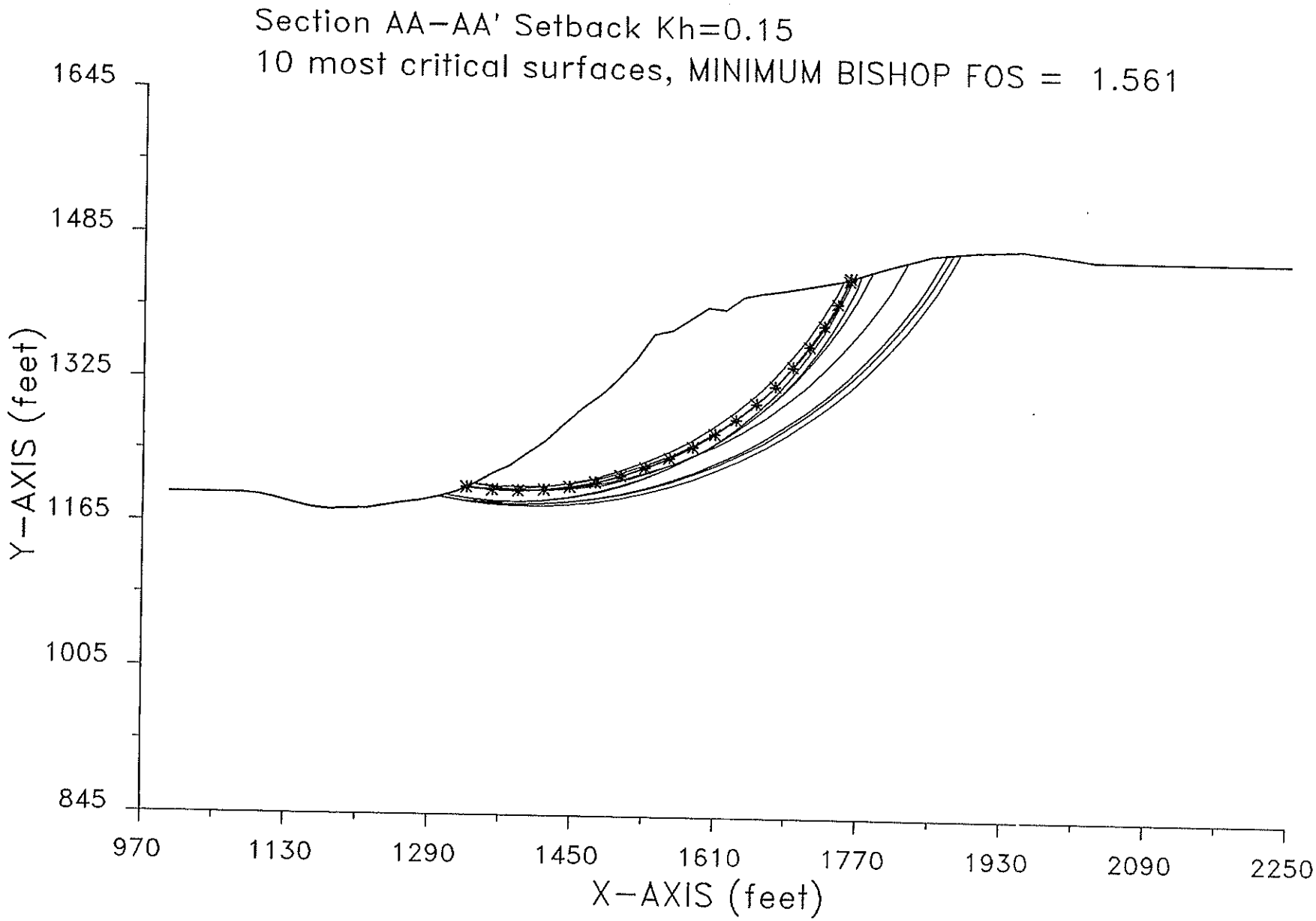
S. .P-P5 7-31-** 9:29


Section P-P' Daylight Cut Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.138
1625
1575
1525
1475
1425
1375
Y-AXIS (feet)
1000
1050
1100
1150
1200
1250
1300
1350
1400
X-AXIS (feet)

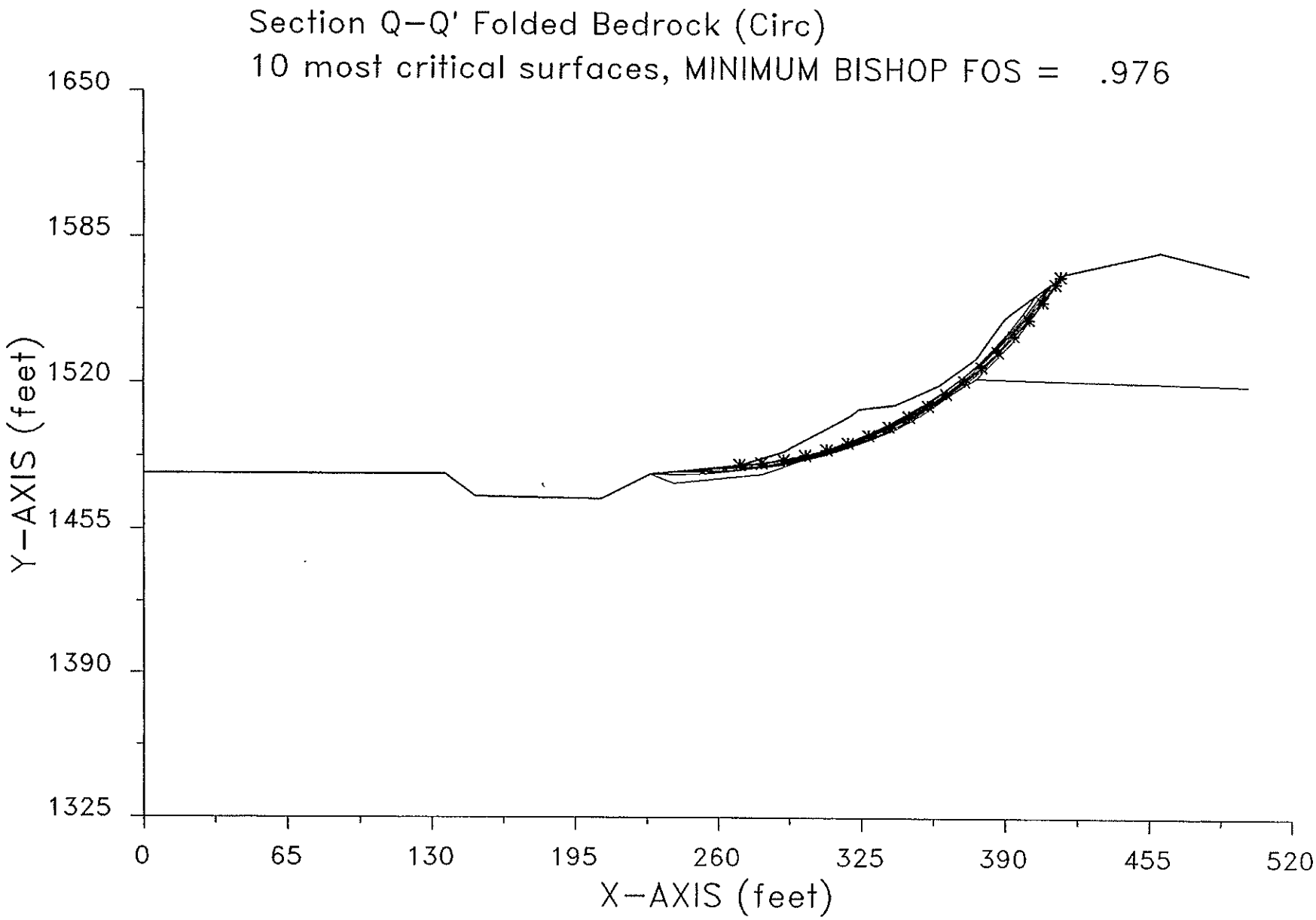
S. .AAA1 7-31-** 9:30



S AAA3 7-31-** 9:30

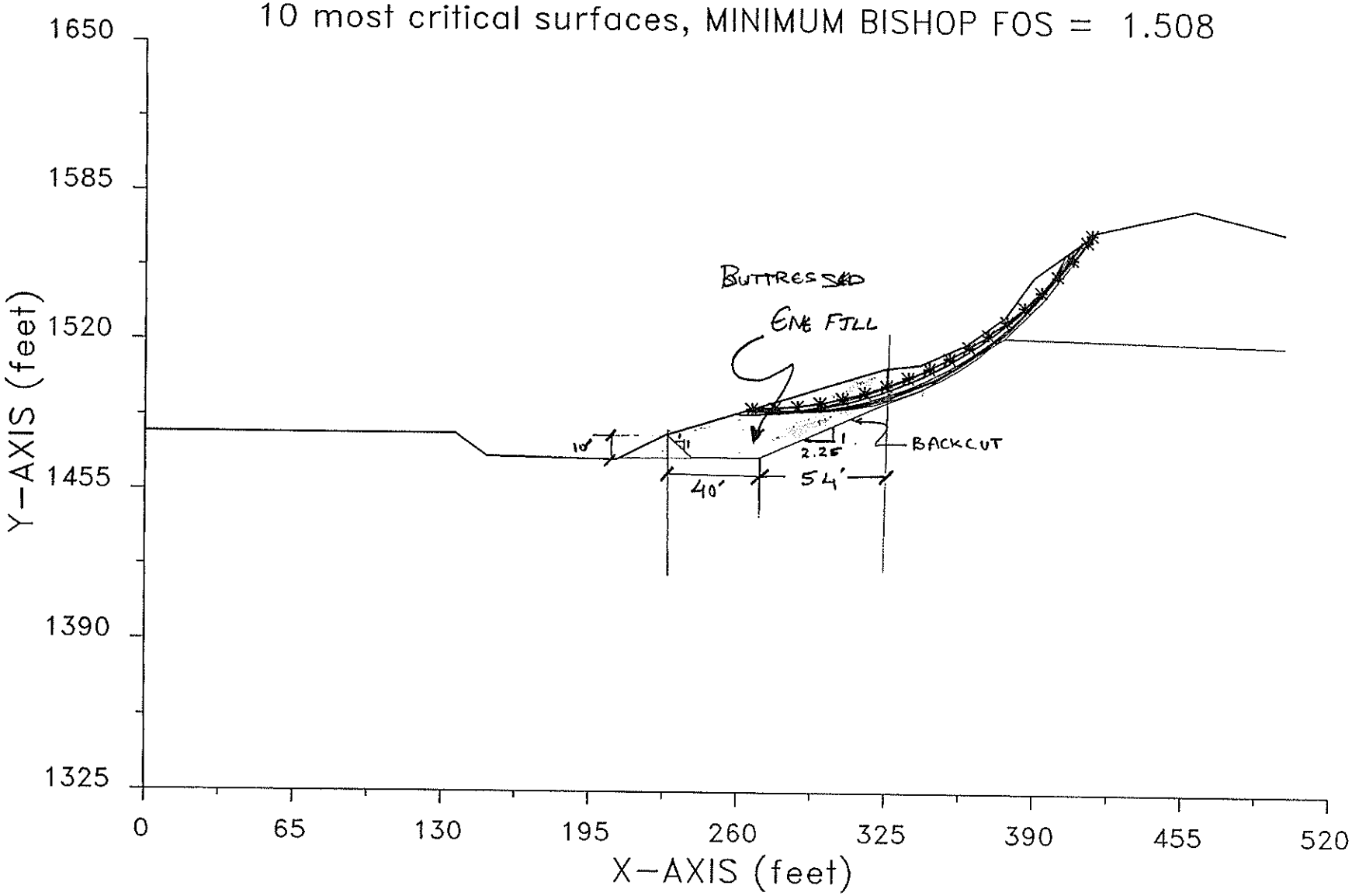


S. ;Q-Q1 8-01-** 16:59

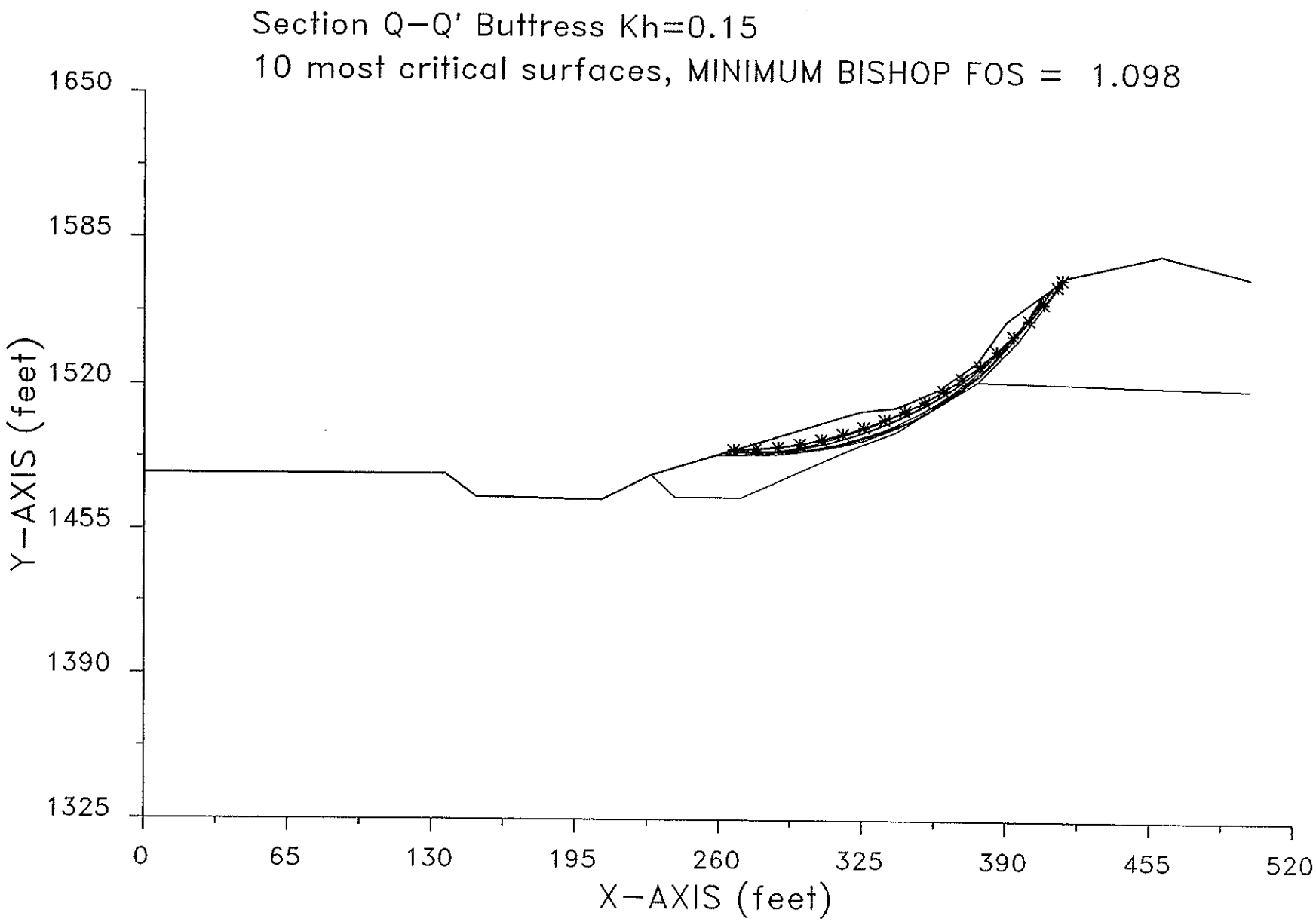


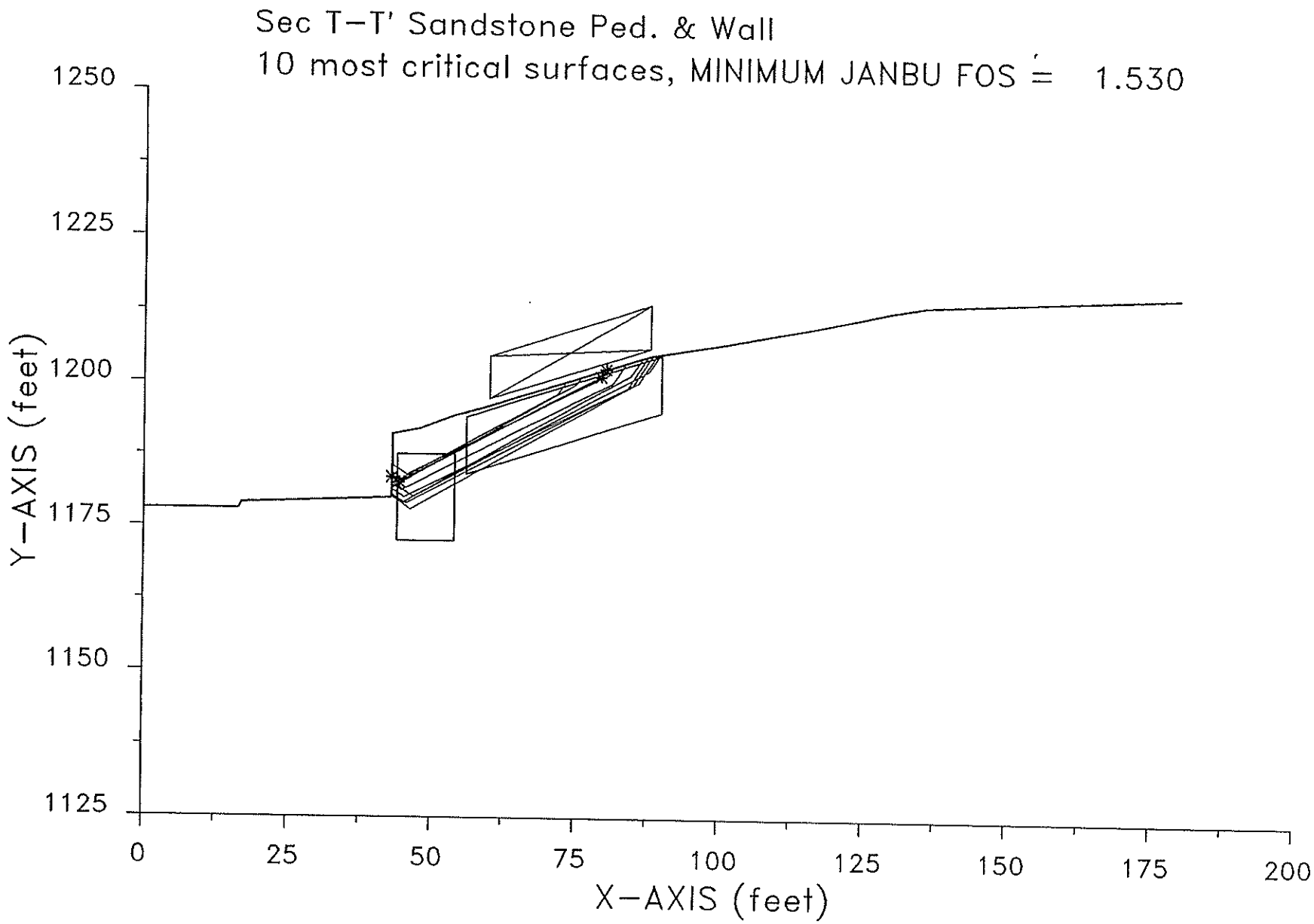
SL..Q-Q2 8-01-** 17:08

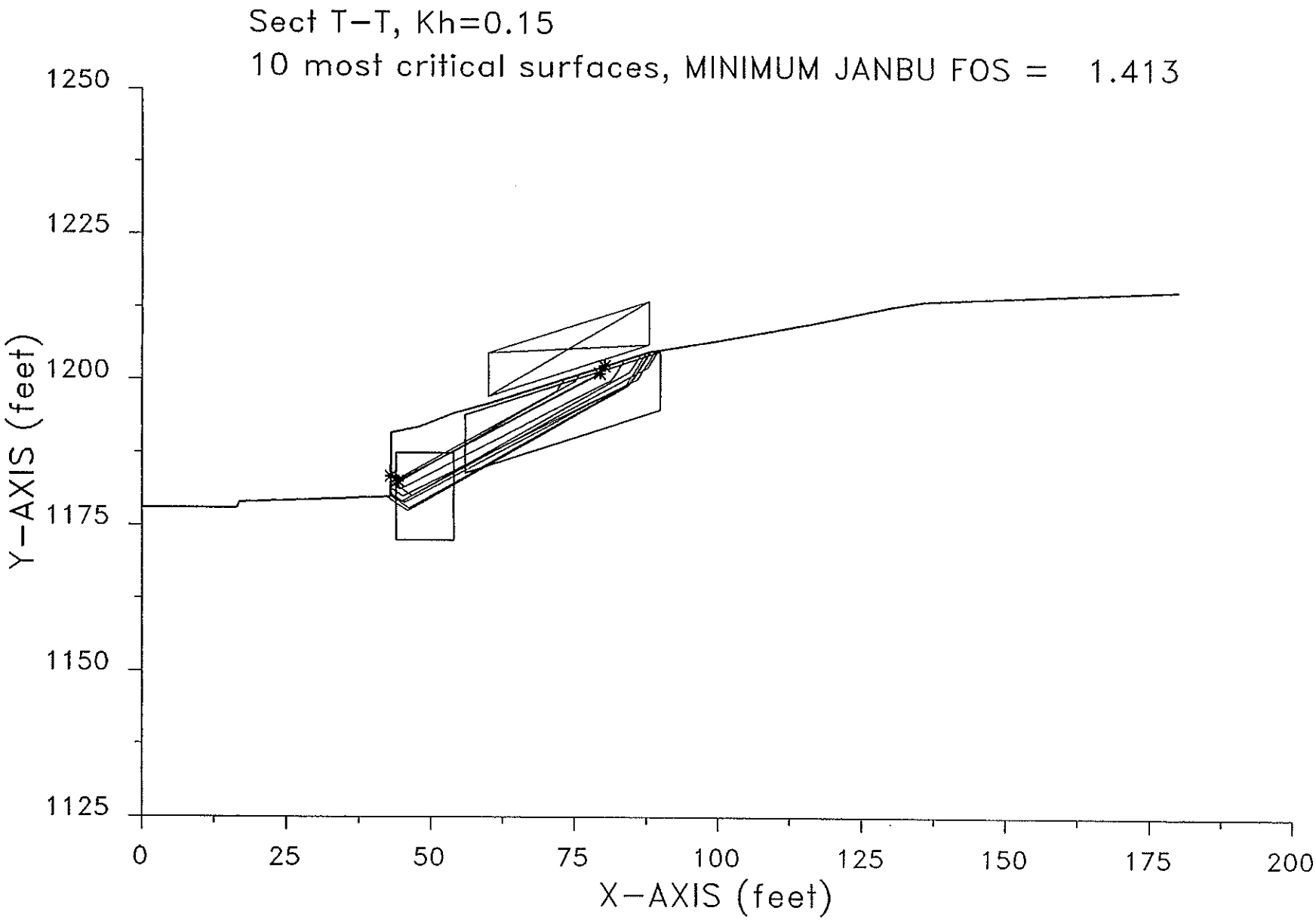
Section Q-Q' Folded Bedrock Buttress
10 most critical surfaces, MINIMUM BISHOP FOS = 1.508



SL..,Q-Q3 8-01-** 17:10




Sec T-T' Sandstone Ped. & Wall
10 most critical surfaces, MINIMUM JANBU FOS = 1.530
1250
1225
1200
1175
1150
1125
Y-AXIS (feet)
0
25
50
75
100
125
150
175
200
X-AXIS (feet)


Sect T-T, Kh=0.15
10 most critical surfaces, MINIMUM JANBU FOS = 1.413
1250
1225
1200
1175
1150
1125
Y-AXIS (feet)
0
25
50
75
100
125
150
175
200
X-AXIS (feet)

Nuth

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 3 Station 1 130' below C2
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	66
Bieniawski Rating	13
Discontinuity Spacing, mm	190
Bieniawski Rating	8

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	42	
Class	III	Fair Rock

This rock exhibits an average standup time of 1 week for a 5 meter horizontal span, 200-300 kPa rock mass cohesion, and a friction angle of 25 to 35 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 2 Station 5 500' below Crest of Ridge
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.5
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	95
Bieniawski Rating	19
Discontinuity Spacing, mm	255
Bieniawski Rating	9

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	49	
Class	III	Fair Rock

This rock exhibits an average standup time of 1 week for a 5 meter horizontal span, 200-300 kPa rock mass cohesion, and a friction angle of 25 to 35 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 2 Station 4 335' below Crest of Ridge
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	49
Bieniawski Rating	10
Discontinuity Spacing, mm	130
Bieniawski Rating	7

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	38	
Class	IV	Poor Rock

This rock exhibits an average standup time of 10 hours for a 2.5 meter horizontal span, 100-200 kPa rock mass cohesion, and a friction angle between 15 and 25 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 2 Station 3 260' below Crest of Ridge
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	5
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	49
Bieniawski Rating	10
Discontinuity Spacing, mm	150
Bieniawski Rating	7

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	39	
Class	IV	Poor Rock

This rock exhibits an average standup time of 10 hours for a 2.5 meter horizontal span, 100-200 kPa rock mass cohesion, and a friction angle between 15 and 25 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 2 Station 2 235' below Crest of Ridge
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	72
Bieniawski Rating	14
Discontinuity Spacing, mm	250
Bieniawski Rating	9

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating**		
	Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	44	
Class	III	Fair Rock

This rock exhibits an average standup time of 1 week for a 5 meter horizontal span, 200-300 kPa rock mass cohesion, and a friction angle of 25 to 35 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 2 Station 1 200' feet below crest of ridge
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	56
Bieniawski Rating	11
Discontinuity Spacing, mm	130
Bieniawski Rating	7

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	39	
Class	IV	**Poor Rock**

This rock exhibits an average standup time of 10 hours for a 2.5 meter horizontal span, 100-200 kPa rock mass cohesion, and a friction angle between 15 and 25 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 2 Station 1 200' feet below crest of ridge
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	56
Bieniawski Rating	11
Discontinuity Spacing, mm	130
Bieniawski Rating	7

Conditions of Discontinuitites	Rating
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	Rating
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m).	
B. Ratio of joint water pressure to σ_1.	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	Rating		
	Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	39	
Class	IV	Poor Rock

This rock exhibits an average standup time of 10 hours for a 2.5 meter horizontal span, 100-200 kPa rock mass cohesion, and a friction angle between 15 and 25 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 1 Station 4 300' South of C1A
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	50
Bieniawski Rating	10
Discontinuity Spacing, mm	50
Bieniawski Rating	6

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Stickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	25

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	42	
Class	III	Fair Rock

This rock exhibits an average standup time of 1 week for a 5 meter horizontal span, 200-300 kPa rock mass cohesion, and a friction angle of 25 to 35 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 1 Station 3 250' South of C1A
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	56
Bieniawski Rating	11
Discontinuity Spacing, mm	90
Bieniawski Rating	6

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	39	
Class	IV	Poor Rock

This rock exhibits an average standup time of 10 hours for a 2.5 meter horizontal span, 100-200 kPa rock mass cohesion, and a friction angle between 15 and 25 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 1 Station 2 210' South, 40 West of C1A
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	72
Bieniawski Rating	14
Discontinuity Spacing, mm	230
Bieniawski Rating	8

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	44	
Class	III	Fair Rock

This rock exhibits an average standup time of 1 week for a 5 meter horizontal span, 200-300 kPa rock mass cohesion, and a friction angle of 25 to 35 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Traverse 1 Station 1 140' below C1A
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	69
Bieniawski Rating	14
Discontinuity Spacing, mm	130
Bieniawski Rating	7

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	42	
Class	III	Fair Rock

This rock exhibits an average standup time of 1 week for a 5 meter horizontal span, 200-300 kPa rock mass cohesion, and a friction angle of 25 to 35 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Overall RMR for Outcrops on North Rock Slope
Geologist Chad and Brendan

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
AVG RQD, %	63
Bieniawski Rating	13
Avg Discontinuity Spacing, mm	161
Bieniawski Rating	7

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	20

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating**		
	Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-15

Overall RMR	41	
Class	III	Fair Rock

This rock exhibits an average standup time of 1 week for a 5 meter horizontal span, 200-300 kPa rock mass cohesion, and a friction angle of 25 to 35 degrees.

South

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location Average RMR based on south side traverse
Geologist Bill Gates

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	75
Bieniawski Rating	15
Discontinuity Spacing, mm	370
Bieniawski Rating	10

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	25

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m).	
B. Ratio of joint water pressure to σ_1.	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-60

Overall RMR	6	
Class	V	Very Poor Rock

This rock exhibits an average standup time of 30 minutes for a 1 meter horizontal span < 100 kPa rock mass cohesion, and a friction angle < 15 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location F-F' Transection Area, RMR #2
Geologist Bill Gates

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	82
Bieniawski Rating	16
Discontinuity Spacing, mm	500
Bieniawski Rating	11

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	10

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-60

Overall RMR	-7	
Class	V	**Very Poor Rock**

This rock exhibits an average standup time of 30 minutes for a 1 meter horizontal span < 100 kPa rock mass cohesion, and a friction angle < 15 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location F-F' Transection Area, RMR #1
Geologist Bill Gates

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	95
Bieniawski Rating	19
Discontinuity Spacing, mm	750
Bieniawski Rating	13

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	25

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-60

Overall RMR	13	
Class	V	Very Poor Rock

This rock exhibits an average standup time of 30 minutes for a 1 meter horizontal span < 100 kPa rock mass cohesion, and a friction angle < 15 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location G-G' Transection Area, RMR #5
Geologist Bill Gates

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	75
Bieniawski Rating	15
Discontinuity Spacing, mm	80
Bieniawski Rating	6

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	10

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			0

Overall RMR	47	
Class	III	**Fair Rock**

This rock exhibits an average standup time of 1 week for a 5 meter horizontal span, 200-300 kPa rock mass cohesion, and a friction anble of 25 to 35 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location G-G' Transection Area, RMR #4
Geologist Bill Gates

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	26
Bieniawski Rating	6
Discontinuity Spacing, mm	270
Bieniawski Rating	9

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	25

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-60

Overall RMR	-4	
Class	V	Very Poor Rock

This rock exhibits an average standup time of 30 minutes for a 1 meter horizontal span < 100 kPa rock mass cohesion, and a friction angle < 15 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location G-G' Transection Area, RMR #3
Geologist Bill Gates

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	72
Bieniawski Rating	14
Discontinuity Spacing, mm	70
Bieniawski Rating	6

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	25

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-60

Overall RMR	2	
Class	V	Very Poor Rock

This rock exhibits an average standup time of 30 minutes for a 1 meter horizontal span < 100 kPa rock mass cohesion, and a friction angle < 15 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location G-G' transection area, RMR #2
Geologist Bill Gates

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	75
Bieniawski Rating	15
Discontinuity Spacing, mm	370
Bieniawski Rating	10

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	25

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-60

Overall RMR	6	
Class	V	Very Poor Rock

This rock exhibits an average standup time of 30 minutes for a 1 meter horizontal span < 100 kPa rock mass cohesion, and a friction angle < 15 degrees.

The Rock Mass Rating System

Geomechanics Classification of Rock Masses

After Z.T. Bieniawski, 1989

KLEINFELDER

2405 140th Ave. NE Suite A101 Bellevue, WA 98005

Project Chatsworth Presidio, CA

Location G-G' transection area, RMR #1
Geologist Bill Gates

Rock Mass Property Input

Strength of Intact Rock, Mpa	1.25
Point Load ?	N
Uniaxial Compressive ?	Y
Bieniawski Rating	1
RQD, %	95
Bieniawski Rating	19
Discontinuity Spacing, mm	760
Bieniawski Rating	13

Conditions of Discontinuitites	**Rating**
1. Very rough surfaces, not continuous, no separation, and unweathered rock walls.	30
2. Slightly rough surfaces, separpation < 1 mm, and slightly weathered walls.	25
3. Slightly rough surface, separation < 1 mm, and highly weathered walls.	20
4. Slickenslided surfaces -or- gouge (infilling), 5 mm thick -or- separaption 1-5 mm and continuous.	10
5. Soft gouge > 5 mm -or- separation > 5 mm and continuous	0
Bieniawski Rating?	25

Groundwater Conditions	**Rating**
Conditions include:	
A. Inflow per 10 m of tunnel length (L/m),	
B. Ratio of joint water pressure to σ_1,	
C. General conditions.	
1. No inflow -or- 0 ratio -or- completely dry.	15
2. < 10 L/min -or- < 10 ratio -or- damp.	10
3. 10-25 L/min inflow -or- 0.1-0.2 ratio -or- wet.	7
4. 22-125 L/min inflow -or- 0.2-0.5 ratio -or- dripping.	4
5. > 125 L/min inflow -or- > 0.5 ratio -or- flowing.	0
Bieniawski Rating?	15

Orientation of Discontinuities	**Rating** Tunnels	Foundations	Slopes
Very Favorable	0	0	0
Favorable	-2	-2	-5
Fair	-5	-7	-25
Unfavorable	-10	-15	-50
Very Unfavorable	-12	-25	-60
Bieniawski Rating?			-60

Overall RMR	13	
Class	V	Very Poor Rock

This rock exhibits an average standup time of 30 minutes for a 1 meter horizontal span < 100 kPa rock mass cohesion, and a friction angle < 15 degrees.

ASSESSMENT OF THE EXPOSED ROCK SLOPE

Location

The exposed rock slope is located near the town of Chatsworth, CA, and is divided into various rock outcrops across the south side of the Brown's Canyon. Outcrops range in height from less than five feet to approximately 40 feet. Two vertical traverses were completed on the slope to map the exposed rock outcrops located near transection areas F –F' and G – G'. Both traverses started at the crst of the rock slope and traversed to the bottom of Brown's Canyon and the creek bed. Two outcrops were mapped along the traverse through area F – F' and five outcrops were mapped along the traverse through area G –G'.

RMR and Strength

Table 2 provides specific geomechanical data on the rock mass of the outcrops located on the south slope. Based on our assessment, the overall RMR for the south slope is 6, which means the rock mass is composed of very poor quality rock as a whole (Class V). Based on Bieniawski's (1989) RMR tables, Class No. V rock exhibits cohesion of less than 100 kPa (approx. 15 psi), which is less than 2200 psf. Similarly, friction angles for this class of rock are less than 15°. Based on the overall RMR of 6, which is very poor rock, we chose a conservative cohesion and friction angle of 2000 psf and 15°, respectively. Appendix B contains individual RMR tables recorded at locations on the south slope.

In the outcrops, we observed highly weather medium to coarse grained sandstone. Rock fragments up to cobble size had previously raveled down the slope. Strength of the weathered rock mass, as estimated from field observation and blows by geology hammer, indicates that the sandstone is generally very weak to weak rock (ISRM).

APPENDIX D
SUMMARY OF NATURAL AND PROPOSED SLOPES

Slope No. and Type	Cross-Section or General Location	Maximum Slope Height, Length and Inclination	Anticipated Geologic Conditions
Natural Slopes			
1 – Natural Slope	Below Lots 173 through 179	1½:1 to 2:1 natural slope	Kcs steeply oriented unfavorably out of slope, toward Browns Canyon
2 – Natural Slope	U-U' Below Lots 166 through 172	1 ½:1 to 1¼:1 natural slope	Kcs bedrock, with interbedded siltstone and some claystone, oriented steeply out of slope
3 – Natural Slope	Below Lots 141 through 144,and 164 through 166	1 ½:1 to 1¼:1 natural slope, small fill slope near "B" Street with 10 foot high retaining wall at the toe	Surficial debris on steep slope faces, Kcs bedrock, with interbedded siltstone and some claystone, oriented unfavorably out of slope, alluvial removals on the order of 3 to 5 feet anticipated
4 – Natural Slope	C-C'	190 Feet high, 280 feet long, 2:1 natural slope.	Slope contains wedge failure and potential block glide landslide. Lots 54 and 55 will be impacted by an existing head scarp and or extreme surficial slope instability. Kcs bedrock is oriented unfavorably out of slope. Recommend 100 foot structural setback restricted use area.
4 – Natural Slope	E-E'	130 Feet high, 240 feet long, 2:1 natural slope.	Kcs bedrock is oriented unfavorably out of slope, apparent dips 10 to 21 degrees
5 – Natural slope	G-G'	100 feet high, 200 feet long, 2:1 or flatter	Slope contains potential block glide landslide. Lots 26 through 29 will be impacted by surficial slope instability. Kcs bedrock oriented unfavorably out of slope, moderately dipping

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Slope No. and Type	Cross-Section or General Location	Maximum Slope Height, Length and Inclination	Anticipated Geologic Conditions
6 – Natural Slope	B-B'	100 feet high, 210 feet long (west), 200 feet long (east), 2:1 or flatter near top, 1 ½:1 mid-slope to toe	Lineament from CDMG identified approximately 100 feet east of left (western) bridge abutment, Kcs bedrock is oriented unfavorably out of slope along western slope areas. Eastern slope areas are oriented favorably into slope, moderately to steeply dipping.

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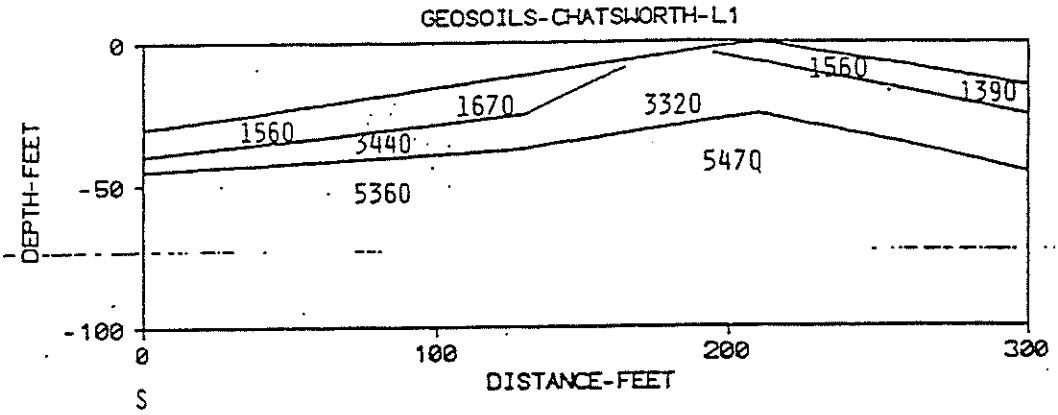

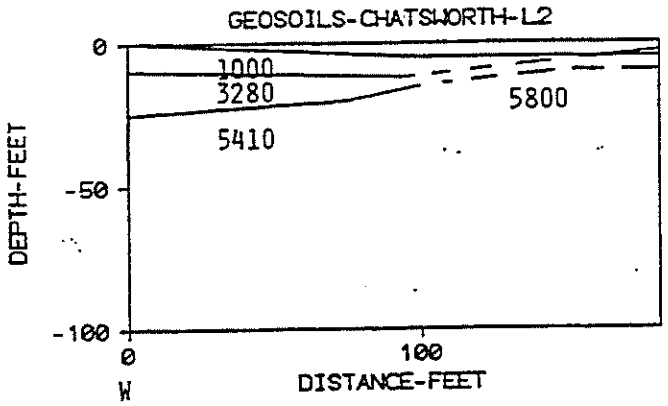

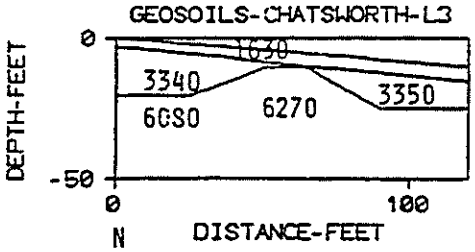

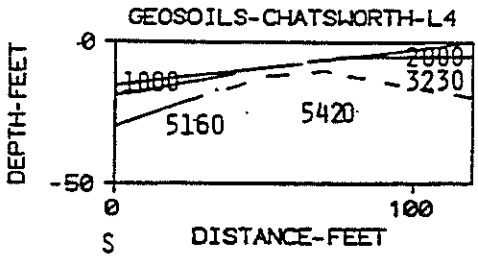

RYLAND ASSOCIATES, INC.

GeoSoils, Inc.

Chatsworth Ridge Estates
Tentative Tract 49163
Seismic Refraction Profiles

DATE 12/96 | W.O. NO. 4651-VN

Geotechnical • Geologic • Environmental

Figure 1

FORM 89/22

RMA
MATERIAL TESTING
CONSTRUCTION INSPECTION
GEOTECHNICAL ENGINEERING

PDC Housing Group
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
August 13, 1990

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - PCF	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0							
	7.5	104.5	85	•		SP	Light brown poorly graded sand; some roots; slope wash.
2						BDRX	Bedrock—Light brown sandstone; some small roots.
4	7.5	110.5	90	•		BDRX	Bedrock—Massive, competent light brown sandstone
							Bedding: N50W/45NE Joint: N25E/25SE
							End of test hole excavation
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ----

No Ground Water Encountered

TEST HOLE No. 1

PDC Housing Group
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
August 13, 1990

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0	11.3	112.5	81	●		SP	Dark brown silty sand with gravel and cobbles to 6 inches in diameter.
2	11.1	95.0	78				
4							End of test hole excavation
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ---

Ground Water Encountered @ 4.0 ft.

TEST HOLE No. 2

RMA
MATERIAL TESTING
CONSTRUCTION INSPECTION
GEOTECHNICAL ENGINEERING

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0						SP	Brown poorly graded sand with organics moderately dense.
	9.5	81.5	83				
2							
4	13.0	68.5	85				
	12.5	69.5	90				
6							
8							
10						SP/SC	Brown clayey sand with organics.
12							End of test hole excavation
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ——

No Ground Water Encountered

TEST HOLE No. 3

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0						SP	Light brown poorly graded sand with some roots.
	6.5	99.0	81			BDRX	Bedrock- Light brown moderately jointed sandstone
2							
4							End of test hole excavation
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ——

No Ground Water Encountered

TEST HOLE No. 4

RMA
MATERIAL TESTING
CONSTRUCTION INSPECTION
GEOTECHNICAL ENGINEERING

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0						SP	Light brown poorly graded sand with some roots: slope wash.
	7.5	90.5	74			BDRX	Bedrock—Light brown sandstone.
2							End of test hole excavation
							Refusal
4							
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ----

No Ground Water Encountered

TEST HOLE No. 5

RMA
MATERIAL TESTING
CONSTRUCTION INSPECTION
GEOTECHNICAL ENGINEERING

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0						SP	Light brown poorly graded sand with some roots: slope wash.
	10.5	96.5	79	●		BDRX	Bedrock—Light brown sandstone.
2							
						BDRX	Bedrock—Massive, competent light brown sandstone.
4	11.5	107.5	88				
	10.4	107.0	87				End of test hole excavation
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ----

No Ground Water Encountered

TEST HOLE No. 6

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0						SP	Light brown poorly graded sand with some roots: slope wash.
2	7.5	103.5	84			BDRX	Bedrock—Light brown sandstone moderately to highly fractured
4	7.5	99.0	81			BDRX	Bedrock—Massive, competent light brown sandstone bedrock.
							End of test hole excavation
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ——

No Ground Water Encountered

TEST HOLE No. 7

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0							
	8.0	91.0	74			BDRX	Bedrock—Light brown sandstone bedrock. moderately fractured
2						BDRX	Bedrock—Massive, competent sandstone
							End of test hole excavation
4							
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ---

No Ground Water Encountered

TEST HOLE No. 8

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0						SP	Light brown poorly graded sand with some roots: slope wash.
						BDRX	Bedrock—Light brown sandstone bedrock. moderately fractured.
2						BDRX	Bedrock siltstone; highly fractured with jointing perpendicular to bedding
4							End of test hole excavation
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ——

No Ground Water Encountered

TEST HOLE No. 9

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH -- FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY -- pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0						SP	Light brown poorly graded sand with some roots: slope wash.
						BDRX	Bedrock—Sandstone: moderately fractured
	6.5	108.0	88			BDRX	Bedrock—Sandstone: competent.
2							
4							End of test hole excavation
6							
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ——

No Ground Water Encountered

TEST HOLE No. 10

Petralia Development
Twin Oaks Project
No. of Chartsworth, CA
RMA Job# 89-257-01
June 30 , 1989

DEPTH - FT.	MOISTURE CONTENT (% of dry wt.)	DRY DENSITY - pcf	PERCENT COMPACTION	BAG SAMPLE LOCATION	SYMBOL	U.S.C.S. DESIGNATION	DESCRIPTION
0						SP	Light brown poorly graded sand with some roots: slope wash.
2						BDRX	Bedrock; siltstone: highly fractured with jointing perpendicular to bedding.
4							
6							End of test hole excavation
8							
10							
12							
14							

Excavated with: 24" Bucket
Date Excavated: 6/21/89
Location: See Plot Plan
Elevation: ——

No Ground Water Encountered

TEST HOLE No. 11

APPENDIX F
GENERAL EARTHWORK AND GRADING GUIDELINES

1.0 General Intent

These specifications present general procedures and requirements for grading and earthwork as shown on the approved grading plans, including preparation of areas to be filled, placement of fill, installation of subdrains, and excavations. The recommendations contained in the geotechnical report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict. Evaluations performed by the consultant during the course of grading may result in new recommendations which could supersede these specifications or the recommendations of the geotechnical report.

1.0 Earthwork Observation and Testing

Prior to the commencement of grading, a qualified geotechnical consultant (soils engineer and engineering geologist, and their representatives) shall be employed for the purpose of observing earthwork procedures and testing the fills for conformance with the recommendations of the geotechnical report and these specifications. It will be necessary that the consultant provide adequate testing and observation so that he may determine that the work was accomplished as specified. It shall be the responsibility of the contractor to assist the consultant and keep him apprised of work schedules and changes so that he may schedule his personnel accordingly.

It shall be the sole responsibility of the contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the consultant, unsatisfactory conditions, such as questionable soil, poor moisture condition, inadequate compaction, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the consultant will be empowered to reject the work and recommend that construction be stopped until the conditions are rectified.

Maximum dry density tests used to determine the degree of compaction will be performed in accordance with the American Society for Testing and Materials test method ASTM D1557-78.

3.0 Preparation of Areas to be Filled

3.1 Clearing and Grubbing: All brush, vegetation and debris shall be removed or piled and otherwise disposed of.

3.2 Processing: The existing ground which is determined to be satisfactory for support of fill shall be scarified to a minimum depth of 6 inches. Existing ground which is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until the soils are broken down and free of large clay lumps or clods and until the working surface is reasonably uniform and free of uneven features which would inhibit uniform compaction.

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3.3 Overexcavation: Soft, dry, spongy, highly fractured or otherwise unsuitable ground, extending to such a depth that surface processing cannot adequately improve the condition, shall be overexcavated down to firm ground, approved by the consultant.

3.4 Moisture Conditioning: Overexcavated and processed soils shall be watered, dried-back, blended, and/or mixed, as required to attain a uniform moisture content near optimum.

3.5 Recompaction: Overexcavated and processed soils which have been properly mixed and moisture-conditioned shall be recompacted to a minimum relative compaction of 90 percent.

3.6 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. The lowest bench shall be a minimum of 15 feet wide, shall be at least 2 feet deep, shall expose firm material, and shall be approved by the consultant. Other benches shall be excavated in firm material for a minimum width of 4 feet. Ground sloping flatter than 5:1 shall be benched or otherwise overexcavated when considered necessary by the consultant.

3.7 Approval: All areas to receive fill, including processed areas, removal areas and toe-of-fill benches shall be approved by the consultant prior to fill placement.

4.0 Fill Material

4.1 General: Material to be placed as fill shall be free of organic matter and other deleterious substances, and shall be approved by the consultant. Soils of poor gradation, expansion, or strength characteristics shall be placed in areas designated by the consultant or shall be mixed with other soils to serve as satisfactory fill material.

4.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 12 inches, shall not be buried or placed in fills, unless the location, materials, and disposal methods are specifically approved by the consultant. Oversize disposal operations shall be such that nesting of oversize material does not occur, and such that the oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 feet vertically of finish grade or within the range of future utilities or underground construction, unless specifically approved by the consultant.

4.3 Import: If importing of fill material is required for grading, the import material shall meet the requirements of Section 4.1.

5.0 Fill Placement and Compaction

5.1 Fill Lifts: Approved fill material shall be placed in areas prepared to receive fill in near-horizontal layers not exceeding 6 inches in compacted thickness. The consultant may approve thicker lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to attain uniformity of material and moisture in each layer.

5.2 Fill Moisture: Fill layers at a moisture content less than optimum shall be watered and mixed, and wet fill layers shall be aerated by scarification or shall be blended with drier material. Moisture-conditioning and mixing of fill layers shall continue until the fill material is at a uniform moisture content at or near optimum.

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5.3 Compaction of Fill: After each layer has been evenly spread, moisture-conditioned, and mixed, it shall be uniformly compacted to not less than 90 percent of maximum dry density. Compaction equipment shall be adequately sized and shall be either specifically designed for soil compaction or of proven reliability, to efficiently achieve the specified degree of compaction.

5.4 Fill Slopes: Compacting of slopes shall be accomplished, in addition to normal compacting procedures, by backrolling of slopes with sheepsfoot rollers at frequent increments of 2 to 3 feet in fill elevation grain, or by other methods producing satisfactory results. At the completion of grading, the relative compaction of the slope out to the slope face shall be at least 90 percent.

5.5 Compaction Testing: Field tests to check the fill moisture and degree of compaction will be performed by the consultant. The location and frequency of tests shall be at the consultant's discretion. In general, the tests will be taken at an interval not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of embankment.

6.0 Subdrain Installation

Subdrain systems, if required, shall be installed in approved ground to conform to the approximate alignment and details shown on the plans or herein. The subdrain location or materials shall not be changed or modified without the approval of the consultant. The consultant, however, may recommend and upon approval, direct changes in subdrain line, grade or material. All subdrains should be surveyed for line and grade after installation and sufficient time shall be allowed for the surveys, prior to commencement of filling over the subdrains.

7.0 Excavation

Excavations and cut slopes will be examined during grading. If directed by the consultant, further excavation or overexcavation and refilling of cut areas shall be performed, and/or remedial grading of cut slopes shall be performed. Where fill-over-cut slopes are to be graded, unless otherwise approved, the cut portion of the slope shall be made and approved by the consultant prior to placement of materials for construction of the fill portion of the slope.

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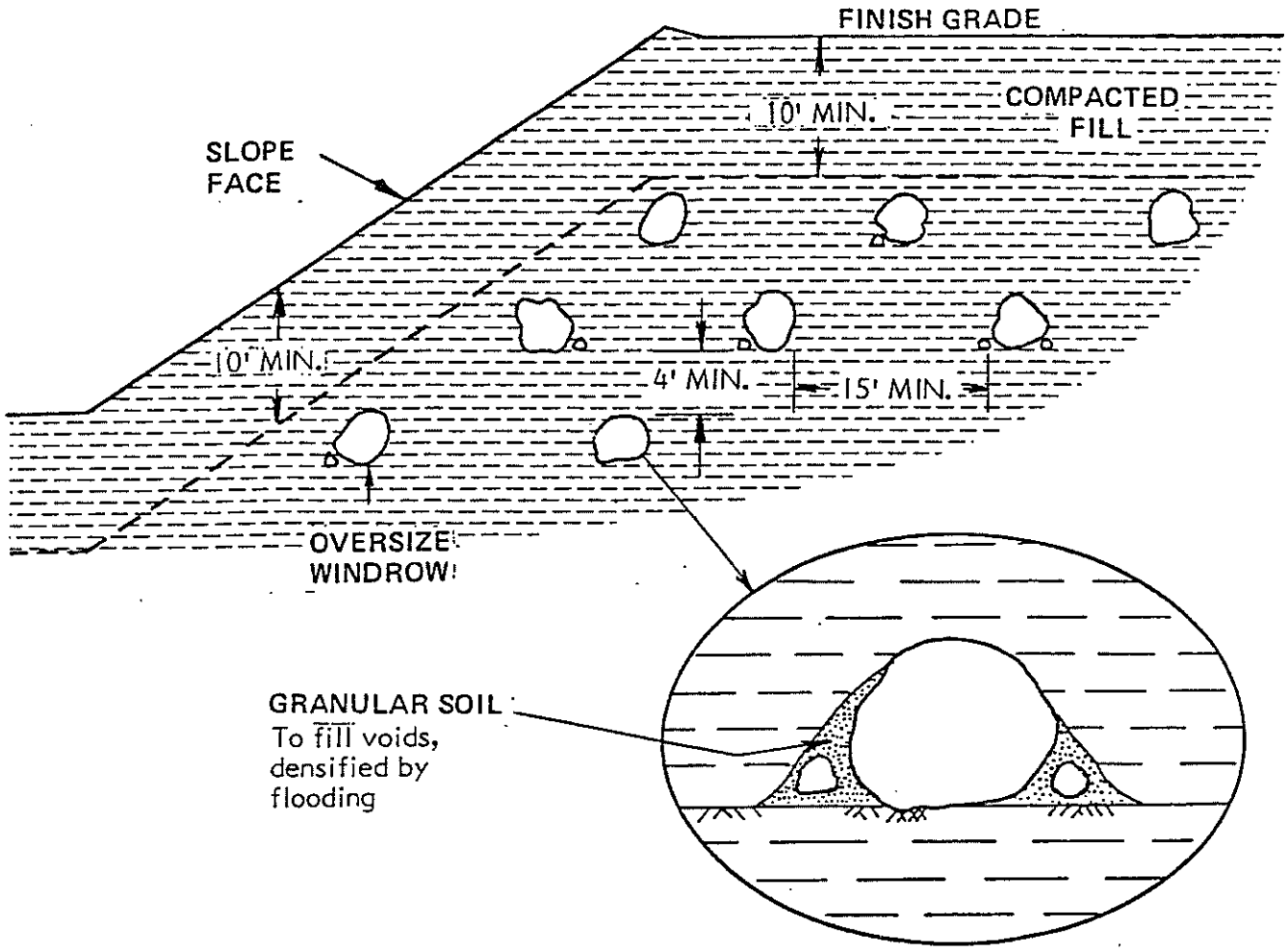
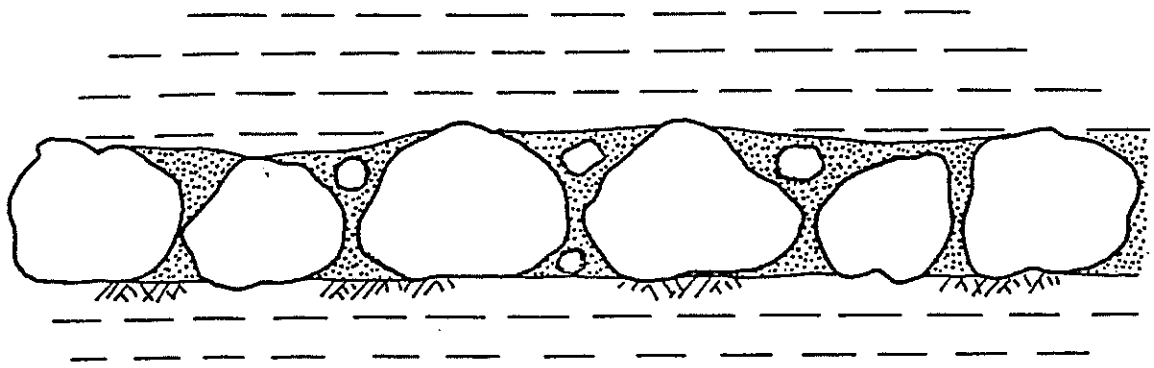
ROCK DISPOSAL DETAIL

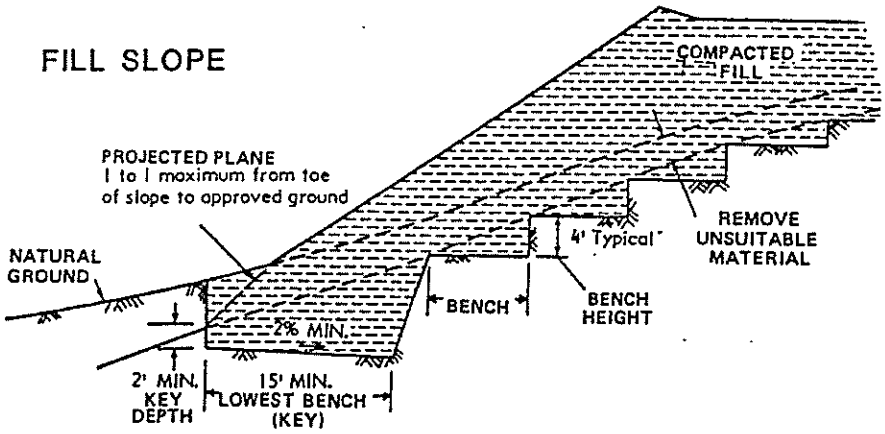


PROFILE ALONG WINDROW

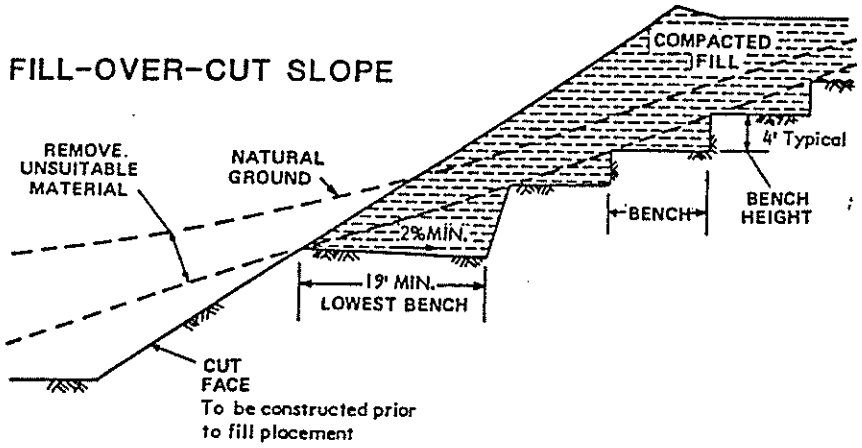


BENCHING DETAILS

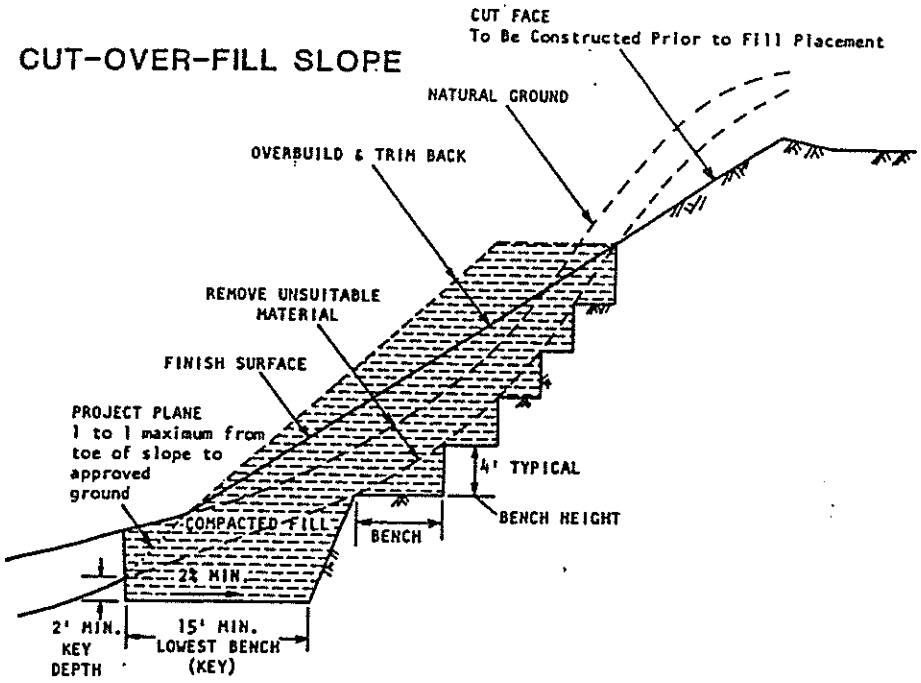
FILL SLOPE



FILL-OVER-CUT SLOPE



CUT-OVER-FILL SLOPE

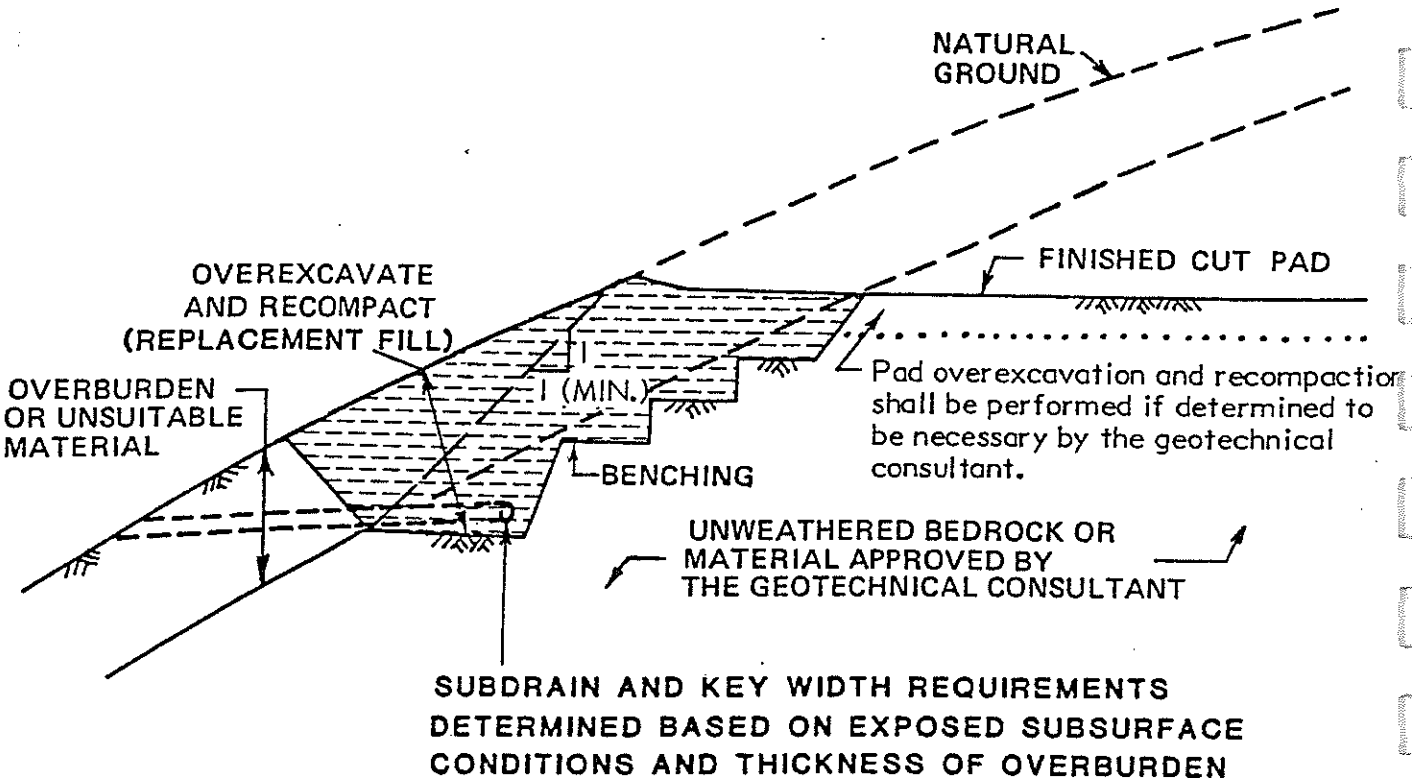


NOTES:

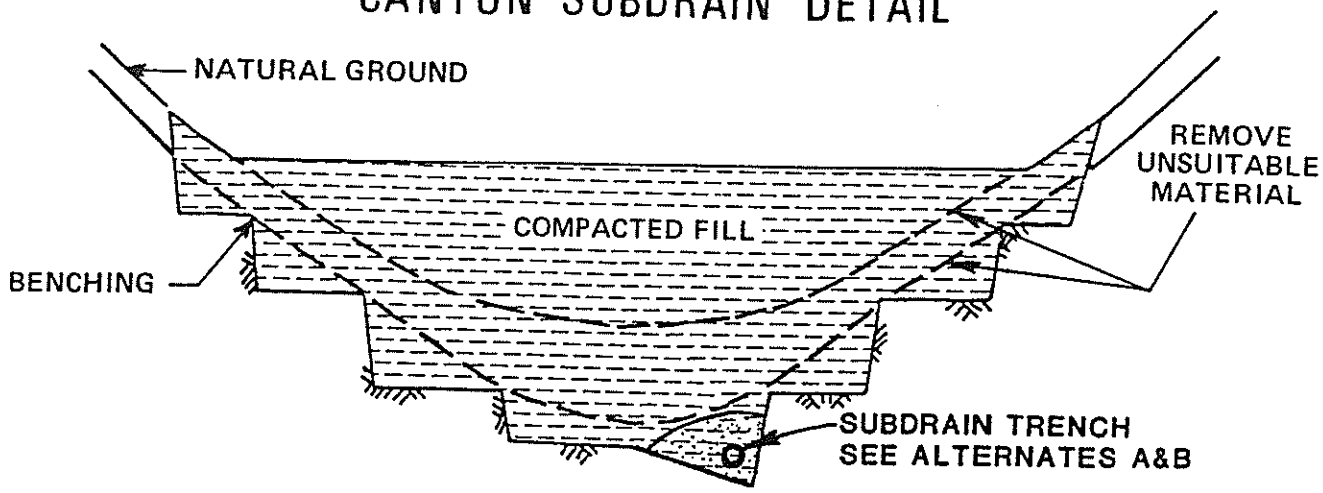
LOWEST BENCH: Depth and width subject to field change based on consultant's inspection.

SUBDRAINAGE: Back drains may be required at the discretion of the geotechnical consultant.

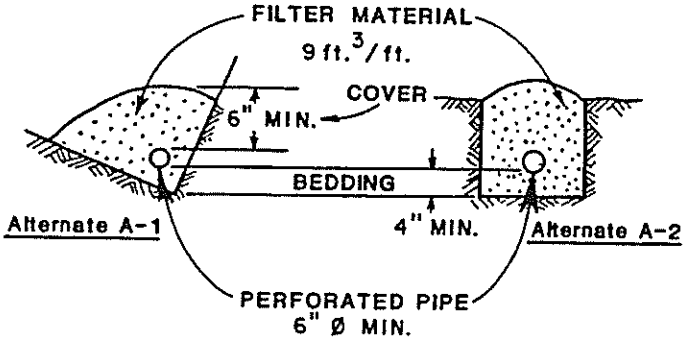
SIDE HILL
CUT PAD DETAIL



CANYON SUBDRAIN DETAIL



SUBDRAIN ALTERNATE A: Perforated Pipe Surrounded With Filter Material

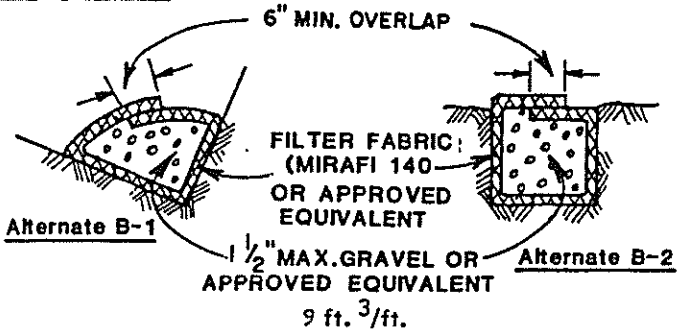


FILTER MATERIAL

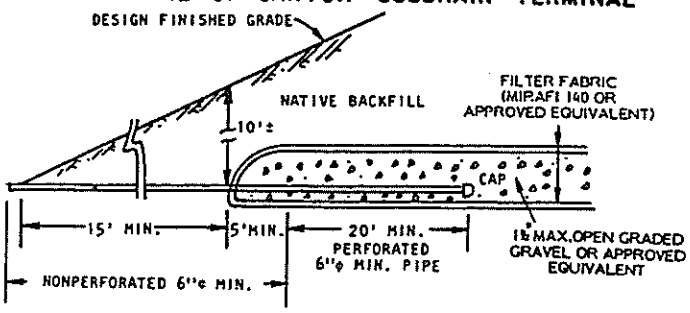
Filter material shall be Class 2 permeable material per State of California Standard Specifications, or approved alternate. Class 2 grading as follows:

SIEVE SIZE	PERCENT PASSING
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

SUBDRAIN ALTERNATE B: 1 1/2" Gravel Wrapped In Filter Fabric

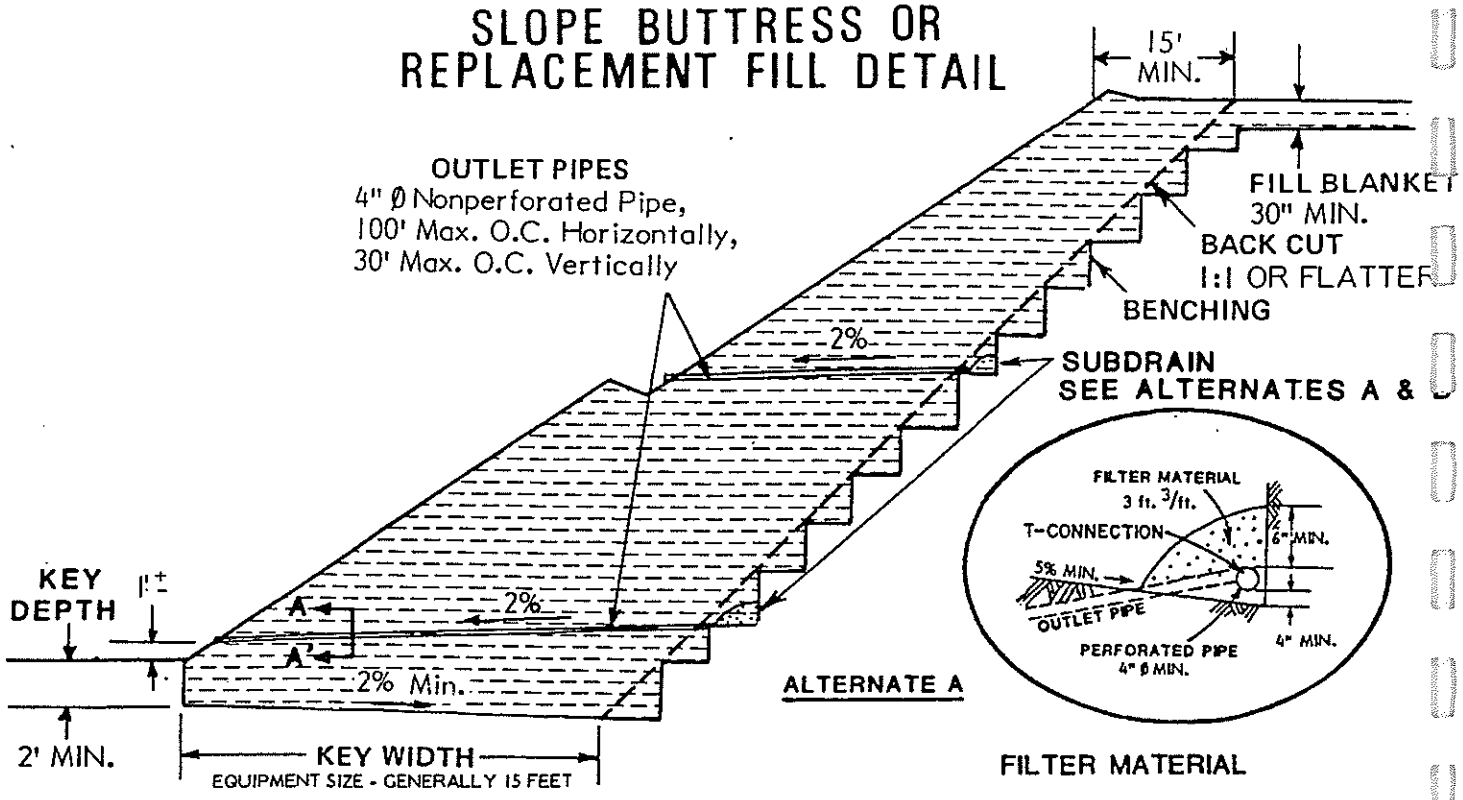


DETAIL OF CANYON SUBDRAIN TERMINAL



- SUBDRAIN INSTALLATION - Subdrain pipe shall be installed with perforations down or, at locations designated by the geotechnical consultant, shall be nonperforated pipe.
- SUBDRAIN TYPE - Subdrain type shall be ASTM C508 Asbestos Cement Pipe (ACP) - or ASTM D2751, SDR 23.5 or ASTM D1527, Schedule 40 Acrylonitrile Butadiene Styrene (ABS) or ASTM D3034 SDR 23.5 or ASTM D1785, Schedule 40 Polyvinyl Chloride Plastic (PVC) pipe or approved equivalent.

SLOPE BUTTRESS OR REPLACEMENT FILL DETAIL

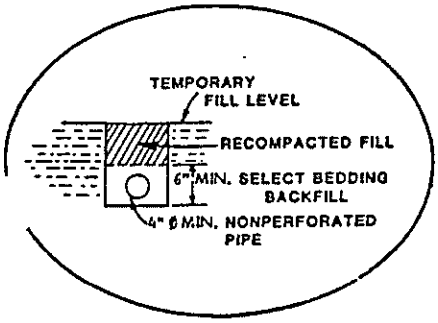


ALTERNATE A

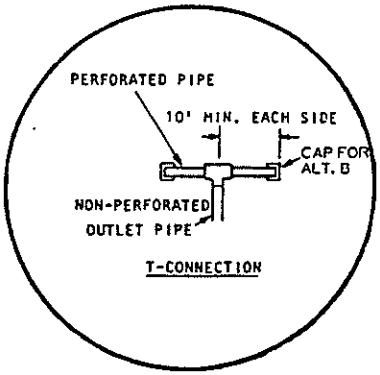
FILTER MATERIAL

Filter material shall be Class 2 permeable material per State of California Standard Specifications, or approved alternate. Class 2 grading as follows:

SIEVE SIZE	PERCENT PASSIN
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3



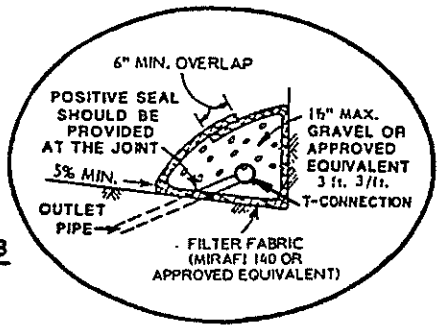
DETAIL A-A'



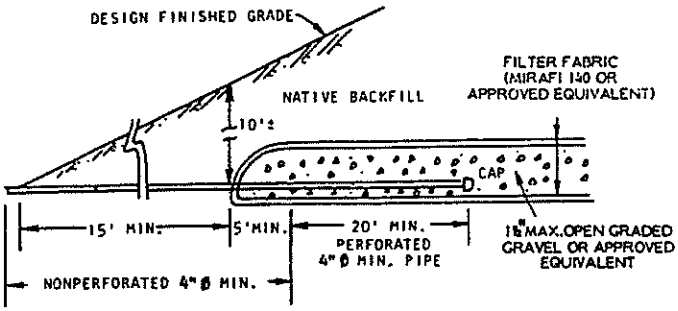
NOTES:

- Fill blanket, back cut, key width and key depth are subject to field change, per report/plans.
- Key heel subdrain, blanket drain, or vertical drain may be required at the discretion of the geotechnical consultant.
- SUBDRAIN INSTALLATION - Subdrain pipe shall be installed with perforations down or, at locations designated by the geotechnical consultant, shall be nonperforated pipe.
- SUBDRAIN TYPE - Subdrain type shall be ASTM C508 Asbestos Cement Pipe (ACP) or ASTM D2751, SDR 23.5 or ASTM D1527, Schedule 40 Acrylonitrile Butadiene Styrene (ABS) or ASTM D3034 SDR 23.5 or ASTM D1785, Schedule 40 Polyvinyl Chloride Plastic (PVC) pipe or approved equivalent.

ALTERNATE B

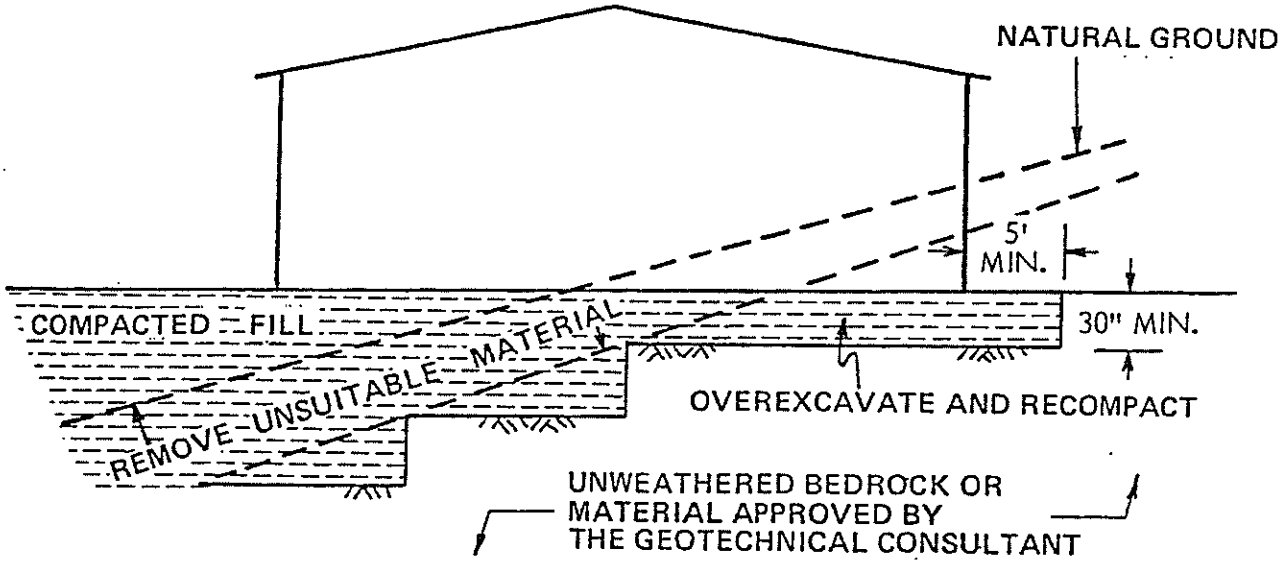


DETAIL OF BUTTRESS SUBDRAIN TERMINAL

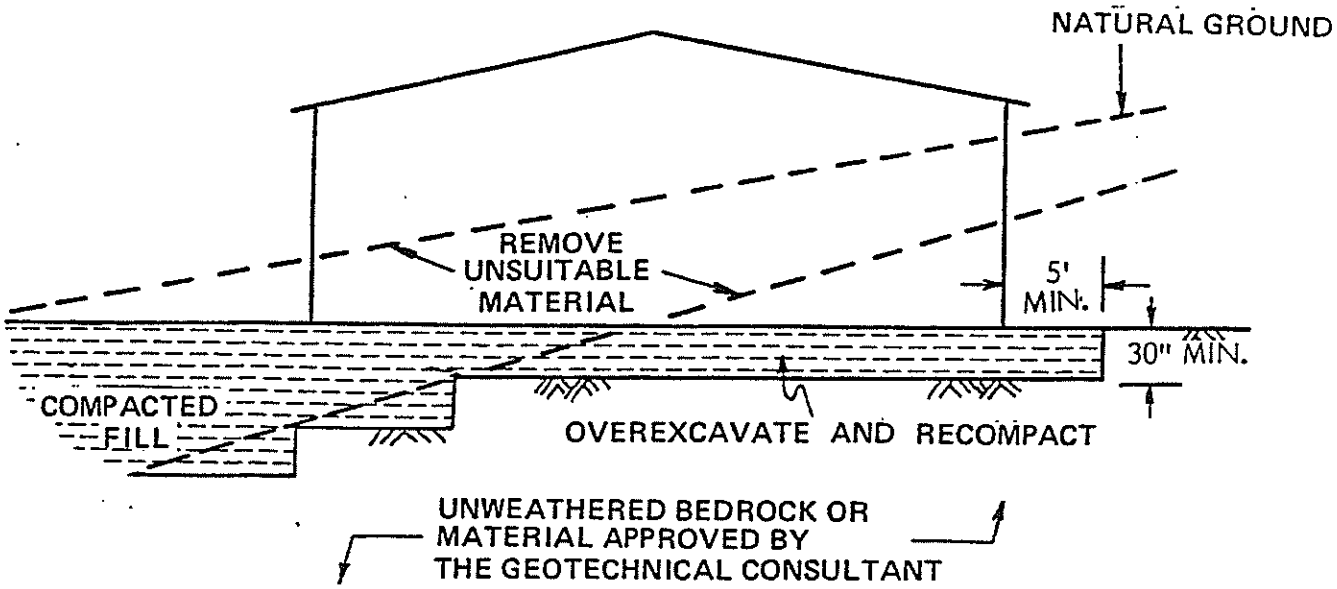


TRANSITION LOT DETAILS

CUT-FILL LOT



CUT LOT



NOTE:
Deeper overexcavation and recompaction shall be performed if determined to be necessary by the geotechnical consultant.

APPENDIX G
PRELIMINARY BRIDGE FOUNDATION RECOMMENDATIONS

SEISMIC DESIGN

Faulting

The site is not within a current Alquist-Priolo Earthquake Fault Zone. The nearest mapped fault trace is the Simi-Santa Rosa-Northridge Hills fault. It passes less than 1 km to the north of the subject bridge sites. According to Mualchin (1996), the Simi-Santa Rosa-Northridge Hills fault is a reverse oblique fault.

The shortest distance from the site to the above mentioned fault and other major active fault systems and their maximum earthquake magnitudes are presented in Table 7-1. The locations of the faults and associated parameters presented on Table 7-1 are based on data presented by Working Group on California Earthquake Probabilities (1995), Jennings (1994), Mualchin (1996), Petersen et. al. (1996), and Frankel et. al. (1996).

TABLE G-1
PRESIDIO BRIDGES
FAULT TABLE

Fault Name	Site Distance (km)	Type of Displacement (1)	Slip Rate (mm/yr)	Maximum Magnitude (2)	Maximum Magnitude (3)	Peak Bedrock Acceleration Mean (4)
Simi-Santa Rosa-Northridge Hills	1	RO	1.5	7 ½	6.7	0.70
Chatsworth/N	1	XX	-	6 ½	-	0.58
Santa Susana	4.6	RE	5	7	6.6	0.50
San Fernando-Sierra Madre-Duarte	6	RE	2-3	7 ½	6.7-7	0.53
Chatsworth/S	7	XX	-	6 ¼	-	0.32
Verdugo	15	RO	0.5	6 ¾	6.7	0.24
San Gabriel	15	RO	1	7 ½	7	0.33
San Cayetano-Holser-Del Valle	17	RE	0.5-6	7 ½	6.5-6.8	0.31
Oakridge	18	RO	4.0	7 ½	6.9	0.30
North Hollywood	19	XX	-	6	-	0.13

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Fault Name	Site Distance (km)	Type of Displacement (1)	Slip Rate (mm/yr)	Maximum Magnitude (2)	(3)	Peak Bedrock Acceleration Mean (4)
Malibu Coast-Santa Monica-Hollywood-Raymond	27	RO	0.3-1	7 ½	6.4-6.7	0.21
Eagle Rock	31	XX	-	6	-	0.08
Charnock	31	ST	-	6 ½	-	0.11
Bailey	34	XX	-	6 ½	-	0.10
Clearwater	36	NO	-	6 ¾	-	0.10
Newport-Inglewood-Rose Canyon/E	37	ST	1.0	7	6.9	0.12
More Ranch-Mission Ridge-Arroyo Parida-Santa Ana	37	NO	0.4	7 ½	6.7	0.16
Elysian Park Seismic Zone	39	RE	1.5	7	6.7	0.11
Pine Mountain	43	XX	-	7	-	0.09
Palos Verdes	43	ST	3.0	7	7.1	0.09
San Andreas/C	46	ST	34	8	7.8	0.22
Santa Ynez	47	RO	2.0	7 ½	7	0.13
Redondo Canyon (offshore)	54	XX	-	6 ¼	-	0.03
Clamshell-Sawpit Canyon	56	RO	0.5	6 ½	6.5	0.04
Pitas Point-Ventura	57	RO	1.0	7 ¼	6.8	0.09
Cabrillo	62	RO	-	6 ½	-	0.03
Red Mountain	62	RE	2.0	7 ¼	6.8	0.07
Garlock/W	67	ST	6.0	7 ¾	7.1	0.10
Santa Cruz Island	69	ST	1.0	7	6.8	0.03
Los Alamitos	69	XX	-	6	-	0.01
San Jose	70	RE	0.5	6 ¾	6.5	0.02
Big Pine	70	ST	0.8	7 ¼	6.7	0.05
Llano	77	XX	-	6	-	0.01
Mesa-Rincon Creek	77	XX	-	7	-	0.02
Indian Hill-Cucamonga	81	RE	5	7	7	0.02
Central Avenue	81	XX	1	6 ½	6.7	0.01
Chino	81	ST	1	6 ½	6.7	0.01
Pleitore	81	XX	-	7	-	0.01
Malibu Coast/S (Offshore)	82	RO	-	6 ½	-	0.01

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Fault Name	Site Distance (km)	Type of Displacement (1)	Slip Rate (mm/yr)	Maximum Magnitude (2)	(3)	Peak Bedrock Acceleration Mean (4)

Notes:
(1) ST-strike slip, RE-reverse including thrust, RO-Reverse Oblique, NO-normal oblique, NL-normal, XX-not known
(2) Mualchin (1996)
(3) California Division of Mines and Geology (CDMG), Peterson et, al. (1996)
(4) Mualchin & Jones (1992)

SEISMIC DESIGN CRITERIA

The following seismic design parameters may be used for the preliminary design of the Presidio bridges in Chatsworth, California. These values were estimated using the California Seismic Hazard Map 1996 (Mualchin, 1996) and procedures outlined in Caltrans Seismic Design Criteria (SDC) Version 1.1 (1999). Based on the results of our field investigation, the subsurface soils mainly consist of thin layer of alluvium over sandstone. Therefore, we have classified the Soil Profile Type as B.

The data used in developing the ARS curve are presented in Table 7-2. The ARS Curve presented in Figure B.2 of the Caltrans Seismic Design Criteria (SDC) for 0.6g was modified according to the guidelines presented in Section 6.1.2.1 of the SDC and Section 3.7 of Caltrans Guidelines for Foundation Investigation and Reports to develop the recommended ARS Curve. Because the structure is within 15 km of an active fault and the fault is a reverse - oblique fault, we modified the ARS curve as follows:

- Increased the spectral acceleration on the ARS curve by 10 percent for periods below 0.5 second
- Increased the spectral acceleration on the ARS curve by 20 percent for periods greater than 1 second
- Linearly interpolated spectral acceleration on the curve in increments of 10 to 20 percent between period ½ and 1 second

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TABLE G-2
SEISMIC DESIGN RECOMMENDATIONS

Condition	Design Recommendation and Reference
Controlling Fault	Simi-Santa Rosa-Northridge Hills fault (Mualchin, 1996)
Type of Fault	Reverse Oblique (Mualchin, 1996)
Site Distance from the Fault	1 km (Mualchin, 1996)
Earthquake Magnitude	7 ½ (Mualchin, 1996)
Peak Acceleration	0.7g (Mualchin, 1996)
Soil Profile Type	B (Table B.1, 1999 Caltrans Seismic Design Criteria)
Base ARS Curve	Figure B.2 (1999 Caltrans Seismic Design Criteria)

LIQUEFACTION EVALUATION

As discussed in Section 3.3, liquefaction generally is not likely other than in saturated alluvium within the creeks and drainages. Foundations for bridge piers within Devil Canyon Creek at the "A" Street structure will be designed considering liquefaction of the surficial soils.

SCOUR EVALUATION

We recommend conducting a scour evaluation for design of bridge piers for any piers located within the flow line of the creek. The effects of potential scour that are subsequently presented in a hydrology or hydraulics report will be incorporated into the bridge foundation design.

CORROSION EVALUATION

No corrosion data has been obtained for this preliminary evaluation. The final bridge design will require corrosion testing of surface water and soils to evaluate potential soil corrosivity issues.

PRELIMINARY FOUNDATION RECOMMENDATIONS

Subsurface Conditions

We evaluated the proposed bridge foundations based upon the sandstone materials we encountered in our borings. Our limited laboratory testing on samples of the sandstone in boring

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KB-4 indicate friction angles of 53 to 61 degrees and cohesion values ranging from 160 to 1,870 psf. Water was not encountered in the borings drilled near the proposed abutment locations, however surface water is likely to be encountered at the pier locations.

Foundations

We anticipate the bridge foundations may be supported either on spread footings or cast-in-drilled-hole (CIDH) piles. Driven piles are not recommended because of the dense bedrock formations on site. Because of the high seismicity at the site, spread footings may not be able to develop adequate lateral and uplift resistance, in which case CIDH pile foundations would be necessary. Large capacity CIDH piles may be desired in order to limit the number of piles required for structure support.

Design recommendations for CIDH piles are based upon the structural loads (demands), and various lengths and diameters can be evaluated to optimize the foundation design for both cost and performance. These items will be coordinated closely with the structural engineer during the design phase. Various diameters and lengths can be designed to resist the applied loads, and lateral demands may control the recommended shaft lengths. We recommend minimum CIDH pile lengths of 20 feet, and minimum diameters of 24 inches. The actual shaft lengths and diameters will be designed based upon the axial (downward and upward) and lateral demands, with considerations for scour and liquefaction included in the design lengths.

We performed preliminary evaluations of allowable bearing capacity for spread footings founded directly on undisturbed sandstone bedrock. Abutment footings founded at least 4 feet below lowest adjacent grade, at least 5 feet wide, and more than 20 feet long may be designed using a net allowable bearing capacity of 10 kips per square foot. Sliding resistance of abutment footings can be evaluated using a friction factor of 0.45 for mass concrete on the silty sandstone bedrock. Shear keys may also be considered for added passive earth pressure to resist lateral movement. Preliminary earth pressures for design are presented in the following section.

Earth Pressures

The information in this section is for abutment walls and footings, and is based on an excavation behind the abutment that is subsequently backfilled with non-expansive engineered fill.

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TABLE G-3
LATERAL EARTH PRESSURES FOR DESIGN

Earth Pressure Condition	Equivalent Fluid Pressure (lb/ft^3)
Active Earth Pressure	36
Seismic Active Earth Pressure	33
Passive Earth Pressure	360

The earth pressures provided in Table 7-3 were calculated assuming vertical walls with horizontal backfill, backfilled with materials that meet Caltrans standards for abutment fills. Proper drainage should be designed behind the walls to allow for drained conditions in the backfill soils and to prevent excessive hydrostatic pressure above the water table, in accordance with Caltrans Standard Plan BO-3 (Caltrans, 1992a).

According to ATC-32 (1996) page 100, it can be assumed that abutment structural backfill will provide an ultimate passive resistance of 7.7 kips per square foot (ksf) for abutment walls with heights greater than or equal to 8 feet. For abutment walls that are less than 8 feet in height, a reduced ultimate passive resistance value of 7.7 ksf multiplied by (H/8) should be used, where H = wall height in feet. A lateral wall movement of 1% of the wall height can be assumed to mobilize the full ultimate passive resistance.

For the seismic earth pressure calculations, the Mononabe-Okabe relationship was used (Seed and Whitman, 1970). Effective horizontal ground acceleration used in the analysis was 0.35g, which is equal to one-half of the peak ground acceleration of 0.7g that we recommend using for design (FHWA, 1986). It should be noted that the seismic earth pressure is an inverted triangle, with the largest earth pressure occurring at the top of the abutment wall. The resultant seismic earth pressure force is applied at approximately 0.6H from the bottom of the wall, where H is the wall height.

Soil in front of and behind abutment walls should consist of low expansive materials with an expansion index (EI) of less than 51. The low EI material should be within a 1:1 slope from outside the heel of the abutment footings.

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Construction Considerations

Difficult site access and difficult drilling should be anticipated, resulting in accordingly priced mobilization and drilling costs. At this time, groundwater is not anticipated in the abutment excavations, but may be encountered in the CIDH piles drilled at the pier locations. If groundwater is encountered, the piles should be installed using a synthetic slurry. In addition, if the CIDH piles are constructed under slurry, we recommend conducting non-destructive testing of the completed shafts to check for construction defects.

Additional Field Work and Laboratory Testing

We recommend conducting additional soil/rock borings at the final plan locations of the proposed bridge abutments and piers for the structures. Laboratory testing consisting of corrosivity of soil and surface water should be conducted, as well as unconfined compression tests on retrieved rock core samples.

REFERENCES

Caltrans. Seismic Design Criteria, Version 1.1. July 1999.

Federal Highway Administration (FHWA). *Manual on Design and Construction of Driven Pile Foundations.* 1996.

Frankel, A.D., Mueller, C.S., Barnhard, T., Perkins, D.M., Leyendecker, E.V., Dickman, N., Hanson, S., and Hopper, M. 1996. National Seismic Hazard Maps, June 1996 Documentation, USGS Open File Report 96-532, Denver, CO.: available at web site: http://geohazards.cr.usgs.gov/eq

Jennings, C.W., *Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions.* California Division of Mines and Geology, Map No. 6. 1994.

Mualchin, L. *California Seismic Hazard Map 1996: Based on Maximum Credible Earthquakes (MCE).* Caltrans. 1996.

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Maulchin, Lalliana, and Allen L. Jones. *Peak Acceleration from Maximum Credible Earthquakes in California (Rock and Stiff-Soil Sites).* CDMG Open File Report 92-1. 1992.

Petersen, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M.S., Frankel, A.D., Lienkaemper, J.J., McCrory, P.A., and Schwartz, D.P. 1996. Probabilistic Seismic Hazard Assessment for the State of California: Division of Mines and Geology Open File Report 96-08: fault parameters are available at web site: http://www.consrv.ca.gov/dmg/shezp/fltindex.html

Working Group on California Earthquake Probabilities. 1995. Seismic Hazards in Southern California: Probable Earthquakes, 1994 to 2024. Bulletin of the Seismological Society of America, Vol. 85, No. 2, pp. 379 - 439.

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COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave.
Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913
Calling hours - Monday through Thursday 8-9 a.m. & 3-4 p.m.

District Office 9.1

DISTRIBUTION:

__ Drainage
__ Grading
__ Geo/Soils Central File
__ District Engineer
__ Geologist
__ Soils Engineer
__ Engineer/Architect

Tentative Map (Tract) 53138
Location Chatsworth
Developer/Owner Presidio Chatsworth Partners LLC
Engineer/Architect B & E Engineers
Soils Engineer Kleinfelder (J.N. 58-919401-008)
Geologist Same as above

Review of:

Tentative Map (Tract) Dated By Regional Planning 2/21/01
Previous review sheet dated 7/15/00

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

As Previously Requested:

1. Provide a geotechnical update report/letter which specifically addresses and evaluate the latest tentative tract map submitted through the Department of Regional Planning.

2. Provide a geotechnical map which is based upon the latest tentative map.

3. Provide static and seismic slope stability analyses for the natural slopes steeper than a 2:1 gradient. Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards. Recommend mitigation if factors of safety are below County minimum standards or designate as "Restricted Use Area".

4. Address the depth of the unsuitable alluvial soils located within the tract boundaries. Unsuitable alluvial soils deeper than a depth of 5 feet must be designated as "Restricted Use Area".

5. Address the potential for debris flows impacting the proposed development. Recommend mitigation as necessary.

6. The latest tentative map indicates approximately 953,600 cubic yards of material to be exported to a future development site. Address and evaluate where this fill will be placed. Provide a site plan showing this proposed grading and provide specific recommendations as necessary.

7. Provide chemical test results (sulfate, chloride, resistivity, and pH, etc.) for the on-site soils to address the presence of chemicals deleterious to construction materials and utility lines. Recommend mitigation as necessary.

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

SOILS ENGINEERING REVIEW SHEET

Tentative Tract 53138

REMARKS (cont.):

8. Show the following on the geotechnical map:

   a. Location of all "Restricted Use Areas".
   b. Location of all debris flow mitigation (debris walls, debris basins, etc.).
   c. All recommended mitigation measures.

9. Requirements of the Geology Section are attached.

10. Include a copy of this review sheet with your response.

REGISTERED PROFESSIONAL ENGINEER
AMIR M ALAM
No. C48738
Exp. 9-30-04
CIVIL
STATE OF CALIFORNIA

Prepared by _____ Date 3/21/01
Amir M. Alam

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
Amir:53138a

REVIEWER CALLING HOURS
8-9 a.m. & 3-4 p.m. Mon.-Thurs.

LAND DEVELOPMENT DIVISION
GEOLOGIC REVIEW SHEET
900 S. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 LDMA/Proc. Cente
1 Section File
1 Subdivision

TENTATIVE TRACT 53138
SUBDIVIDER Presidio Chatsworth Partners LLC
ENGINEER B & E Engineers
GEOLOGIST Kleinfelder (58-919401-008)
SOILS ENGINEER Same as above

TENTATIVE MAP DATED 2/21/01
ADDRESS north end of Canoga Ave. at 118 Freeway
LOCATION Chatsworth
REPORT DATE 4/24/00
REPORT DATE 4/24/00

The Regional Planning Commission, developer and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF TENTATIVE TRACT OR MINOR LAND SUBDIVISION MAP:

[X] Revised engineering geologic reports will be required to evaluate the feasibility of the proposed subdivision considerin the addition of the 13-acre parcel to the west and the 125-acre parcel to the north of the original 96-acre project.

[X] A soils report will be required to evaluate the feasibility of the proposed subdivision.

[ ] Sufficient evidence must be submitted to show that the sustained use of private sewage disposal system is possibl without inducing a geologic hazard. The Health Department and developer are advised that geologic conditions withi this tract may severely limit or prohibit the use of private sewage disposal system that will introduce water into th subsurface.

[X] Based on the State of California Seismic Hazard Maps, Oat Mountain Quadrangle, the subject site is located in an are with a potential for liquefaction. The above requested engineering geology and soils engineering reports must addres the potential for liquefaction and ground failure. Please refer to the attached Materials Engineering Division's "Interin Geology Review Guidelines for Ground Failure/Liquefaction" (GS045 Rev. 5/18/99). Provide this office with two (2 original copies of the reports for review and distribution to the State of California Division of Mines and Geology.

[X] Based on the State of California Seismic Hazard Maps, Oat Mountain Quadrangle, the site is located in an area wit a potential for seismically-induced landslides/slope failure. The above requested engineering geology and soil engineering reports must address the potential for seismically induced slope instability at the subject site. Provide geologic cross sections for all slopes in question and perform seismic slope stability analyses to determine the stati and psuedostatic factors of safety. Show the locations of all geologic cross sections used in slope stability analyse on the geologic map. Recommend mitigation if factors of safety are below County minimum standards.

[X] Comply with remarks/conditions of approval on the attached Soils Engineering Review Sheet dated 3/21/01.

NOTE: Provide a copy of this review with your resubmittal.

Prepared by _____
Greg K. Johnson RG 5987, CEG 2050

Date 3/21/01

NOTICE: Public Safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction and Safety Orders.

The "Manual for Preparation of Geotechnical Reports" prepared by County of Los Angeles, Department of Public Works is available on the Internet at the following address: http://dpw.co.la.ca.us/med/manual.pdf

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11/23/99

Sheet 1 of 1

REVIEWER CALLING HOURS
8-9 a.m. & 3-4 p.m. Mon.-Thurs.

County of Los Angeles Department of Public Works
LAND DEVELOPMENT DIVISION
GEOLOGIC REVIEW SHEET
900 S. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

COPY

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 LDMA/Proc. Center
1 Section File
1 Subdivision

TENTATIVE TRACT 53138
SUBDIVIDER Presidio Chatsworth Partners LLC
ENGINEER B & E Engineers
GEOLOGIST Kleinfelder (58-919401-008)
SOILS ENGINEER Same as above

TENTATIVE MAP DATED 6/27/01
ADDRESS north end of Canoga Ave. at 118 Freeway
LOCATION Chatsworth
REPORT DATE 4/24/00
REPORT DATE 4/24/00

The Regional Planning Commission, developer and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF TENTATIVE TRACT OR MINOR LAND SUBDIVISION MAP:

[X] Revised engineering geologic reports will be required to evaluate the feasibility of the proposed subdivision considering the addition of the 13-acre parcel to the west and the 125-acre parcel to the north of the original 96-acre project.

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[X]. Comply with remarks/conditions of approval on the attached Soils Engineering Review Sheet dated 7/9/01.

NOTE: Provide a copy of this review with your resubmittal.

Prepared by GK
Greg K. Johnson RG 5987, CEG 2050

Date 7/9/01

NOTICE: **Public Safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction and Safety Orders.**

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p:\ldpub\geology review\greg\tt53138tmr3
11/23/99

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

SOILS ENGINEERING REVIEW SHEET

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Tentative Map (Tract) 53138
Location Chatsworth
Developer/Owner Presidio Chatsworth Partners LLC
Engineer/Architect B & E Engineers
Soils Engineer Kleinfelder (J.N. 58-919401-008)
Geologist Same as above

Review of:

Revised Tentative Map (Tract) Dated By Regional Planning 6/27/01
Previous review sheet dated 3/21/01

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

As Previously Requested:

1. Provide a geotechnical update report/letter which specifically addresses and evaluate the latest tentative tract map submitted through the Department of Regional Planning.

2. Provide a geotechnical map which is based upon the latest tentative map.

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COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

SOILS ENGINEERING REVIEW SHEET

Tentative Tract 53138

REMARKS (cont.):

7. Provide chemical test results (sulfate, chloride, resistivity, etc.) for the on-site soils to address the presence of chemicals deleterious to concrete and ferrous materials. The tests must be in accordance with California Test Methods, Department of Transportation, or equivalent (aqueous solution tests, such as EPA Tests or similar methods are not acceptable for determination of resistivity).

8. Show the following on the geotechnical map:

   a. Location of all "Restricted Use Areas".
   b. Location of all debris flow mitigation (debris walls, debris basins, etc.).
   c. All recommended mitigation measures.

9. Requirements of the Geology Section are attached.

10. Include a copy of this review sheet with your response.

REGISTERED PROFESSIONAL ENGINEER
AMIR M. ALAM
No. C48738
Exp. 9-30-04
CIVIL
STATE OF CALIFORNIA

Prepared by _____ Date 7/09/01
Amir M. Alam

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.
Amir:53138a

APPENDIX K

DRAINAGE CONCEPT & WATER REFERENCE DOCUMENTS

Hydrology Definitions

Best Management Practice (BMP): In water pollution control, the best means available to control pollution of waterways from non-point sources, as opposed to best available technology, which applies to pollution control for point sources.

Burned and Bulked Runoff (Qbb): Runoff from burned areas that is laden with burned vegetation, fines, rocks, and other debris.

Capital Flood (Qcap): The runoff resulting from a theoretical storm based on Los Angeles County Department of Public Works methodology. The "model" storm is derived from 50-year frequency rainfall values which occur in a time sequence patterned after actual major extra-tropical storms occurring in the Los Angeles Region. The calculations of runoff are also based on the soil types and amount of impervious surfaces in a watershed area, and on the assumption that undeveloped portions of the watershed are burned, resulting in significant amounts of debris and sediment being added to the runoff.

Catch Basin: A precast concrete structure installed within a street gutter and under the curb to "catch" surface storm water runoff and convey it to an underground storm drain structure.

Clear Runoff (Qc): Clear runoff that is absent of fines, rocks, vegetation, and other debris

Closed Drainage System: A series of covered or enclosed drainage conduits used to convey storm runoff. Proposed in lower elevations of the tributary drainage courses wherever least development runoff flows would be less than 2,000 cubic feet per second.

Coefficient of Runoff: A variable in the rational runoff formula which is dependent upon soil type, rainfall intensity, and the percent of imperviousness.

Debris Basin: A basin designed to trap sediment and debris from runoff before the runoff is discharged.

Desilting Basin: A basin planted with grasses, shrubs, or other vegetation and a corrugated metal standpipe used to reduce the velocity of incoming storm flows long enough to allow silt and other debris to settle out of the flowing water before the water is discharged downstream.

Detention Basin: A basin in which storm flows are captured and stored and, therefore, not available for producing surface runoff.

Erosion: The wearing away of land surfaces by water, wind, and ice, or by gravity.

Impervious: A substance that will not permit water to flow through it.

Infiltration: Downward entry of water into soil.

Interception: That portion of precipitation intercepted by vegetation. Intercepted precipitation is disposed of by drip, stem flow, or evaporation (or sometimes sublimation, in the case of snow, sleet, hail, or freezing rain).

Open Drainage System: A series of uncovered or unenclosed drainages devices used to convey storm runoff. Proposed in lower elevations of the tributary drainage courses wherever least development runoff flows would exceed 2,000 cubic feet per second.

Q: Peak runoff measured in cubic feet per second.

Drainage Concept

Standard Urban Storm Water Mitigation Plan (SUSMP)

EIR Case No. 99-239

JN 99610 OCT. 12,2000

B & E Engineers

24 W. Saint Joseph Street
Arcadia, CA. 910017-2854
TEL. (626) 446-4449
FAX (626) 4446-6556

Drainage Concept
Standard Urban Storm Water Mitigation Plan (SUSMP)
EIR Case No. 99-239

Project is located Northeast of the intersection of Topanga Canyon Blvd. and the Simi Valley Freeway in the Unincorporated Chatsworth area of the County of Los Angeles.

The majority of the site drains into Devil Canyon watershed area in a southeasterly direction where it discharges into Brown Canyon further downstream of the project.

A small watershed area drains in a southwesterly direction into an existing 30" CMP, Caltrans drainage system, crossing the Simi Valley Freeway.

Proposed development of the project will maintain a similar drainage pattern as the current existing drainage pattern. This means that the total area draining into Devil Canyon and Brown Canyon will be the same in pre- and post-developed conditions. Therefore, no water diversion is anticipated.

Bulked and Burned flow for a 50-year storm is calculated for the undeveloped site conditions (i.e., existing conditions), while Clear flow is calculated for the developed site conditions, (i.e. after project completion), per LA County design criteria.

Several elevated and desilting inlets are proposed along the northerly Project Boundary to intercept debris from upstream watershed.

These inlets will eliminate the Bulked and Burned conditions within the project boundary and therefore reduce the overall amount of bulked and burned flow currently discharged to Devil Canyon. Approximately 4,590 CY of debris will also be eliminated.

LA County Flood Control District—Brown's Canyon Capital Flood Chart indicates a total flow of 9,070 cfs (bulked) and 14,320 cfs (bulked and burned) at Devil Canyon.

This Report includes Drainage Concept studies as follows:

1- Existing drainage conditions for the undeveloped site
2- Proposed drainage improvements for the project
3- Devil Canyon Water Surface Profile
4- Capacity of Existing 30" CMP

The following information is used in the Drainage Concept:

- Rainfall Zone ..... "L"
- Soil No 065
- Debris Production Area ..... DPA – 4
- Design Frequency 50-YR
- Debris Production Rate ..... 106 CY / AC
- Bulking Factor 1.66

Proposed project will be designed and constructed in compliance with National Pollutant Discharge Elimination System (NPDES) permit and all applicable State and Local Water Quality permits.

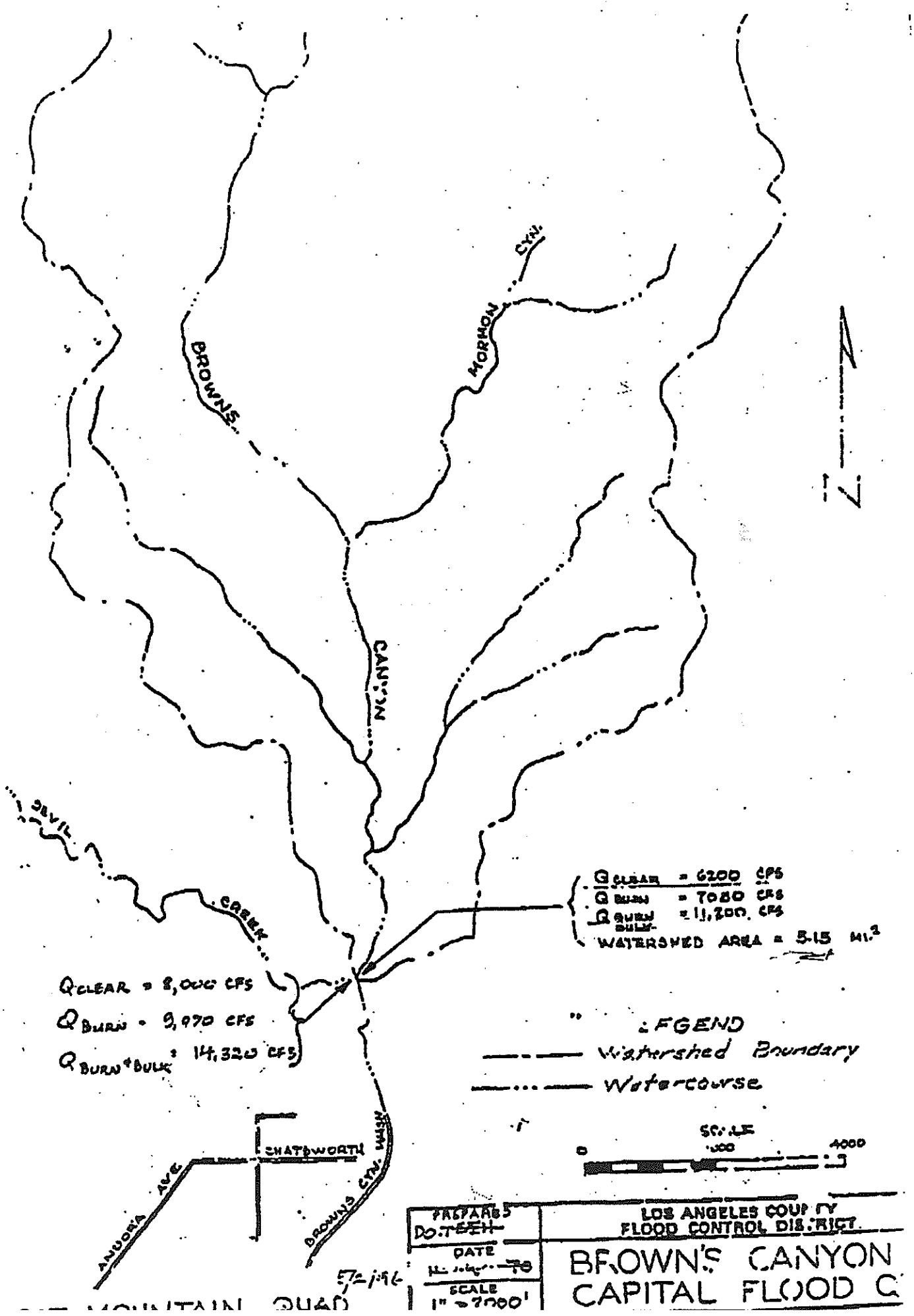
Storm Water Pollution Prevention Plan (SWPPP) and Standard Urban Storm Water Mitigation Plan (SUSMP) will be developed for this site utilizing Best Management Practices (BMP's) for the project.

SWPPP will identify any pollutant sources that may affect quality of storm water discharges during construction. It will implement various pollution prevention measures such as erosion control, dust control and will provide BMP guide to contractors during various stages of site construction

SUSMP will identify any pollutant sources that may affect quality of storm water discharges after project is completed. It will implement various pollution prevention measures including some or all of the following measures:

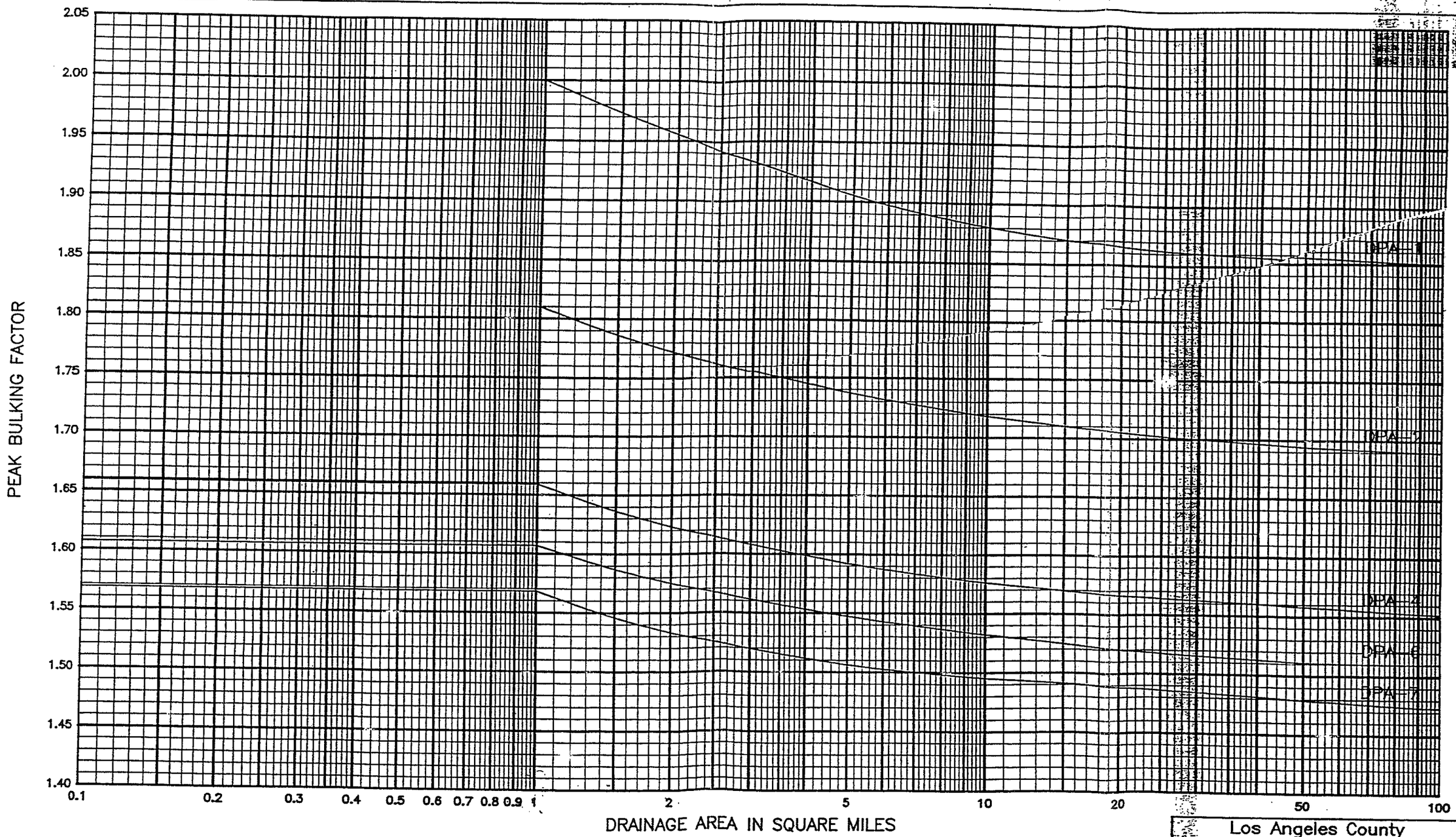
- Inserts in catch basins and continuous deflection units (CDU) to filter storm water run off prior to discharging to the ocean storm drain system. Sample CDU and filter are shown on enclosed drainage concept map.

VICINITY MAP
NOT TO SCALE


BROWNS
CANYON
MORMON
CYN.
DEVIL
CREEK
Q CLEAR = 6200 CFS
Q BURN = 7080 CFS
Q BURN BULK = 11,200 CFS
WATERSHED AREA = 5.15 MI.²
Q CLEAR = 8,000 CFS
Q BURN = 9,970 CFS
Q BURN + BULK = 14,320 CFS
LEGEND
Watershed Boundary
Watercourse
SCALE
0
1000
4000
CHATSWORTH
ANDORA AVE
BROWNS CYN. WASH
PREPARED
DATE
SCALE
1" = 2000'
LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
BROWN'S CANYON
CAPITAL FLOOD C

Drainage Concept

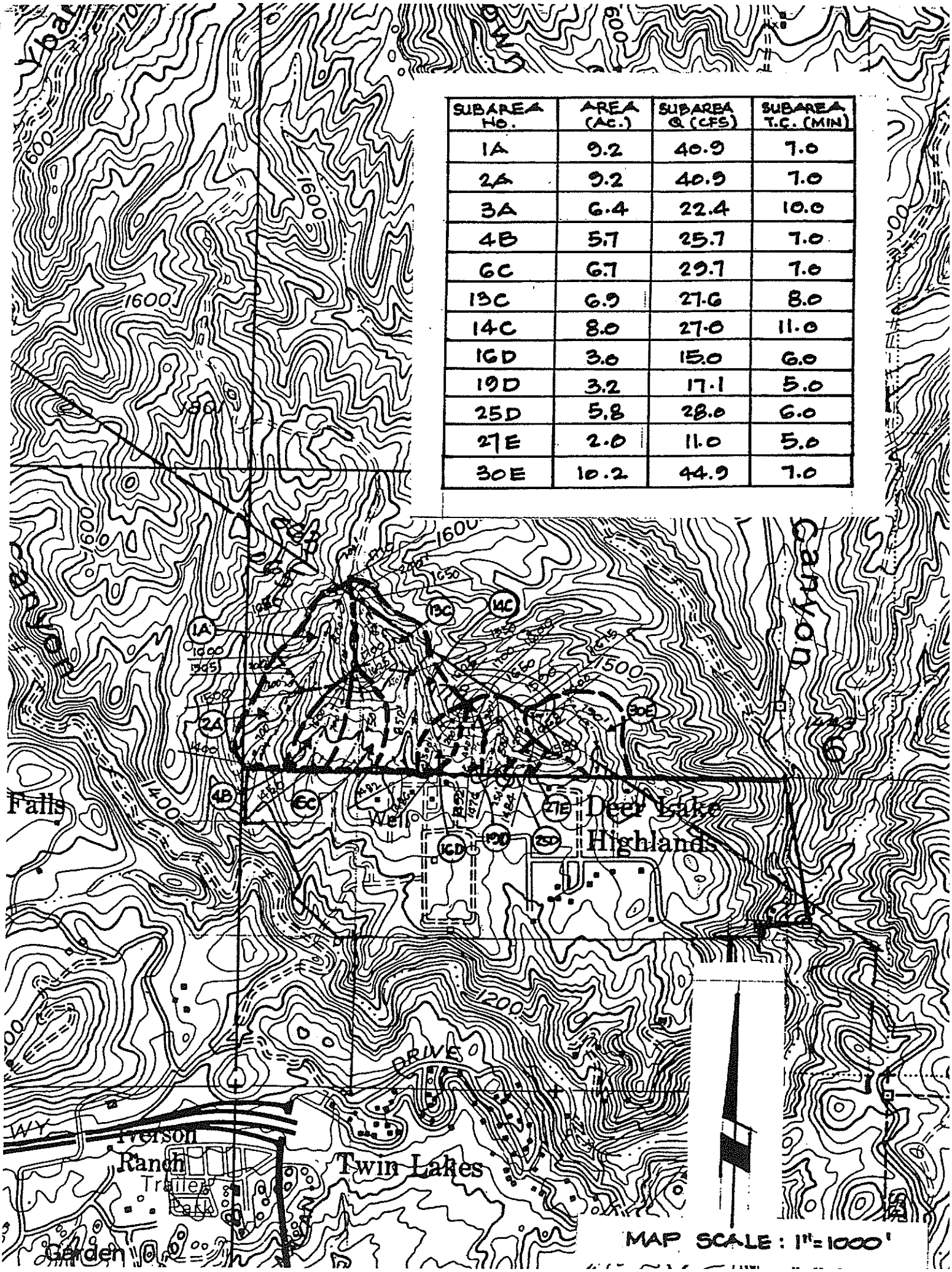
Existing Conditions



Los Angeles County
Department of Public Works

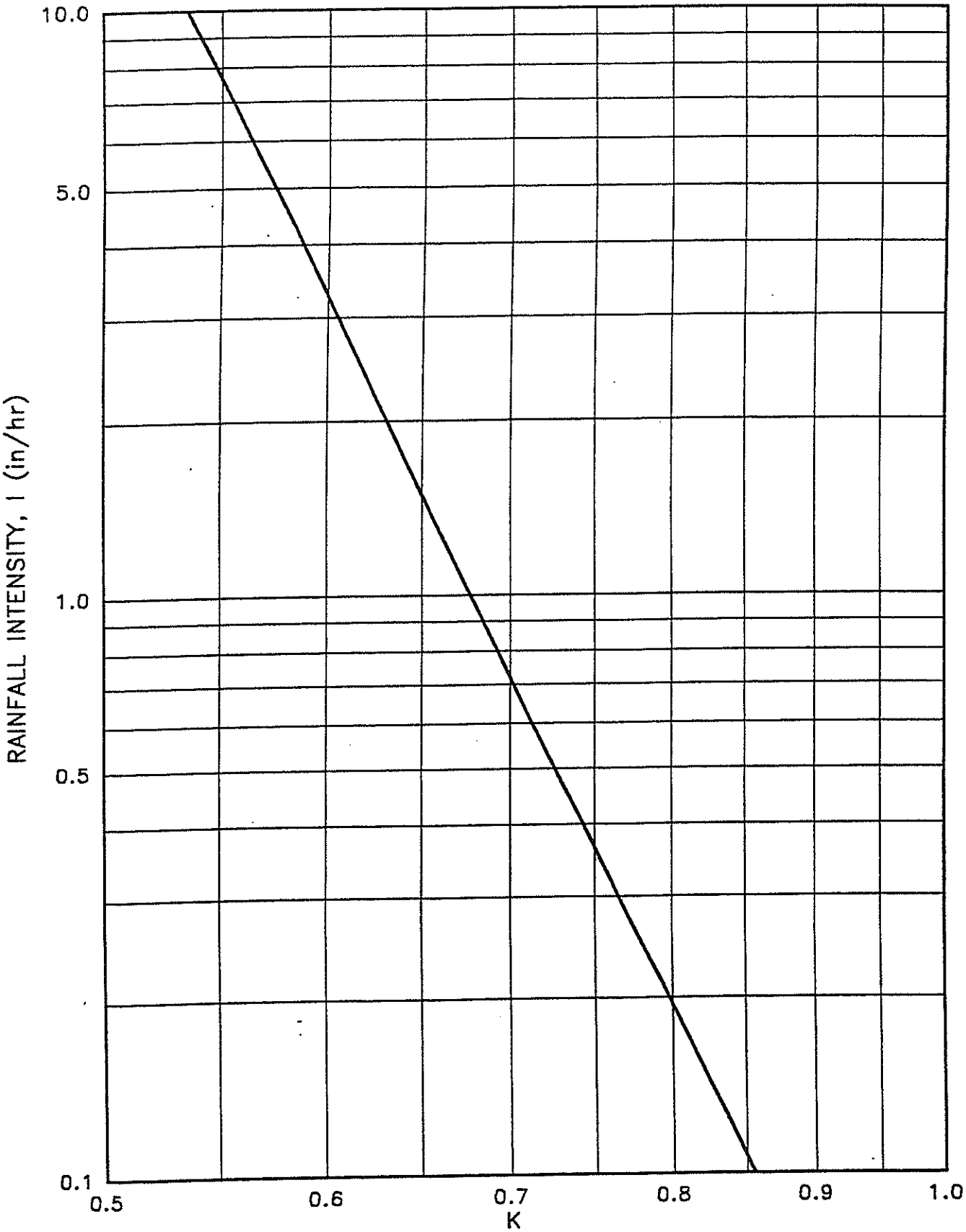
PEAK BULKING FACTOR
for Los Angeles Basin

SUBAREA No.	AREA (Ac.)	SUBAREA Q (CFS)	SUBAREA T.C. (MIN)
1A	9.2	40.9	7.0
2A	9.2	40.9	7.0
3A	6.4	22.4	10.0
4B	5.7	25.7	7.0
6C	6.7	29.7	7.0
13C	6.9	27.6	8.0
14C	8.0	27.0	11.0
16D	3.0	15.0	6.0
19D	3.2	17.1	5.0
25D	5.8	28.0	6.0
27E	2.0	11.0	5.0
30E	10.2	44.9	7.0



SOIL NO. O65 (CLEAR) SOIL NO. 189 (BURNED)

Cu	I	K	Cb
0.100	0.000	#DIV/0!	#DIV/0!
0.100	0.130	0.834	0.250
0.200	0.180	0.806	0.355
0.400	0.280	0.771	0.537
0.500	0.380	0.747	0.626
0.650	0.690	0.703	0.754
0.750	1.135	0.668	0.833
0.800	1.500	0.650	0.870
0.830	1.800	0.638	0.892
0.850	2.020	0.630	0.905
0.900	2.850	0.608	0.939
0.948	5.000	0.575	0.970
0.956	6.000	0.564	0.975
0.958	7.000	0.555	0.977



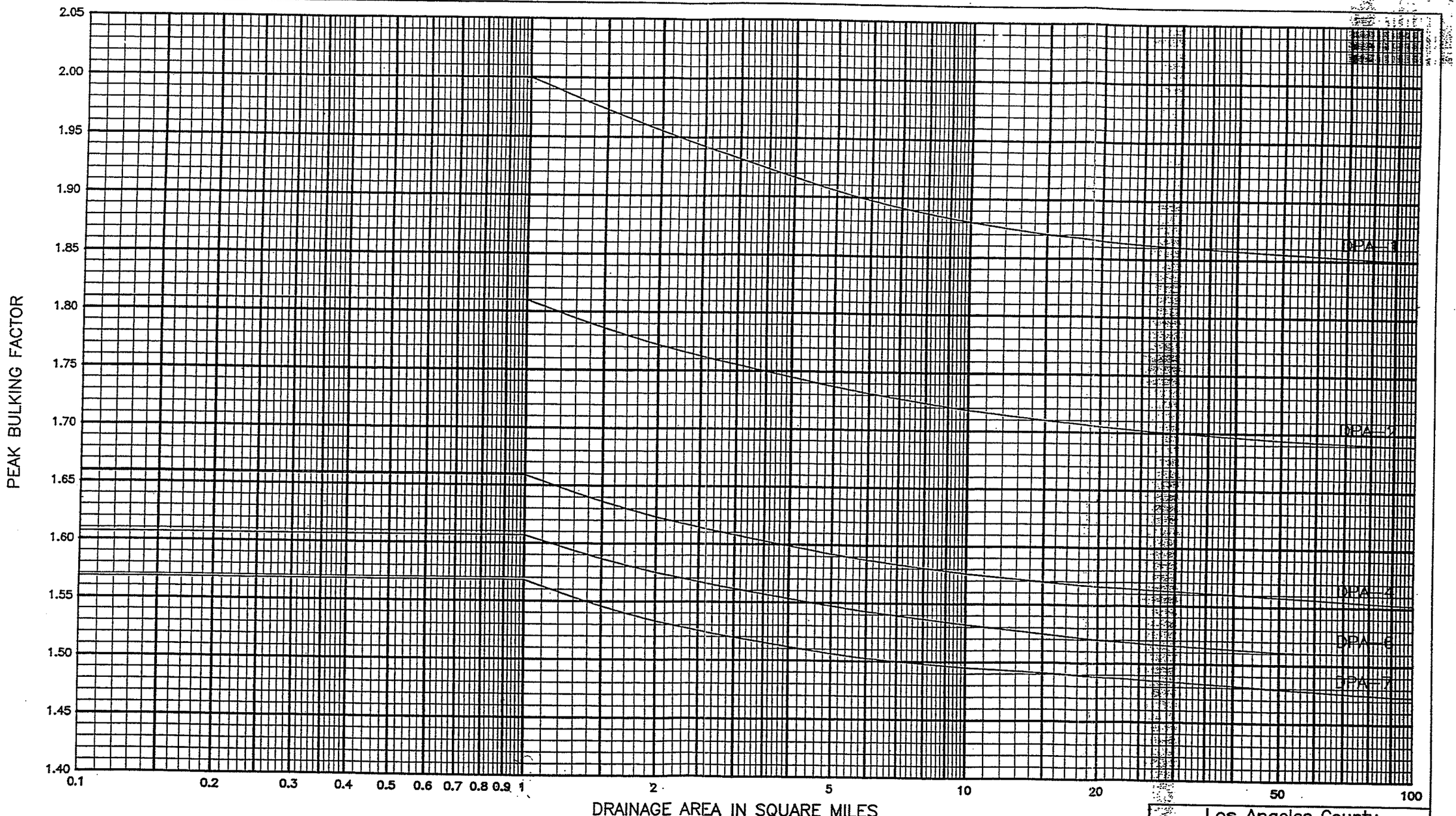
Equation:

$K = 0.677 * I^{-0.102}$

Where: K = The ratio of burned to unburned infiltration rates (Burn Factor = f_b/f_u).
I = The rainfall intensity (in/hr).

Los Angeles County
Department of Public Works

BURN FACTOR CURVE



Los Angeles County
Department of Public Works

PEAK BULKING FACTOR
for Los Angeles Basin

TIME OF CONCENTRATION CALCULATIONS

:23:18 RATIONAL METHOD HYDROLOGY FLOWS calculated by
rs.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 1A (1A.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

mponent Area Data:

ach	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.188	9.2	1650.0	1500.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.188	.0	1650.0	1500.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1770.0	1650.0	.600	.060	174	.000

/13/99 B&E ENGINEERS 24W. ST JOSEPH STREET, ARCADIA page 1
:30:16 RATIONAL METHOD HYDROLOGY FLOWS calculated by
rs.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 3A (3A.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	10	0

mponent Area Data:

ach o.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.176	6.4	1425.0	1240.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.176	.0	1425.0	1240.0	.0	.00	0	0

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Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1496.0	1425.0	.355	.060	174	.000

:40:31 RATIONAL METHOD HYDROLOGY FLOWS calculated by
-s.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 5B (5B.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	6	0

mponent Area Data:

ach Convey.	Strt	Junct	Soil	Prop.	Map	Area	Elev. (ft.)		Ext. Q	Fixed	Fix	
o. Type	No.	No.	No.	Imp.	Slope	(ac)	Top	Bottom	(cfs)	Size	S	X
- 1 Nat.Mtn	0	0- 0	174	.000	.103	3.7	1456.0	1424.0	.0	.00	0	0
- 2 Nat.Mtn	0	0- 0	174	.000	.103	.0	1456.0	1424.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1512.0	1456.0	.280	.060	174	.000

'13/99 B&E ENGINEERS 24W. ST JOSEPH STREET, ARCADIA page 1
3:41 RATIONAL METHOD HYDROLOGY FLOWS calculated by
's.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 8B (8B.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	9	0

ponent Area Data:

ach).	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.161	4.5	1446.0	1330.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.161	.0	1446.0	1330.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1484.0	1446.0	.190	.060	174	.000

:15:23 RATIONAL METHOD HYDROLOGY FLOWS calculated by
rs.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.10C (10C.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

mponent Area Data:

ach o.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.146	5.8	1430.0	1344.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.146	.0	1430.0	1344.0	.0	.00	0	0

ıde Definitions:
****
ıximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
.x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
:rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
ınct No.: Reach No. junctioning with top of this reach.

ıteral Design Q's:
****
esign Q's for laterals are calculated separately using a local Time of
oncentration. Those lateral Q's calculated with the Main Line are for
ain Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1490.0	1430.0	.300	.060	174	.000

:41: 3 RATIONAL METHOD HYDROLOGY FLOWS calculated by
-s.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.13C (13C.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	30	7.	8	0

mponent Area Data:

ach Convey.	Strt	Junct	Soil	Prop.	Map	Area	Elev. (ft.)		Ext. Q	Fixed	Fix
o. Type	No.	No.	No.	Imp.	Slope	(ac)	Top	Bottom	(cfs)	Size	S X
- 1 Nat.Mtn	0	0- 0	174	.000	.133	6.9	1650.0	1550.0	.0	.00	0 0
- 2 Nat.Mtn	0	0- 0	174	.000	.133	.0	1650.0	1550.0	.0	.00	0 0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
.in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1710.0	1650.0	.300	.060	174	.000

.53:45 RATIONAL METHOD HYDROLOGY FLOWS calculated by
's.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.15C (15C.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	8	0

mponent Area Data:

ach o.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
- 1	Nat.Mtn	0	0- 0	174	.000	.070	2.4	1488.0	1466.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.070	.0	1488.0	1466.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at S feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1512.0	1488.0	.120	.060	174	.000

: 9:39 RATIONAL METHOD HYDROLOGY FLOWS calculated by
's.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.18C (18C.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	12	0

mponent Area Data:

ach Convey.	Strt	Junct	Soil	Prop.	Map	Area	Elev. (ft.)		Ext. Q	Fixed	Fix	
o. Type	No.	No.	No.	Imp.	Slope	(ac)	Top	Bottom	(cfs)	Size	S	X
- 1 Nat.Mtn	0	0- 0	174	.000	.115	3.4	1498.0	1402.0	.0	.00	0	0
- 2 Nat.Mtn	0	0- 0	174	.000	.115	.0	1498.0	1402.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1526.0	1498.0	.140	.060	174	.000

:52: 4 RATIONAL METHOD HYDROLOGY FLOWS calculated by
's.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.20D (20D.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

nponent Area Data:

ach Convey.	Strt	Junct	Soil	Prop.	Map	Area	Elev. (ft.)		Ext. Q	Fixed	Fix	
o. Type	No.	No.	No.	Imp.	Slope	(ac)	Top	Bottom	(cfs)	Size	S	X
- 1 Nat.Mtn	0	0- 0	174	.000	.064	1.4	1472.0	1465.0	.0	.00	0	0
- 2 Nat.Mtn	0	0- 0	174	.000	.064	.0	1472.0	1465.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1502.0	1472.0	.150	.060	174	.000

: 2:27 RATIONAL METHOD HYDROLOGY FLOWS calculated by
's.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.23C (23C.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	10	0

nponent Area Data:

ach Convey.	Strt	Junct	Soil	Prop.	Map	Area	Elev. (ft.)		Ext. Q	Fixed	Fix	
o. Type	No.	No.	No.	Imp.	Slope	(ac)	Top	Bottom	(cfs)	Size	S	X
- 1 Nat.Mtn	0	0- 0	174	.000	.069	5.5	1444.0	1402.0	.0	.00	0	0
- 2 Nat.Mtn	0	0- 0	174	.000	.069	.0	1444.0	1402.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

eral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1474.0	1444.0	.150	.060	174	.000

CHATSWORTH RIDGE ESTATE
T.C. CALC.25D (25D.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	6	0

mponent Area Data:

ach o.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
- 1	Nat.Mtn	0	0- 0	174	.000	.228	5.8	1590.0	1476.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.228	.0	1590.0	1476.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
-t No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1650.0	1590.0	.300	.060	174	.000

:30:56 RATIONAL METHOD HYDROLOGY FLOWS calculated by
rs.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.27E (27E.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

mponent Area Data:

ach o.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.384	2.0	1580.0	1484.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.384	.0	1580.0	1484.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1668.0	1580.0	.440	.060	174	.000

48:14 RATIONAL METHOD HYDROLOGY FLOWS calculated by
s.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 30E (30E.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

ponent Area Data:

ach).	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.165	10.2	1600.0	1470.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.165	.0	1600.0	1470.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1675.0	1600.0	.375	.060	174	.000

: 2: 3 RATIONAL METHOD HYDROLOGY FLOWS calculated by
rs.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 32E (32E.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	13	0

mponent Area Data:

ach o.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.120	8.9	1508.0	1347.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.120	.0	1508.0	1347.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1556.0	1508.0	.240	.060	174	.000

15:12 RATIONAL METHOD HYDROLOGY FLOWS calculated by
's.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 35E (35E.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	15	0

nponent Area Data:

ach o.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.160	5.3	1458.0	1260.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.160	.0	1458.0	1260.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1471.7	1458.0	.068	.060	174	.000

42:17 RATIONAL METHOD HYDROLOGY FLOWS calculated by
s.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 38E (38E.INP)
B & E ENGINEERS BY 12/14/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

ponent Area Data:

ch	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1	Nat.Mtn	0	0- 0	174	.000	.279	6.6	1520.0	1340.0	.0	.00	0	0
2	Nat.Mtn	0	0- 0	174	.000	.279	.0	1520.0	1340.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
t No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1581.9	1520.0	.310	.060	174	.000

1:55 RATIONAL METHOD HYDROLOGY FLOWS calculated by
's.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 40F (40F.INP)
B & E ENGINEERS BY 12/14/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	11	0

ponent Area Data:

ach	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.092	5.1	1474.0	1413.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.092	.0	1474.0	1413.0	.0	.00	0	0

de Definitions:
****
imum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
-t No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

eral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1490.0	1474.0	.080	.060	174	.000

CHATSWORTH RIDGE ESTATE
T.C. CALC. 43A (43A.INP)
B & E ENGINEERS BY 12/14/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

mponent Area Data:

ach o.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
- 1	Nat.Mtn	0	0- 0	174	.000	.205	9.1	1430.0	1300.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.205	.0	1430.0	1300.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1481.9	1430.0	.260	.060	174	.000

46:44 RATIONAL METHOD HYDROLOGY FLOWS calculated by
s.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 45B (45B.INP)
B & E ENGINEERS BY 12/14/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	10	0

ponent Area Data:

ch	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
- 1	Nat.Mtn	0	0- 0	174	.000	.199	4.9	1445.0	1280.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.199	.0	1445.0	1280.0	.0	.00	0	0

le Definitions:
****
imum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
t No.: Street Cross-Section No. - See Street-Cross-Section Data list.
ct No.: Reach No. junctioning with top of this reach.

eral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
centration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1465.8	1445.0	.104	.060	174	.000

58:24 RATIONAL METHOD HYDROLOGY FLOWS calculated by
's.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 47C (47C.INP)
B & E ENGINEERS BY 12/14/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	11	0

nponent Area Data:

ach	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
).													
- 1	Nat.Mtn	0	0- 0	174	.000	.151	6.5	1322.0	1150.0	.0	.00	0	0
- 2	Nat.Mtn	0	0- 0	174	.000	.204	.0	1370.0	1138.0	.0	.00	0	0

de Definitions:
****
ximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
x=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
rt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
nct No.: Reach No. junctioning with top of this reach.

teral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
ncentration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1370.0	1322.0	.240	.060	174	.000

13:23 RATIONAL METHOD HYDROLOGY FLOWS calculated by
s.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 49E (49E.INP)
B & E ENGINEERS BY 12/14/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

ponent Area Data:

ch	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1	Nat.Mtn	0	0- 0	174	.000	.329	5.3	1405.0	1177.9	.0	.00	0	0
2	Nat.Mtn	0	0- 0	174	.000	.329	.0	1405.0	1177.9	.0	.00	0	0

le Definitions:
****
imum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
t No.: Street Cross-Section No. - See Street-Cross-Section Data list.
ct No.: Reach No. junctioning with top of this reach.

eral Design Q's:
****
sign Q's for laterals are calculated separately using a local Time of
centration. Those lateral Q's calculated with the Main Line are for
in Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1479.6	1405.0	.373	.060	174	.000

Modified Rational Calculations

Existing Conditions

MODIFIED RATIONAL METHOD HYDROLOGY

TRACT NO.47646 B&E ENGINEERS DEC.14, 1999 STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	1A	9.	40.	9.	40.	1	700.	.14285	.00	.00	0.	189	7	L50	.00
9610	2A	9.	40.	18.	75.	1	800.	.20000	.00	.00	0.	189	7	L50	.00
9610	3A	6.	21.	24.	93.	0	0.	.00000	.00	.00	0.	189	10	L50	.00
9610	4B	6.	27.	6.	27.	1	290.	.08621	.00	.00	0.	189	7	L50	.00
9610	5B	4.	19.	10.	44.	0	0.	.00000	.00	.00	0.	189	6	L50	.00
9610	6C	7.	31.	7.	31.	1	250.	.10400	.00	.00	0.	189	7	L50	.00

CONFLUENCE Q'S

9610 7B TB 1155 QB 44. QBC 75. QC 31. 9610 7C TC 1155 QC 31. QCB 75. QB 44.
9610 7BC TBC 1155 QBC 75. QB 44. QC 31.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	7BC	7.	31.	17.	75.	1	540.	.17407	.00	.00	0.	189	0	L50	.00
9610	8B	5.	19.	22.	92.	1	390.	.20512	.00	.00	0.	189	9	L50	.00
9610	9B	4.	18.	26.	105.	0	0.	.00000	.00	.00	0.	189	7	L50	.00
9610	10C	6.	27.	6.	27.	1	310.	.30323	.00	.00	0.	189	7	L50	.00

CONFLUENCE Q'S

9610 11B TB 1157 QB 105. QBC 128. QC 24. 9610 11C TC 1155 QC 26. QCB 123. QB 97.
9610 11BC TBC 1156 QBC 130. QB 104. QC 25.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	11BC	6.	26.	32.	130.	1	260.	.12692	.00	.00	0.	189	0	L50	.00
9610	12B	3.	13.	35.	140.	0	0.	.00000	.00	.00	0.	189	7	L50	.00
9610	13C	7.	28.	7.	28.	2	850.	.07529	.00	.00	0.	189	8	L50	.00
9610	14C	8.	27.	15.	54.	2	255.	.06274	.00	.00	0.	189	11	L50	.00
9610	15C	2.	8.	17.	61.	0	0.	.00000	.00	.00	0.	189	8	L50	.00
9610	16D	3.	15.	3.	15.	2	230.	.06695	.00	.00	0.	189	6	L50	.00

CONFLUENCE Q'S

9610 17C TC 1157 QC 61. QCD 72. QD 11. 9610 17D TD 1154 QD 14. QDC 68. QC 54.
9610 17CD TCD 1156 QCD 74. QC 61. QD 13.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	17CD	3.	14.	20.	74.	1	615.	.10407	.00	.00	0.	189	0	L50	.00
9610	18C	3.	9.	23.	81.	0	0.	.00000	.00	.00	0.	189	12	L50	.00
9610	19D	3.	16.	3.	16.	1	215.	.12558	.00	.00	0.	189	5	L50	.00
9610	20D	1.	5.	4.	21.	2	720.	.08750	.00	.00	0.	189	5	L50	.00
9610	21D	3.	11.	7.	30.	0	0.	.00000	.00	.00	0.	189	10	L50	.00

MODIFIED RATIONAL METHOD HYDROLOGY

TRACT NO.47646 B&E ENGINEERS DEC.14, 1999 STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV

CONFLUENCE Q'S

9610 22C TC 1158 QC 81. QCD 107. QD 26. 9610 22D TD 1156 QD 30. QDC 106. QC 76.
9610 22CD TCD 1157 QCD 109. QC 80. QD 29.

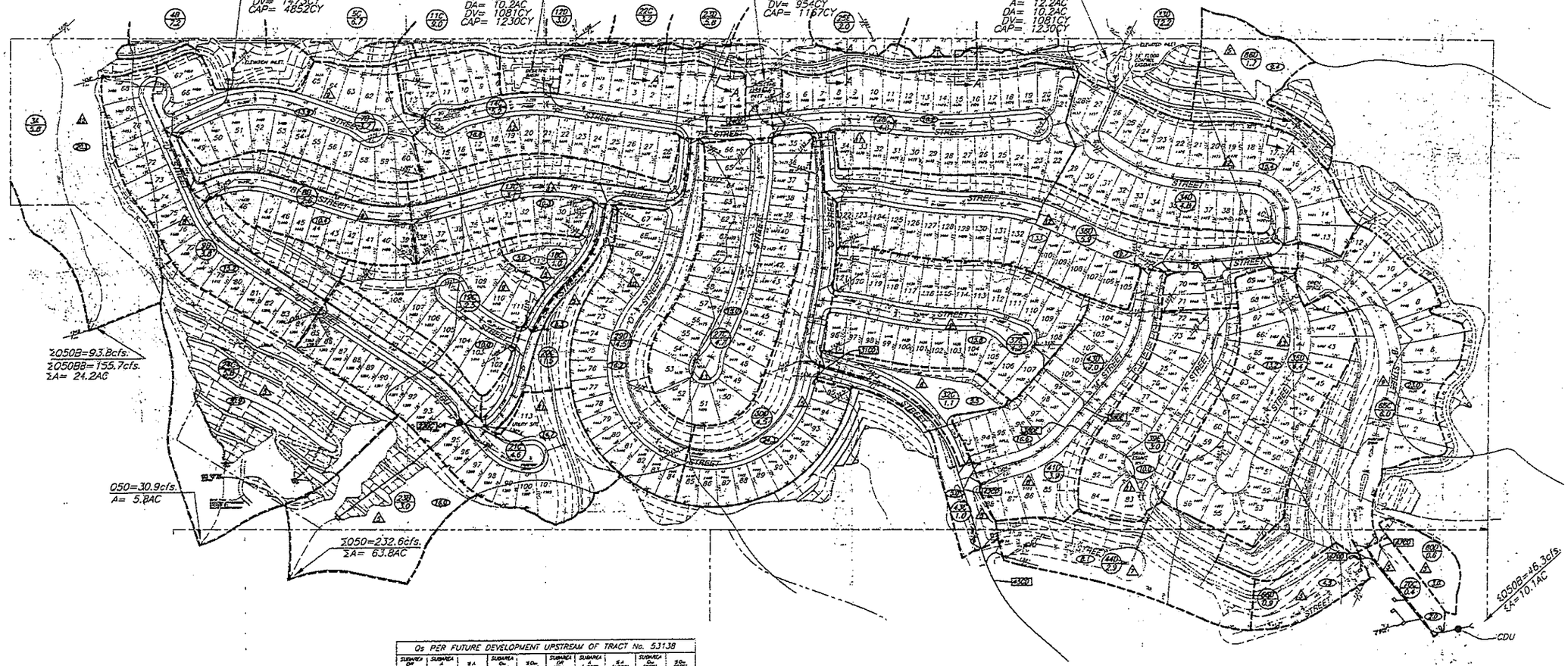
MODIFIED RATIONAL METHOD HYDROLOGY

TRACT NO.47646 B&E ENGINEERS DEC.14, 1999 STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	43A	9.	40.	9.	40.	1	880.	.15455	.00	.00	0.	189	7	L50	.00
9610	44A	10.	44.	19.	77.	0	0.	.00000	.00	.00	0.	189	7	L50	.00
9610	45B	5.	15.	5.	18.	1	840.	.16905	.00	.00	0.	189	10	L50	.00
9610	46B	8.	33.	13.	47.	0	0.	.00000	.00	.00	0.	189	8	L50	.00
9610	47C	7.	23.	7.	23.	0	0.	.00000	.00	.00	0.	189	11	L50	.00
9610	48D	4.	18.	4.	18.	0	0.	.00000	.00	.00	0.	189	7	L50	.00
9610	49E	5.	22.	5.	22.	0	0.	.00000	.00	.00	0.	189	7	L50	.00

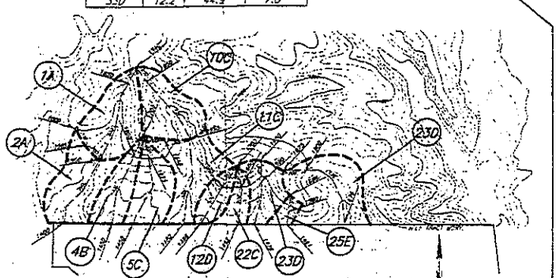
THE FOLLOWING ARE ADJUSTMENTS TO MODIFIED RATIONAL OUTPUT DUE TO ROUNDING OFF OF AREAS:

(1) SUBAREA NO. OR JCT. NO.	(2) INPUT AREA (AC)	(3) ACTUAL AREA (AC)	(4) OUTPUT Q OR Q_B (CFS)	(5) ACTUAL Q OR Q_B (CFS)	(6) Σ OUTPUT AREA (AC)	(7) Σ ACTUAL AREA (AC)	(8) TOTAL Q_{BB} OR Q_B IN PIPE
22 CD	30.0	31.6	109.0	114.8	30.0	31.6	114.8
23C	6.0	5.5	21.0	19.3	36.0	37.1	132.9
24C	7.0	7.4	25.0	26.4	43.0	44.5	153.2
25D	6.0	5.8	29.0	28.0	6.0	5.8	28.0
26D	5.0	5.1	24.0	24.5	11.0	10.9	51.5
27E	2.0	2.0	11.0	11.0	2.0	2.0	11.0
28DE	13.0	12.9	62.0	61.5	13.0	12.9	61.5
29D	9.0	8.6	34.0	32.5	22.0	21.5	91.9
30E	10.0	10.2	44.0	44.9	10.0	10.2	44.9
31E	10.0	10.3	49.0	50.5	20.0	20.5	89.2
32E	9.0	8.9	27.0	26.7	29.0	29.4	112.5
33DE	51.0	50.9	205.0	204.6	51.0	50.9	204.6
34D	10.0	9.8	35.0	34.3	61.0	60.7	231.9
35E	5.0	5.3	14.0	14.8	5.0	5.3	14.8
36E	7.0	7.4	23.0	24.3	12.0	12.7	39.2
37DE	73.0	73.4	269.0	270.5	73.0	73.4	270.5
38E	7.0	6.6	31.0	29.2	7.0	6.6	29.2
39E	8.0	7.6	33.0	31.4	15.0	14.2	58.7
40F	5.0	5.1	17.0	17.3	5.0	5.1	17.3
41F	9.0	9.2	37.0	37.8	14.0	14.3	51.1

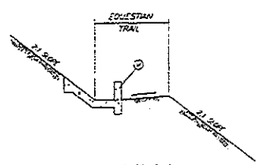


Qs PER FUTURE DEVELOPMENT UPSTREAM OF TRACT No. 53138									
SUBAREA ID# (CT.No.)	SUBAREA A (ACRES)	ΣA (ACRES)	SUBAREA Q50 (CFS)	ΣQ50 (CFS)	SUBAREA ID# (CT.No.)	SUBAREA A (ACRES)	ΣA (ACRES)	SUBAREA Q50 (CFS)	ΣQ50 (CFS)
1A	9.2	9.2	40.9	40.9	22C	1.2	1.2	17.1	17.1
2A	9.2	18.4	40.9	76.7	23D	5.8	5.8	28.0	28.0
3A	5.3	24.3	20.3	93.8	24CD		9.0		45.0
4B	7.2	7.2	31.0	31.0	25E	2.0	2.0	11.6	11.6
5C	6.7	6.7	29.7	29.7	26CE		11.0		55.0
6BC	6.1	13.8		59.6	27C	4.3	15.7	15.0	68.2
7B	3.3	17.6	13.9	73.5	28C	4.6	20.3	16.2	84.4
8H	9.5	26.0	19.4	92.9	29D	4.5	4.5	18.2	18.2
9H	3.8	29.8	15.2	108.1	30D	4.3	8.8	24.4	42.6
10C	6.9	6.9	30.6	30.6	31CD		28.3		111.1
11C	9.0	15.9	40.0	65.6	32C	1.1	29.5	5.5	116.6
12D	3.0	18.9	15.0	80.6	33C	12.2	41.7	35.9	152.5
13CD		18.9		79.6	34D	4.8	17.0	15.4	68.0
14C	3.2	24.1	18.5	99.4	35D	2.2	21.4	13.2	81.2
15C	4.1	27.2	20.1	104.8	36D	4.9	27.3	19.7	100.1
16C	1.0	28.2	5.0	106.8	37C	4.2	4.2	14.3	14.3
17C	2.5	30.7	10.0	115.9	38DC		37.5		114.8
18DC	1.5	32.2	8.3	119.0	39D	3.0	3.0	10.0	10.0
19C	4.6	36.8	14.7	133.6	40CE		34.4		124.6
20DC		60.9		223.5	41D	3.9	38.3	16.6	138.3
21B	3.0	63.8	18.0	232.6	42CD		69.0		350.4
24C	5.8	5.8	30.9	30.9	43C	1.0	70.0	5.0	355.4
					44C	1.8	71.8	8.1	363.5
					45CD		71.8		260.8
					46D	1.7	1.7	9.4	9.4

SUB-AREA NO	AREA (AC.)	SUB-AREA Q (CFS)	SUB-AREA T.C. (MIN)
1A	9.2	40.9	7.0
2A	9.2	40.9	7.0
4B	7.2	31.9	7.0
5C	6.7	29.7	7.0
10C	6.9	30.6	8.0
11C	9.0	40.0	7.0
12D	3.0	15.0	6.0
22C	3.2	17.1	5.0
23D	5.8	28.6	6.0
25E	2.0	11.6	5.0
33D	12.2	44.9	7.0

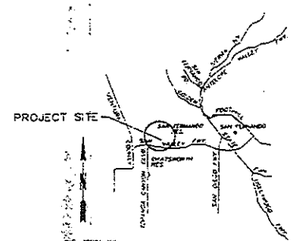


OFFSITE SUBAREAS
(ULTIMATE CONDITION)
SCALE: 1"=500'



SECTION A-A

1. TERMINATE WALL AT LOCATIONS WHERE FLOWS RUN ACROSS THE EQUESTRIAN TRAIL. CONSTRUCT TRANSITION DITCHES AT THESE LOCATIONS TO DIRECT FLOWS INTO DRAINAGE BASINS OR OUTLET.
2. DRAINAGE WALL AT TOP OF EQUESTRIAN TRAIL SLOPE MAY BE REQUIRED AT LOCATIONS MENTIONED ABOVE TO PREVENT RUNOFF SPILLING INTO LOTS BELOW.



LOCATION MAP

DATA.

HYDROLOGY MAP.....1-H1-35
SOIL NO.....065
STUDY FREQUENCY.....50 YRS.
RAINFALL ZONE.....1
D.P.A.....4
D.P.V.....106 C.Y./A.C.
BULK FACTOR.....1.66

LEGEND.

- 9 — SUB AREA TIME OF CONCENTRATION
- 1A / 9.2 — DRAINAGE SUBAREA / AREA IN ACRES
- 5.1 / 4.2 — DESIGN "Q" FOR REACH / DRAINAGE AREA IN ACRES
- SUB AREA BOUNDARY
- 16.0 — Q cfs. GENERATED FROM SUBAREA
- EXISTING RIDGE LINE

Q50B= BURNED RUNOFF IN CFS
Q50BB= BURNED AND BULKED RUNOFF IN CFS
Q50= COMBINED CLEAR, BURNED AND BULKED RUNOFF IN CFS

- CDU — CONTINUOUS DEFLECTION UNIT PER DETAIL A
- DENOTES CATCH BASIN WITH INSERT
- CATCH BASIN
- PIPE

GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.

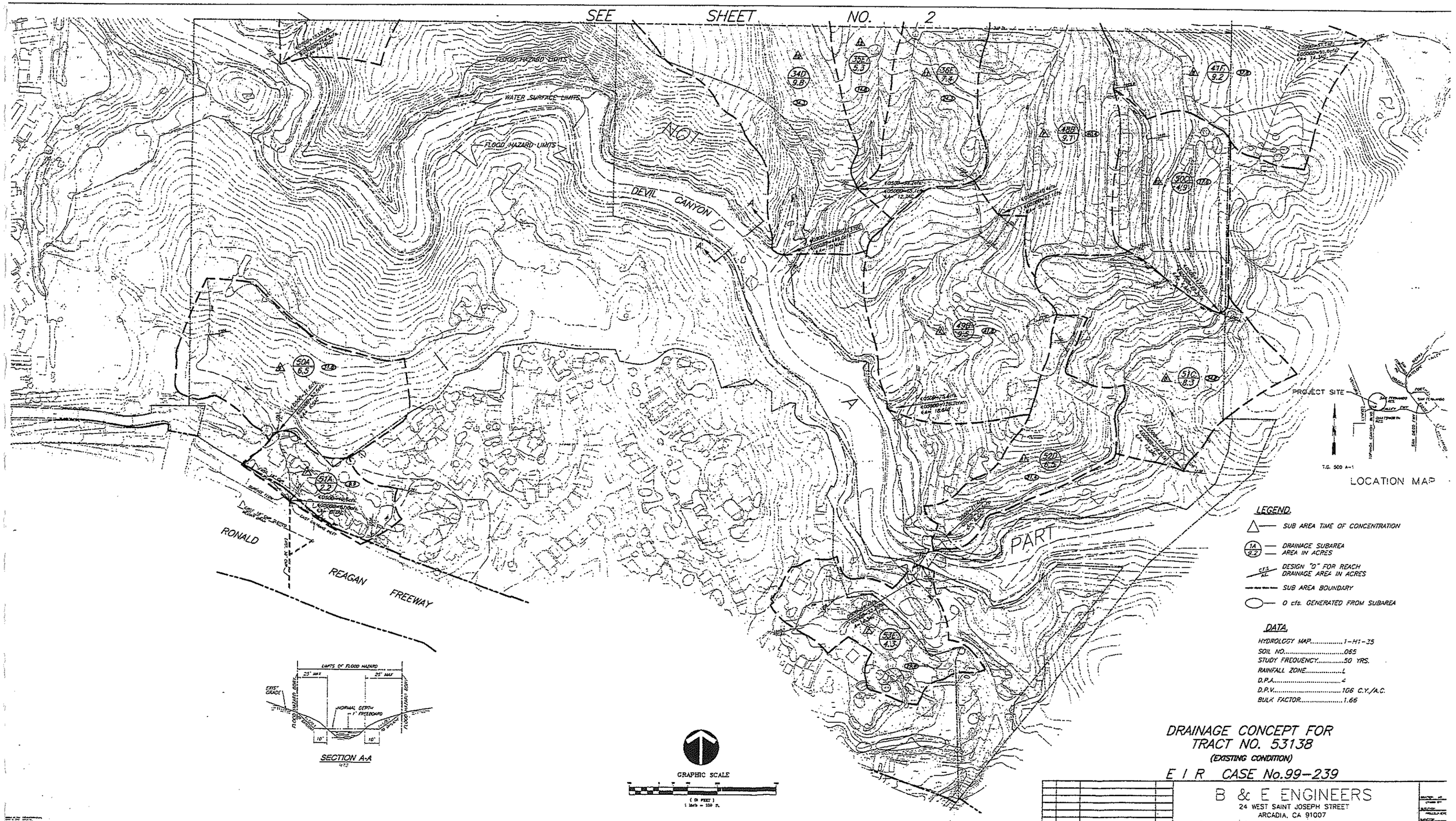
DRAINAGE CONCEPT FOR FUTURE DEVELOPMENT OF DEER LAKE HIGHLANDS UPSTREAM OF TRACT NO. 53138

B & E ENGINEERS
24 WEST SAINT JOSEPH STREET
ARCADIA, CA 91007
TEL: 626-446-4649 FAX: 626-446-6566

NO.	DATE	DESCRIPTION	BY

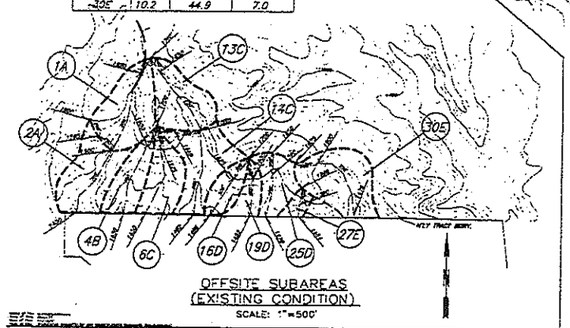
DRAWN BY
DESIGN BY
SUBMITTED
ENGINEERING MANAGER
APPROVED
SIGNATURE

SHEET 1 OF 1 SHEETS


SEE SHEET NO. 2
FLOOD HAZARD LIMITS
WATER SURFACE LIMITS
FLOOD HAZARD LIMITS
NOT
DEVIL CANYON
PART
RONALD REAGAN FREEWAY
PROJECT SITE
LOCATION MAP
LEGEND.
SUB AREA TIME OF CONCENTRATION
DRAINAGE SUBAREA
AREA IN ACRES
DESIGN "Q" FOR REACH
DRAINAGE AREA IN ACRES
SUB AREA BOUNDARY
0 cfs. GENERATED FROM SUBAREA
DATA.
HYDROLOGY MAP.....1-H1-35
SOIL NO.....065
STUDY FREQUENCY.....50 YRS.
RAINFALL ZONE.....L
D.P.A.....4
D.P.V.....106 C.Y./A.C.
BULK FACTOR.....1.66
SECTION A-A
GRAPHIC SCALE
DRAINAGE CONCEPT FOR
TRACT NO. 53138
(EXISTING CONDITION)
E I R CASE No.99-239
B & E ENGINEERS
24 WEST SAINT JOSEPH STREET
ARCADIA, CA 91007
TEL. 626- 446-4449
FAX 626- 446-6566
NO. DATE DESCRIPTION BY

SEE 500 SCALE OFFSITE INSERT

SUB-AREA NO.	AREA (AC.)	SUB-AREA Q (CFS)	SUB-AREA T.C. (MIN)
1A	9.2	40.9	7.0
2A	9.2	40.9	7.0
3A	6.4	22.4	10.0
4B	5.7	25.7	7.0
6C	6.7	29.7	7.0
13C	5.9	27.6	8.0
14C	8.0	27.0	11.0
16D	3.0	15.0	5.0
19D	3.2	17.1	5.0
25D	5.8	28.0	6.0
27E	2.0	11.0	5.0
30E	10.2	44.9	7.0



OFFSITE SUBAREAS
(EXISTING CONDITION)
SCALE: 1"=500'

SEE SHEET NO. 1

LEGEND.

- SUB AREA TIME OF CONCENTRATION
- 1A / 9.2 — DRAINAGE SUBAREA / AREA IN ACRES
- CFS / AC — DESIGN "Q" FOR REACH / DRAINAGE AREA IN ACRES
- SUB AREA BOUNDARY
- 0 cfs. GENERATED FROM SUBAREA

DATA.

HYDROLOGY MAP.....1-H1-35
SOIL NO.....065
STUDY FREQUENCY.....50 YRS.
RAINFALL ZONE.....I
D.P.A.....4
D.P.V.....106 C.Y./A.C.
BULK FACTOR.....1.66

GRAPHIC SCALE

DRAINAGE CONCEPT FOR TRACT NO. 53138

(EXISTING CONDITION)

E I R CASE No. 99-239

NO.	DATE	DESCRIPTION	BY

B & E ENGINEERS
24 WEST SAINT JOSEPH STREET
ARCADIA, CA 91007
TEL 626-445-4449 FAX 626-446-6566

SHEET 2 OF 2 SHEETS

Drainage Concept

Developed Condition

MODIFIED RATIONAL METHOD HYDROLOGY

TRACT NO.47646 B&E ENGINEERS FAULT_DEV 1A-24C) 3.17/00 STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	1A	9.	40.	9.	40.	1	700.	.14286	.00	.00	0.	189	7	L50	.00
9610	2A	9.	40.	18.	75.	1	800.	.20000	.00	.00	0.	189	7	L50	.00
9610	3A	6.	21.	24.	93.	0	0.	.00000	.00	.00	0.	189	10	L50	.00
9610	4B	7.	31.	7.	31.	0	0.	.00000	.00	.00	0.	189	7	L50	.00
9610	5C	7.	31.	7.	31.	2	220.	.01000	2.00	.50	0.	189	7	L50	.00

CONFLUENCE Q'S

9610 6B TB 1154 QB 31. QBC 59. QC 28. 9610 6C TC 1156 QC 30. QCB 58. QB 28.
9610 6BC TBC 1155 QBC 60. QB 30. QC 30.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	6BC	7.	30.	14.	60.	4	250.	.05000	2.25	.00	0.	189	0	L50	.00
9610	7B	4.	15.	18.	75.	4	235.	.10000	2.00	.00	0.	65	9	L50	.42
9610	8B	3.	12.	21.	86.	4	360.	.10000	2.25	.00	0.	65	9	L50	.42
9610	9B	3.	12.	24.	97.	4	530.	.00500	4.00	.00	0.	65	9	L50	.42
9610	10C	7.	31.	7.	31.	2	980.	.08469	.00	.00	0.	189	7	L50	.00
9610	11C	9.	40.	16.	66.	0	0.	.00000	.00	.00	0.	189	7	L50	.00
9610	12D	3.	15.	3.	15.	6	165.	.02755	2.00	.50	0.	189	6	L50	.00

CONFLUENCE Q'S

9610 13C TC 1155 QC 66. QCD 80. QD 14. 9610 13D TD 1154 QD 15. QDC 78. QC 63.
9610 13CD TCD 1155 QCD 80. QC 66. QD 14.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	13CD	3.	15.	19.	80.	4	530.	.03000	2.75	.00	0.	189	0	L50	.00
9610	14C	5.	16.	24.	95.	0	0.	.00000	.00	.00	0.	65	12	L50	.42
9610	15C	0.	0.	24.	95.	0	0.	.00000	.00	.00	0.	65	99	L50	.42
9610	16C	0.	0.	24.	95.	4	375.	.03000	2.75	.00	0.	65	99	L50	.42
9610	17C	3.	10.	27.	104.	4	380.	.10000	2.25	.00	0.	65	12	L50	.42
9610	18C	1.	5.	28.	106.	4	60.	.10000	2.50	.00	0.	65	5	L50	.42
9610	19C	3.	12.	31.	117.	4	200.	.10000	2.50	.00	0.	65	9	L50	.42
9610	20C	2.	11.	33.	123.	4	75.	.02000	3.25	.00	0.	65	5	L50	.42
9610	21C	5.	16.	38.	138.	4	20.	.02000	3.50	.00	0.	65	12	L50	.42

CONFLUENCE Q'S

9610 22B TB 1158 QB 95. QBC 228. QC 133. 9610 22C TC 1156 QC 138. QCB 229. QB 91.
9610 22BC TBC 1157 QBC 232. QB 95. QC 137.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	22BC	38.	138.	62.	232.	4	420.	.50000	2.25	.00	0.	65	0	L50	.00
9610	23B	3.	16.	65.	237.	0	0.	.00000	.00	.00	0.	65	5	L50	.15
9610	24C	6.	32.	6.	32.	0	0.	.00000	.00	.00	0.	65	5	L50	.30

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV I	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	45CD	3.	13.	74.	263.	4	450.	.12000	3.25	.00	0.	65	0	L50	.00
9610	46C	3.	15.	77.	273.	4	210.	.08333	3.50	.00	0.	65	5	L50	.42
9610	47C	4.	20.	81.	294.	0	0.	.00000	.00	.00	0.	65	5	L50	.42
9610	48C	0.	0.	81.	294.	4	30.	.05000	4.00	.00	0.	65	99	L50	.42
9610	49D	4.	22.	4.	22.	4	70.	.10000	2.00	.00	0.	65	5	L50	.42
9610	50CD	4.	22.	85.	309.	4	140.	.10000	3.50	.00	0.	65	0	L50	.00
9610	51C	1.	5.	86.	312.	4	150.	.10000	3.50	.00	0.	65	5	L50	.42
9610	52D	2.	11.	2.	11.	4	210.	.02000	2.00	.00	0.	65	5	L50	.42
9610	53CD	2.	11.	88.	320.	4	180.	.10000	3.50	.00	0.	65	0	L50	.00
9610	54C	2.	11.	90.	327.	4	80.	.10000	3.50	.00	0.	65	5	L50	.42
9610	55D	1.	5.	1.	5.	0	0.	.00000	.00	.00	0.	65	5	L50	.42
9610	56E	1.	5.	1.	5.	0	0.	.00000	.00	.00	0.	65	5	L50	.42
9610	57F	2.	11.	2.	11.	0	0.	.00000	.00	.00	0.	65	5	L50	.42

THE FOLLOWING ARE ADJUSTMENTS TO MODIFIED RATIONAL OUTPUT DUE TO ROUNDING OFF OF AREAS:

1	2	3	4	5	6	7	8
SUBAREA NO. OR JCT. NO.	INPUT AREA (AC)	ACTUAL AREA (AC)	OUTPUT Q OR Q_B (CFS)	ACTUAL Q OR Q_B (CFS)	Σ OUTPUT AREA (AC)	Σ ACTUAL AREA (AC)	TOTAL Q_{BB} OR Q_B (CFS)
51C	1.0	0.3	5.0	1.5	86.0	84.2	305.5
52D	2.0	2.0	11.0	11.0	2.0	2.0	11.0
53CD	88.0	86.2	320.0	313.5	88.0	86.2	313.5
54C	2.0	2.3	11.0	12.7	90.0	88.5	321.6
55D	1.0	0.7	5.0	3.5	1.0	0.7	3.5
56E	1.0	0.6	5.0	3.0	1.0	0.6	3.0
57F	2.0	2.3	11.0	12.7	2.0	2.3	12.7

$$\text{COL. (5)} = \frac{\text{COL. (4)}}{\text{COL. (2)}} \times \text{COL. (3)}$$

$$\text{COL. (8)} = \frac{\Sigma\text{OUTPUT Q}}{\text{COL. (6)}} \times \text{COL. (7)}$$

THE FOLLOWING ARE ADJUSTMENTS TO MODIFIED RATIONAL OUTPUT DUE TO ROUNDING OFF OF AREAS:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SUBAREA NO. OR JCT. NO.	INPUT AREA (AC)	ACTUAL AREA (AC)	OUTPUT Q OR Q_B (CFS)	ACTUAL Q OR Q_B (CFS)	Σ OUTPUT AREA (AC)	Σ ACTUAL AREA (AC)	TOTAL Q_{BB} OR Q_B (CFS)
65C	6.0	6.0	23.0	23.0	6.0	6.0	23.0
66D	1.0	0.9	5.0	4.5	1.0	0.9	4.5
67CD	7.0	6.9	28.0	27.6	7.0	6.9	7.0
68C	1.0	0.2	5.0	1.0	8.0	7.1	29.3
69C	3.0	2.6	16.0	13.9	11.0	9.7	43.2
70C	1.0	0.4	5.0	2.0	12.0	10.1	46.3

$$\text{COL. (5)} = \frac{\text{COL. (4)}}{\text{COL. (2)}} \times \text{COL. (3)}$$

$$\text{COL. (8)} = \frac{\Sigma\ \text{OUTPUT Q}}{\text{COL. (6)}} \times \text{COL. (7)}$$

THE FOLLOWING ARE ADJUSTMENTS TO MODIFIED RATIONAL OUTPUT DUE TO ROUNDING OFF OF AREAS:

(1) SUBAREA NO. OR JCT. NO.	(2) INPUT AREA (AC)	(3) ACTUAL AREA (AC)	(4) OUTPUT Q OR Q_B (CFS)	(5) ACTUAL Q OR Q_B (CFS)	(6) Σ OUTPUT AREA (AC)	(7) Σ ACTUAL AREA (AC)	(8) TOTAL Q_{BB} OR Q_B (CFS)
71C	1.0	0.2	5.0	1.0	1.0	0.2	2.0
72C	3.0	3.2	13.0	13.9	4.0	3.4	16.2
73C	1.0	0.2	5.0	1.0	5.0	3.6	17.3
74C	2.0	2.3	11.0	12.7	7.0	5.9	28.7
75C	3.0	2.9	16.0	15.5	10.0	8.8	42.2
76C	3.0	2.6	16.0	13.9	13.0	11.4	53.5
77C	2.0	1.5	11.0	8.3	15.0	12.9	65.7 *
78C	2.0	2.1	11.0	11.6	17.0	15.0	75.2 *
79C	1.0	0.4	5.0	2.0	18.0	15.4	77.4 *

* INCLUDES BULKED FLOW

$$\text{COL. (5)} = \frac{\text{COL. (4)}}{\text{COL. (2)}} \times \text{COL. (3)}$$

$$\text{COL. (8)} = \frac{\Sigma \text{ OUTPUT Q}}{\text{COL. (6)}} \times \text{COL. (7)} + \text{BULKED FLOW}$$

81E	2.0	1.8	11.0	9.9	2.0	1.8	9.9
82F	3.0	2.2	16.0	11.7	3.0	2.2	11.7

THE FOLLOWING ARE ADJUSTMENTS TO MODIFIED RATIONAL OUTPUT DUE TO ROUNDING OFF OF AREAS:

1	2	3	4	5	6	7	8
SUBAREA NO. OR JCT. NO.	INPUT AREA (AC)	ACTUAL AREA (AC)	OUTPUT Q OR Q_B (CFS)	ACTUAL Q OR Q_B (CFS)	Σ OUTPUT AREA (AC)	Σ ACTUAL AREA (AC)	TOTAL Q_{BB} OR Q_B IN PIPE
83 A	3.0	3.1	13.0	13.4	3.0	3.1	13.4
84 B	2.0	2.1	11.0	11.6	2.0	2.1	11.6
85 C	3.0	2.5	13.0	10.8	3.0	2.5	10.8
86 D	2.0	1.7	11.0	9.4	2.0	1.7	9.4

THE FOLLOWING ARE ADJUSTMENTS TO MODIFIED RATIONAL OUTPUT DUE TO ROUNDING OFF OF AREAS:

1	2	3	4	5	6	7	8
SUBAREA NO. OR JCT. NO.	INPUT AREA (AC)	ACTUAL AREA (AC)	OUTPUT Q OR Q_B (CFS)	ACTUAL Q OR Q_B (CFS)	Σ OUTPUT AREA (AC)	Σ ACTUAL AREA (AC)	TOTAL Q_{BB} OR Q_B (CFS)
86A	2.0	1.5	11.0	8.3	2.0	1.5	13.8 *
87A	2.0	1.8	11.0	9.9	4.0	3.3	20.6 *
88A	4.0	4.0	12.0	12.0	8.0	7.3	35.6 *
89A	2.0	2.4	11.0	13.2	10.0	9.7	48.2 *
90B	5.0	4.8	16.0	15.4	5.0	4.8	15.4
91C	3.0	2.5	16.0	13.3	3.0	2.5	13.3
92D	2.0	1.8	11.0	9.9	2.0	1.8	9.9
93E	1.0	0.2	5.0	1.0	1.0	0.2	1.0
94F	2.0	1.8	6.0	5.4	2.0	1.8	5.4

* INCLUDES BULKED FLOW

$$\text{COL. (5)} = \frac{\text{COL. (4)}}{\text{COL. (2)}} \times \text{COL. (3)}$$

$$\text{COL. (8)} = \frac{\Sigma \text{OUTPUT Q}}{\text{COL. (6)}} \times \text{COL. (7)} + \text{BULKED FLOW}$$

TIME OF CONCENTRATION CALCULATIONS

13:23:18 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 1A (1A.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	174	.000	.188	9.2	1650.0	1500.0	.0	.00	0	0
1- 2	Nat.Mtn	0	0- 0	174	.000	.188	.0	1650.0	1500.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1770.0	1650.0	.600	.060	174	.000

14:13: 0 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 3A (3A.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	10	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	174	.000	.176	5.8	1425.0	1240.0	.0	.00	0	0
1- 2	Nat.Mtn	0	0- 0	174	.000	.176	.0	1425.0	1240.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
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Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1496.0	1425.0	.355	.060	174	.000

8:56:55 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 5C (5C.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	174	.000	.233	6.7	1625.0	1450.0	.0	.00	0	0
1- 2	Nat.Mtn	0	0- 0	174	.000	.233	.0	1625.0	1450.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1700.0	1625.0	.375	.060	174	.000

CHATSWORTH RIDGE ESTATE
T.C. CALC. 8B (SB.INP)
B & E ENGINEERS BY 03/21/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	9	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.039	2.6	1450.0	1429.5	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.039	.0	1450.0	1429.5	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1451.0	1450.0	.010	.040	65	.420

17:17:43 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.10C (10C.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	8	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	174	.000	.133	6.9	1650.0	1550.0	.0	.00	0	0
1- 2	Nat.Mtn	0	0- 0	174	.000	.133	.0	1650.0	1550.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1710.0	1650.0	.300	.060	174	.000

10:22:22 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.12D (12D.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	174	.000	.280	3.0	1626.0	1486.0	.0	.00	0	0
1- 2	Nat.Mtn	0	0- 0	174	.000	.280	.0	1626.0	1486.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1700.0	1626.0	.370	.060	174	.000

16:56:45 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.17C (17C.INP)
B & E ENGINEERS BY 03/21/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	12	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.010	3.1	1450.0	1445.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.010	.0	1450.0	1445.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1451.0	1450.0	.010	.040	65	.420

14:56:45 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.19C (19C.INP)
B & E ENGINEERS BY 03/21/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	9	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.056	2.5	1421.0	1406.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.056	.0	1421.0	1406.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1423.0	1421.0	.010	.040	65	.420

15:12: 9 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.21C (21C.INP)
B & E ENGINEERS BY 03/21/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	11	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.007	4.6	1391.4	1388.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.007	.0	1391.4	1388.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1393.0	1391.4	.016	.040	65	.420

10: 3: 3 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.23D (23D.INP)
B & E ENGINEERS BY 12/13/99

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Nat.Mtn	0	0- 0	174	.000	.435	5.8	1650.0	1476.0	.0	.00	0	0
1- 2	Nat.Mtn	0	0- 0	174	.000	.435	.0	1650.0	1476.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1650.0	1590.0	.300	.060	174	.000

10:17:42 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.29c (29c.INP)
B & E ENGINEERS BY 03/21/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	13	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.010	4.7	1474.5	1468.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.010	.0	1474.5	1468.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1476.0	1474.5	.015	.040	65	.420

10:23:27 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.29D (29D.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	10	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.017	4.5	1457.2	1443.5	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.017	.0	1457.2	1443.5	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1462.5	1457.2	.053	.014	65	.420

10:26:52 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.32C (32C.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	8	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.072	1.1	1432.5	1406.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.072	.0	1432.5	1406.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
170.0	1436.0	1432.5	.021	.040	65	.420

CHATSWORTH RIDGE ESTATE
T.C. CALC.34D (34D.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	12	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.030	4.8	1475.0	1456.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.030	.0	1475.0	1456.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
170.0	1477.0	1475.0	.012	.040	65	.420

14:24:46 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.36D (36D.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	12	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.010	5.9	1450.5	1443.5	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.010	.0	1450.5	1443.5	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1454.0	1450.5	.035	.040	65	.420

14:26:15 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.39e (39e.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	11	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.005	3.0	1446.7	1444.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.005	.0	1446.7	1444.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1448.0	1446.7	.013	.014	65	.420

14:27:37 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.43C (43C.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.089	1.0	1432.5	1386.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.084	.0	1432.5	1386.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1436.0	1432.5	.035	.014	65	.420

10:28:54 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.46C (46C.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.113	3.2	1384.5	1315.6	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.113	.0	1384.5	1315.6	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
50.0	1385.0	1384.5	.010	.040	65	.420

9:19:55 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.Z.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.48C (48C.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.056	2.9	1310.5	1285.4	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.057	.0	1310.5	1285.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
50.0	1311.0	1310.5	.010	.040	65	.420

10:55:21 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.56C (56C.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.092	1.1	1272.0	1238.1	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.092	.0	1272.0	1238.1	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1280.0	1272.0	.080	.014	65	.420

11:34:45 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.66D (66D.INP)
B & E ENGINEERS BY 03/22/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.064	1.4	1405.7	1377.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.064	.0	1405.7	1377.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
30.0	1406.0	1405.7	.010	.040	65	.420

11:39: 6 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.71C (71C.INP)
B & E ENGINEERS BY 03/23/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.045	3.3	1365.7	1334.7	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.045	.0	1365.7	1334.7	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
30.0	1366.0	1365.7	.010	.040	65	.420

11:43:37 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.74C (74C.INP)
B & E ENGINEERS BY 03/23/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.071	2.3	1336.3	1311.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.071	.0	1336.3	1311.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
35.0	1327.0	1310.0	.486	.040	65	.420

13: 5:14 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.79C (79C.INP)
B & E ENGINEERS BY 03/23/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.420	.082	1.3	1226.0	1172.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.082	.0	1226.0	1172.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
100.0	1236.0	1226.0	.100	.014	65	.420

13:18:29 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC.84B (84B.INP)
B & E ENGINEERS BY 03/23/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	65	.420	.160	.5	1204.0	1192.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.420	.073	1.6	1192.0	1173.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1263.0	1204.0	.295	.060	65	.420

13:19:44 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 88A (88A.INP) offsite ULT_DE
B & E ENGINEERS BY 3/28/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	25	7.	11	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.000	.063	3.5	1310.3	1262.2	.0	.00	0	0
1- 2	Street	1	0- 0	65	.000	.063	.0	1310.3	1262.2	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
115.0	1311.5	1310.3	.010	.040	65	.000

10:39:35 RATIONAL METHOD HYDROLOGY FLOWS calculated by
Vers.2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 90B (90B.INP) offsite ULT_DE
B & E ENGINEERS BY 3/28/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	12	0

Component Area Data:

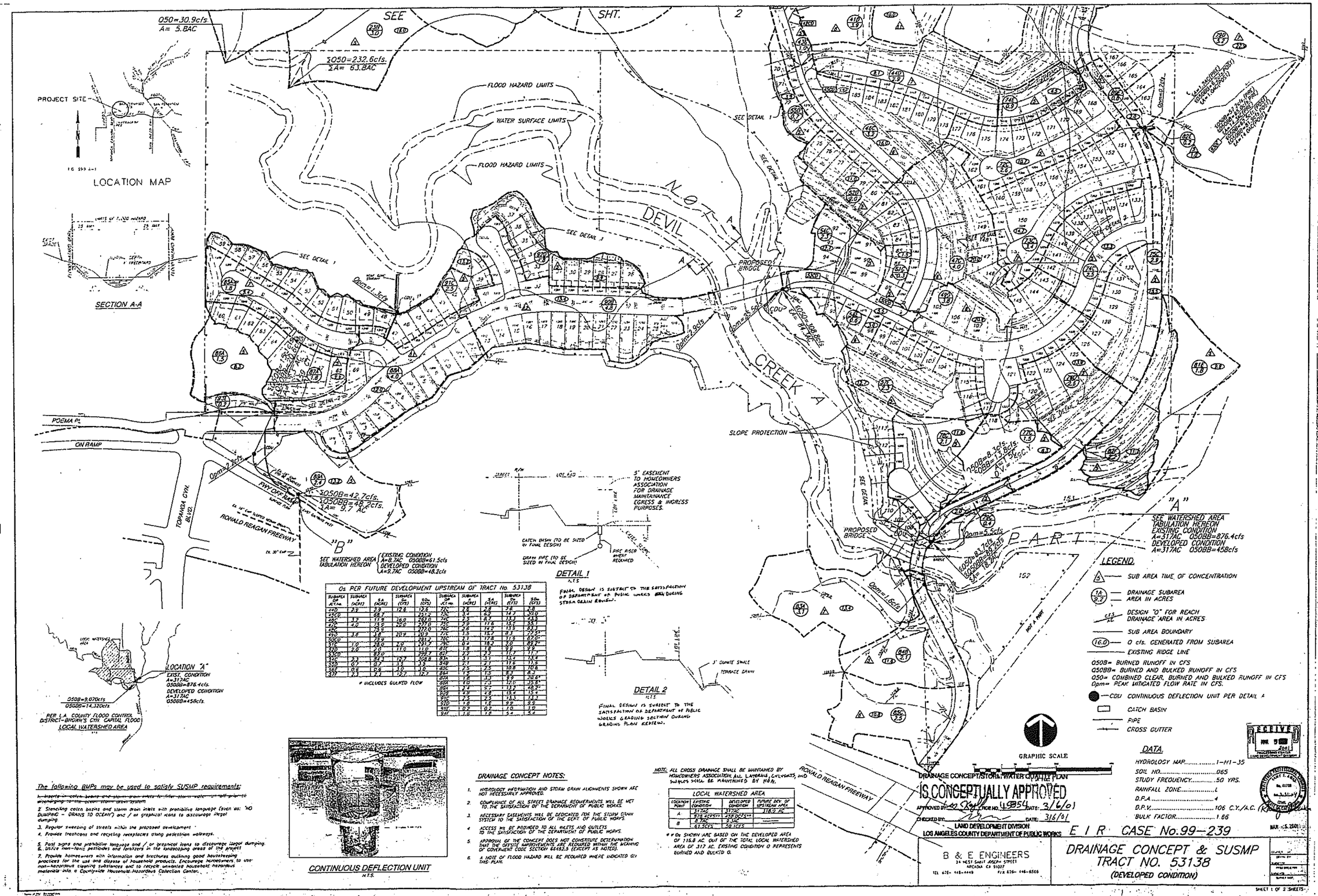
Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Street	1	0- 0	65	.000	.074	5.3	1310.1	1232.0	.0	.00	0	0
1- 2	Street	1	0- 0	65	.000	.074	.0	1310.1	1232.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 6 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lateral Design Q's:
****
Design Q's for laterals are calculated separately using a local Time of Concentration. Those lateral Q's calculated with the Main Line are for Main Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
110.0	1311.0	1310.1	.008	.040	65	.000



Qs PER FUTURE DEVELOPMENT UPSTREAM OF TRACT No. 53138

SUBAREA OR ACTUAL	SUBAREA (ACRE)	Q50 (ACRE)	SUBAREA (CFS)	Q50 (CFS)	SUBAREA OR ACTUAL	SUBAREA (ACRE)	Q50 (ACRE)	SUBAREA (CFS)	Q50 (CFS)
54D	2.9	2.9	12.6	12.6	79D	2.8	2.8	7.6	7.6
54D*		68.7		213.2	79E	3.6	6.2	14.7	30.0
54E	1.7	11.9	16.0	262.0	79F	2.5	8.7	13.3	43.5
54F	4.0	15.9	20.0	277.0	79G	2.9	11.6	15.5	53.1
54G		15.9		277.0	79H	2.6	14.2	11.9	63.2
54H	3.6	3.6	20.9	20.9	79I	1.5	15.7	8.1	71.3
54H*		19.9		281.5	79J	2.1	17.8	11.5	67.0*
57E	1.0	20.0	2.0	281.5	79K	0.4	18.2	2.0	69.2*
57F	2.0	2.0	11.0	11.0	81C	1.8	1.8	9.9	9.9
57G*		22.0		292.5	82I	2.1	2.1	11.2	11.2
57G	3.3	24.3	12.7	108.8	83A	3.1	3.1	13.4	13.4
57H	0.7	0.7	3.3	3.3	84B	2.1	2.1	11.2	11.2
57I	0.6	0.6	3.0	3.0	85C	2.5	2.5	10.8	10.8
57J	2.3	2.3	12.7	12.7	86A	1.5	1.5	8.3	8.3
					87A	1.6	1.3	9.9	7.0*
					88A	1.0	2.3	12.0	15.8*
					89A	2.2	5.2	13.9	48.2*
					90B	4.8	4.8	15.4	15.4
					91C	2.5	2.5	13.3	13.3
					92D	1.6	1.6	9.9	9.9
					93E	0.2	0.2	1.0	1.0
					94F	1.6	1.6	5.4	5.4

* INCLUDES BULKED FLOW

The following BMPs may be used to satisfy SUSMP requirements:

1. Inspect catch basins and storm drain inlets to filter storm water and prevent discharging to the ocean storm drain system.
2. Stenciling catch basins and storm drain inlets with prohibitive language (such as: "NO DUMPING - DRAINS TO OCEAN") and / or graphical icons to discourage illegal dumping.
3. Regular sweeping of streets within the proposed development.
4. Provide trashcans and recycling receptacles along pedestrian walkways.
5. Post signs and prohibitive language and / or graphical icons to discourage illegal dumping.
6. Utilize non-toxic pesticides and fertilizers in the landscaping areas of the project.
7. Provide homeowners with information and brochures outlining good housekeeping practices for the use and disposal of household products. Encourage homeowners to use non-hazardous cleaning substances and to recycle unwanted household hazardous materials with a County-wide Household Hazardous Collection Center.

CONTINUOUS DEFLECTION UNIT
N.T.S.

DRAINAGE CONCEPT NOTES:

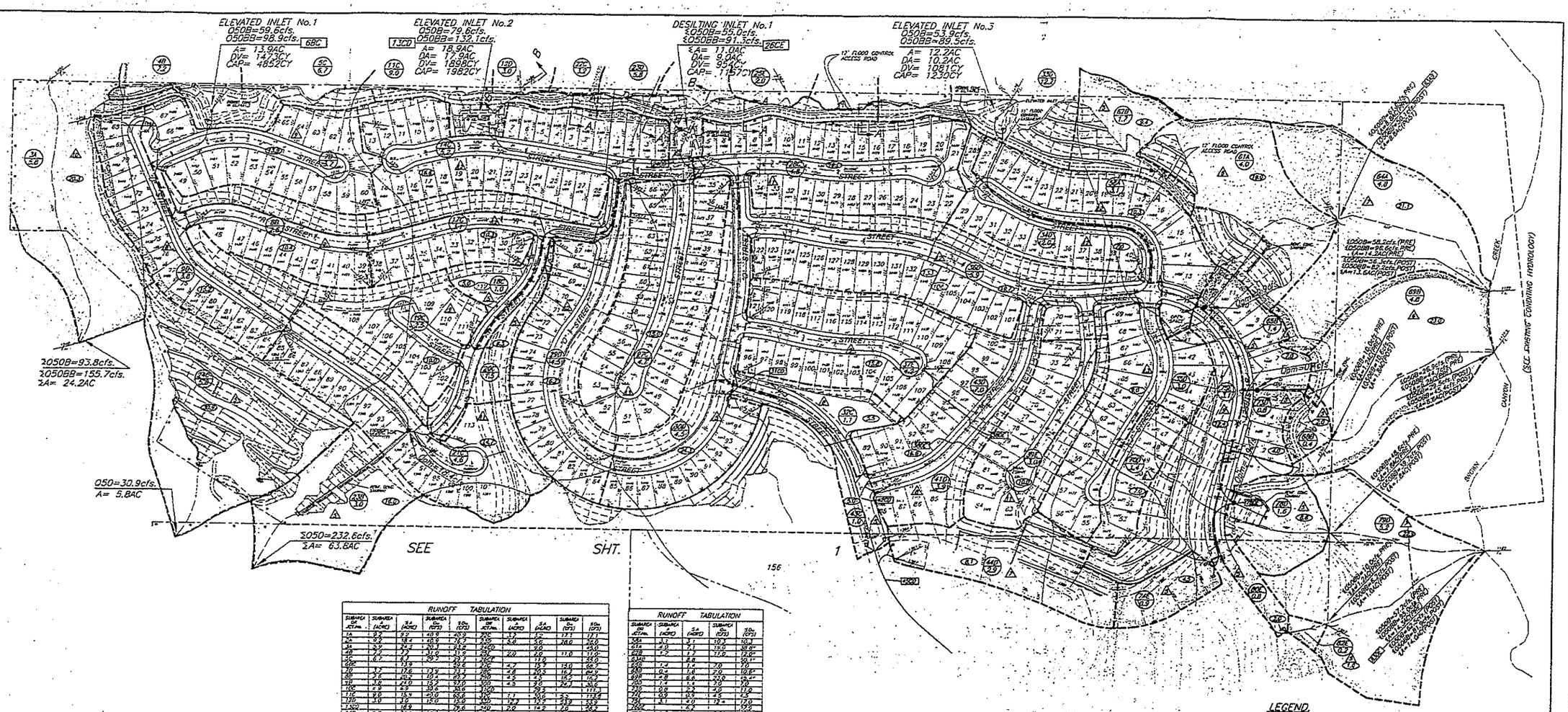
1. HYDROLOGY INFORMATION AND STORM DRAIN ALIGNMENTS SHOWN ARE NOT NECESSARILY APPROVED.
2. COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3. NECESSARY EASEMENTS WILL BE DEDICATED FOR THE STORM DRAIN SYSTEM TO THE SATISFACTION OF THE DEPT. OF PUBLIC WORKS.
4. ACCESS WILL BE PROVIDED TO ALL INLETS AND OUTLETS TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
5. APPROVAL OF THE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5 (EXCEPT AS NOTED).
6. A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.

NOTE: ALL CROSS DRAINAGE SHALL BE MAINTAINED BY HOMEOWNERS ASSOCIATION. ALL LATERALS, CULVERTS, AND SWALES SHALL BE MAINTAINED BY HOA.

LOCAL WATERSHED AREA

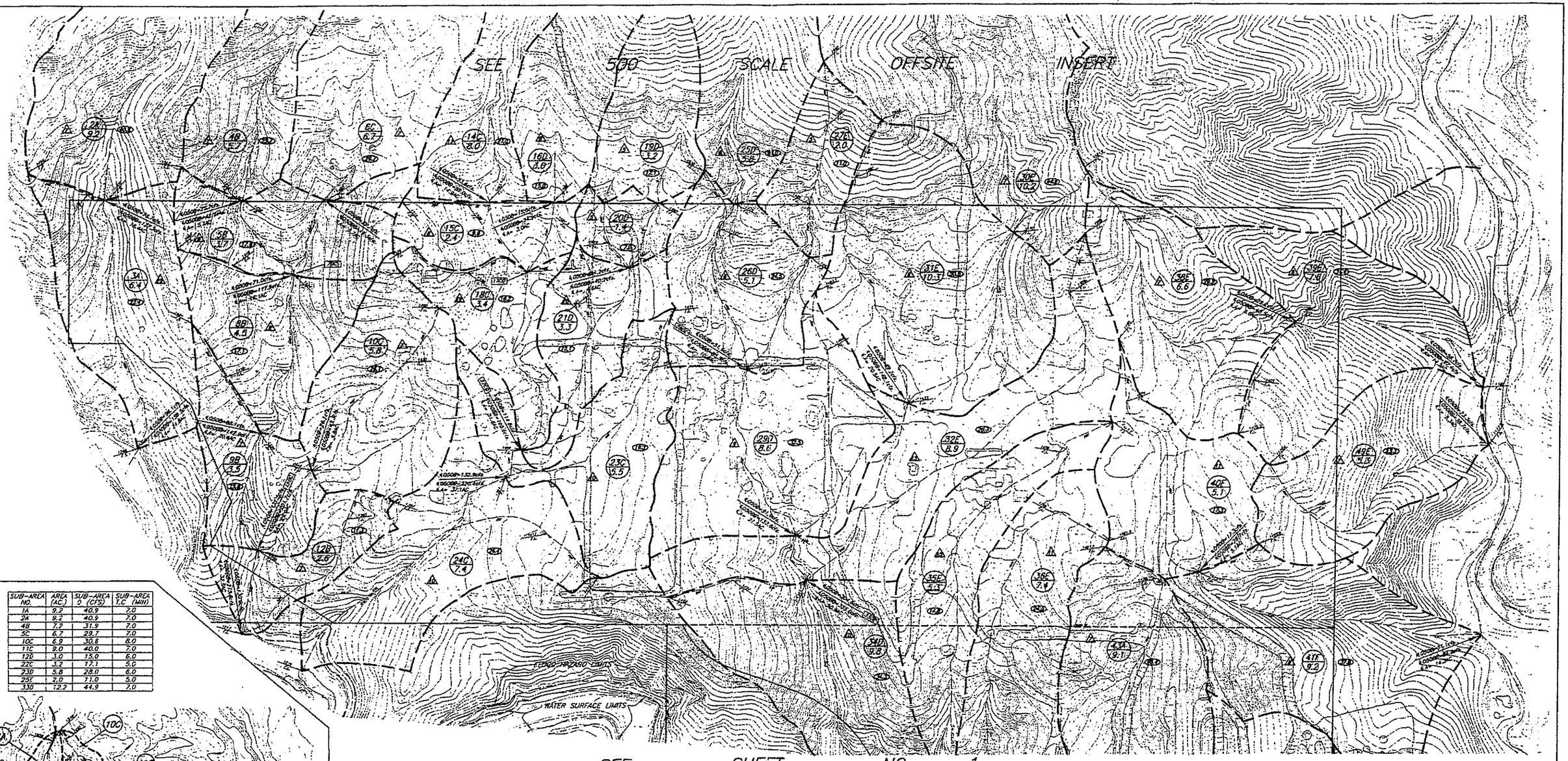
LOCATION POINT	EXISTING CONDITION	DEVELOPED CONDITION	FUTURE DEV. OF UPSTREAM AREA
A	317AC	317AC	
	876.4CFS*	458CFS*	
B	8.7AC	9.7AC	118.0 AC
	61.5CFS	48.2CFS	

* Q's SHOWN ARE BASED ON THE DEVELOPED AREA OF 118.8 AC. OUT OF THE TOTAL LOCAL WATERSHED AREA OF 317 AC. EXISTING CONDITION Q REPRESENTS BURNED AND BULKED Q.

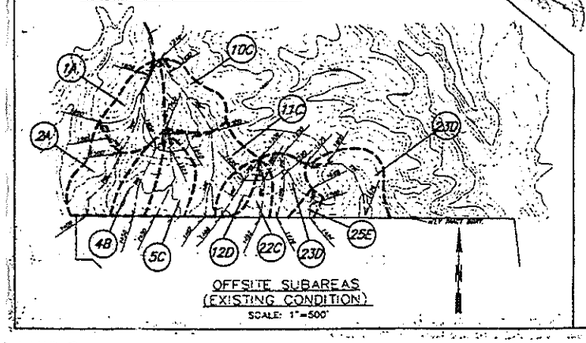


RUNOFF TABULATION									
SUBAREA NO. OR JCT.No.	SUBAREA (ACRES)	Σ A (ACRES)	SUBAREA Q50 (CFS)	ΣQ50 (CFS)	SUBAREA NO. OR JCT.No.	SUBAREA (ACRES)	Σ A (ACRES)	SUBAREA Q50 (CFS)	ΣQ50 (CFS)
1A	9.2	9.2	40.9	40.9	70C	3.2	3.2	17.1	17.1
2A	9.2	18.4	40.9	78.7	72C	5.8	9.0	28.0	45.0
3A	3.9	22.3	20.3	93.8	74C		9.0		45.0
4B	7.2	29.5	31.9	125.7	76C	2.0	11.0	11.0	56.0
5C	6.7	6.7	29.7	29.7	80C		11.0		56.0
6BC		13.9		59.6	82C	4.7	15.7	19.0	66.7
7C	3.2	17.6	17.9	77.5	84C	4.0	19.7	16.7	83.4
8C	3.6	21.2	19.4	96.9	86C	4.5	24.2	18.5	101.9
9B	1.0	22.2	15.2	112.1	88C	4.5	28.7	24.3	126.2
10C	6.9	6.9	30.6	30.6	90C				126.2
11C	9.0	15.9	40.0	65.6	92C	1.1	30.0	5.5	131.7
12D	3.0	18.9	15.0	75.6	94C	12.2	42.2	51.9	183.6
13CD		18.9		79.6	96D	2.0	44.2	7.0	190.6
14C	5.2	24.1	16.6	96.2	98D	3.0	47.2	9.0	199.6
15C	3.1	27.2	10.3	106.5	100C	5.5	52.7	19.7	219.3
16C	1.0	28.2	3.0	109.5	102C	4.3	57.0	13.8	233.1
18C	2.5	30.7	10.0	119.5	104C		57.0		233.1
20C	1.5	32.2	8.1	127.6	106C	3.0	60.0	10.0	243.1
21C	4.0	36.2	14.7	142.3	400C		60.0		243.1
22C		60.8		227.5	410	3.9	63.9	16.6	254.7
23D	3.0	63.8	18.0	237.6	420D		64.8		255.6
25E	5.8	5.8	30.9	30.9	430	1.0	65.8	5.0	258.6
					440	2.3	68.1	12.6	271.2
					450D		68.1		271.2

RUNOFF TABULATION				
SUBAREA NO. OR JCT.No.	SUBAREA (ACRES)	Σ A (ACRES)	SUBAREA Q50 (CFS)	ΣQ50 (CFS)
52A	3.1	3.1	10.3	10.3
61A	4.0	7.1	19.0	29.3
61B	1.2	7.3	11.0	40.3
63AB		7.3		40.3
63B	1.4	8.8	7.0	47.3
64B	0.4	9.2	2.0	49.3
66B	2.8	12.0	14.0	63.3
68B	1.4	13.4	7.0	70.3
69B	2.8	16.2	14.0	84.3
70B	1.4	17.6	7.0	91.3
71B	0.8	18.4	4.0	95.3
72B	0.9	19.3	4.5	99.8
73B	1.4	20.7	7.0	106.8
74B	0.8	21.5	4.0	110.8
75B	0.9	22.4	4.5	115.3
76B	1.4	23.8	7.0	122.3
77B	0.8	24.6	4.0	126.3
78B	0.9	25.5	4.5	130.8
79B	1.4	26.9	7.0	137.8
80B	0.8	27.7	4.0	141.8
81B	0.9	28.6	4.5	146.3
82B	1.4	30.0	7.0	153.3
83B	0.8	30.8	4.0	157.3
84B	0.9	31.7	4.5	161.8
85B	1.4	33.1	7.0	168.8
86B	0.8	33.9	4.0	172.8
87B	0.9	34.8	4.5	177.3
88B	1.4	36.2	7.0	184.3
89B	0.8	37.0	4.0	188.3
90B	0.9	37.9	4.5	192.8
91B	1.4	39.3	7.0	199.8
92B	0.8	40.1	4.0	203.8
93B	0.9	41.0	4.5	208.3
94B	1.4	42.4	7.0	215.3
95B	0.8	43.2	4.0	219.3
96B	0.9	44.1	4.5	223.8
97B	1.4	45.5	7.0	230.8
98B	0.8	46.3	4.0	234.8
99B	0.9	47.2	4.5	239.3
100B	1.4	48.6	7.0	246.3
101B	0.8	49.4	4.0	250.3
102B	0.9	50.3	4.5	254.8
103B	1.4	51.7	7.0	261.8
104B	0.8	52.5	4.0	265.8
105B	0.9	53.4	4.5	270.3
106B	1.4	54.8	7.0	277.3
107B	0.8	55.6	4.0	281.3
108B	0.9	56.5	4.5	285.8
109B	1.4	57.9	7.0	292.8
110B	0.8	58.7	4.0	296.8
111B	0.9	59.6	4.5	301.3
112B	1.4	61.0	7.0	308.3
113B	0.8	61.8	4.0	312.3
114B	0.9	62.7	4.5	316.8
115B	1.4	64.1	7.0	323.8
116B	0.8	64.9	4.0	327.8
117B	0.9	65.8	4.5	332.3
118B	1.4	67.2	7.0	339.3
119B	0.8	68.0	4.0	343.3
120B	0.9	68.9	4.5	347.8
121B	1.4	70.3	7.0	354.8
122B	0.8	71.1	4.0	358.8
123B	0.9	72.0	4.5	363.3
124B	1.4	73.4	7.0	370.3
125B	0.8	74.2	4.0	374.3
126B	0.9	75.1	4.5	378.8
127B	1.4	76.5	7.0	385.8
128B	0.8	77.3	4.0	389.8
129B	0.9	78.2	4.5	394.3
130B	1.4	79.6	7.0	401.3
131B	0.8	80.4	4.0	405.3
132B	0.9	81.3	4.5	409.8
133B	1.4	82.7	7.0	416.8
134B	0.8	83.5	4.0	420.8
135B	0.9	84.4	4.5	425.3
136B	1.4	85.8	7.0	432.3
137B	0.8	86.6	4.0	436.3
138B	0.9	87.5	4.5	440.8
139B	1.4	88.9	7.0	447.8
140B	0.8	89.7	4.0	451.8
141B	0.9	90.6	4.5	456.3
142B	1.4	92.0	7.0	463.3
143B	0.8	92.8	4.0	467.3
144B	0.9	93.7	4.5	471.8
145B	1.4	95.1	7.0	478.8
146B	0.8	95.9	4.0	482.8
147B	0.9	96.8	4.5	487.3
148B	1.4	98.2	7.0	494.3
149B	0.8	99.0	4.0	498.3
150B	0.9	99.9	4.5	502.8
151B	1.4	101.3	7.0	509.8
152B	0.8	102.1	4.0	513.8
153B	0.9	103.0	4.5	518.3
154B	1.4	104.4	7.0	525.3
155B	0.8	105.2	4.0	529.3
156B	0.9	106.1	4.5	533.8
157B	1.4	107.5	7.0	540.8
158B	0.8	108.3	4.0	544.8
159B	0.9	109.2	4.5	549.3
160B	1.4	110.6	7.0	556.3
161B	0.8	111.4	4.0	560.3
162B	0.9	112.3	4.5	564.8
163B	1.4	113.7	7.0	571.8
164B	0.8	114.5	4.0	575.8
165B	0.9	115.4	4.5	580.3
166B	1.4	116.8	7.0	587.3
167B	0.8	117.6	4.0	591.3
168B	0.9	118.5	4.5	595.8
169B	1.4	119.9	7.0	602.8
170B	0.8	120.7	4.0	606.8
171B	0.9	121.6	4.5	611.3
172B	1.4	123.0	7.0	618.3
173B	0.8	123.8	4.0	622.3
174B	0.9	124.7	4.5	626.8
175B	1.4	126.1	7.0	633.8
176B	0.8	126.9	4.0	637.8
177B	0.9	127.8	4.5	642.3
178B	1.4	129.2	7.0	649.3
179B	0.8	130.0	4.0	653.3
180B	0.9	130.9	4.5	657.8
181B	1.4	132.3	7.0	664.8
182B	0.8	133.1	4.0	668.8
183B	0.9	134.0	4.5	673.3
184B	1.4	135.4	7.0	680.3
185B	0.8	136.2	4.0	684.3
186B	0.9	137.1	4.5	688.8
187B	1.4	138.5	7.0	695.8
188B	0.8	139.3	4.0	699.8
189B	0.9	140.2	4.5	704.3
190B	1.4	141.6	7.0	711.3
191B	0.8	142.4	4.0	715.3
192B	0.9	143.3	4.5	719.8
193B	1.4	144.7	7.0	726.8
194B	0.8	145.5	4.0	730.8
195B	0.9	146.4	4.5	735.3
196B	1.4	147.8	7.0	742.3
197B	0.8	148.6	4.0	746.3
198B	0.9	149.5	4.5	750.8
199B	1.4	150.9	7.0	757.8
200B	0.8	151.7	4.0	761.8
201B	0.9	152.6	4.5	766.3
202B	1.4	154.0	7.0	773.3
203B	0.8	154.8	4.0	777.3
204B	0.9	155.7	4.5	781.8
205B	1.4	157.1	7.0	788.8
206B	0.8	157.9	4.0	792.8
207B	0.9	158.8	4.5	797.3
208B	1.4	160.2	7.0	804.3
209B	0.8	161.0	4.0	808.3
210B	0.9	161.9	4.5	812.8
211B	1.4	163.3	7.0	819.8
212B	0.8	164.1	4.0	823.8
213B	0.9	165.0	4.5	828.3
214B	1.4	166.4	7.0	835.3
215B	0.8	167.2	4.0	839.3
216B	0.9	168.1	4.5	843.8
217B	1.4	169.5	7.0	850.8
218B	0.8	170.3	4.0	854.8
219B	0.9	171.2	4.5	859.3
220B	1.4	172.6	7.0	866.3
221B	0.8	173.4	4.0	870.3
222B	0.9	174.3	4.5	874.8
223B	1.4	175.7	7.0	881.8
224B	0.8	176.5	4.0	885.8
225B	0.9	177.4	4.5	890.3
226B	1.4	178.8	7.0	897.3
227B	0.8	179.6	4.0	901.3
228B	0.9	180.5	4.5	905.8
229B	1.4	181.9	7.0	912.8
230B	0.8	182.7	4.0	916.8
231B	0.9	183.6	4.5	921.3
232B	1.4	185.0	7.0	928.3
233B	0.8	185.8	4.0	932.3
234B	0.9	186.7	4.5	936.8
235B	1.4	188.1	7.0	943.8
236B	0.8	188.9	4.0	947.8
237B	0.9	189.8	4.5	952.3
238B	1.4	191.2	7.0	959.3
239B	0.8	192.0	4.0	963.3
240B	0.9	192.9	4.5	967.8
241B	1.4	194.3	7.0	974.8
242B	0.8	195.1	4.0	978.8
243B	0.9	196.0	4.5	983.3
244B	1.4	197.4	7.0	990.3
245B	0.8	198.2	4.0	994.3
246B	0.9	199.1	4.5	998.8
247B	1.4	200.5	7.0	1005.8
248B	0.8	201.3	4.0	1009.8
249B	0.9	202.2	4.5	1014.3
250B	1.4	203.6	7.0	1021.3
251B	0.8	204.4	4.0	1025.3
252B	0.9	205.3	4.5	1029.8
253B	1.4	206.7	7.0	1036.8
254B	0.8	207.5	4.0	1040.8
255B	0.9	208.4	4.5	1045.3
256B	1.4	209.8	7.0	1052.3
257B	0.8	210.6	4.0	1056.3
258B	0.9	211.5	4.5	1060.8
259B	1.4	212.9	7.0	1067.8
260B	0.8	213.7	4.0	1071.8
261B	0.9	214.6	4.5	1076.3
262B	1.4	216.0	7.0	1083.3
263B	0.8	216.8	4.0	1087.3
264B	0.9	217.7	4.5	1091.8
265B	1.4	219.1	7.0	1098.8
266B	0.8	219.9	4.0	1102.8
267B	0.9	220.8	4.5	1107.3
268B	1.4	222.2	7.0	1114.3
269B	0.8	223.0	4.0	1118.3
270B	0.9	223.9	4.5	1122.8
271B	1.4	225.3	7.0	1129.8
272B	0.8	226.1	4.0	1133.8
273B	0.9	227.0	4.5	1138.3
274B	1.4	228.4	7.0	1145.3
275B	0.8	229.2	4.0	1149.3
276B	0.9	230.1	4.5	1153.8
277B	1.4	231.5	7.0	1160.8
278B	0.8	232.3	4.0	1164.8
279B	0.9	233.2	4.5	1169.3
280B	1.4	234.6	7.0	1176.3
281B	0.8	235.4	4.0	1180.3
282B	0.9	236.3	4.5	1184.8
283B	1.4	237.7	7.0	1191.8
284B	0.8	238.5	4.0	1195.8
285B	0.9	239.4	4.5	1200.3
286B	1.4	240.8	7.0	1207.3
287B	0.8	241.6	4.0	1211.3
288B	0.9	242.5	4.5	1215.8
289B	1.4	243.9	7.0	1222.8
290B	0.8	244.7	4.0	1226.8
291B	0.9	245.6	4.5	1231.3
292B	1.4	247.0	7.0	1238.3
293B	0.8	247.8	4.0	1242.3
294B	0.9	248.7	4.5	1246.8
295B	1.4	250.1	7.0	1253.8
296B	0.8	250.9	4.0	1257.8
297B	0.9	251.8	4.5	1262.3
298B	1.4	253.2	7.0	1269.3
299B	0.8	254.0	4.0	1273.3
300B	0.9	254.9	4.5	1277.8
301B	1.4	256.3	7.0	1284.8
302B	0.8	257.1	4.0	1288.8
303B	0.9	258.0	4.5	1293.3
304B	1.4	259.4	7.0	1300.3
305B	0.8	260.2	4.0	1304.3
306B	0.9	261.1	4.5	1308.8
307B	1.4	262.5	7.0	1315.8
308B	0.8	263.3	4.0	1319.8
309B	0.9	264.2	4.5	1324.3
310B	1.4	265.6	7.0	1331.3
311B	0.8	266.4	4.0	1335.3
312B	0.9	267.3	4.5	1339.8
313B	1.4	268.7	7.0	1346.8
314B	0.8	269.5	4.0	1350.8
315B	0.9	270.4	4.5	1355.3
316B	1.4	271.8	7.0	1362.3
317B	0.8	272.6	4.0	1366.3
318B	0.9	273.5	4.5	1370.8
319B	1.4	274.9	7.0	1377.8
320B	0.8	275.7	4.0	1381.8
321B	0.9	276.6	4.5	1386.3
322B	1.4	277.9	7.0	1393.3
323B	0.8	278.7	4.0	1397.3
324B	0.9	279.6	4.5	1401.8
325B	1.4	281.0	7.0	1408.8
326B	0.8	281.8	4.0	1412.8
327B	0.9	282.7	4.5	1417.3
328B	1.4	284.1	7.0	1424.3
329B	0.8	284.9	4.0	1428.3
330B	0.9	285.8	4.5	1432.8
331B	1.4	287.2	7.0	1439.8
332B	0.8	288.0	4.0	1443.8
333B	0.9	288.9	4.5	1448.3
334B	1.4	290.3	7.0	1455.3
335B	0.8	291.1	4.0	1459.3
336B	0.9	292.0	4.5	1463.8
337B	1.4	293.4	7.0	1470.8
338B	0.8	294.2	4.0	1474.8
339B	0.9	295.1	4.5	1479.3
340B	1.4	296.5	7.0	1486.3
341B	0.8	297.3	4.0	1490.3
342B	0.9	298.2	4.5	1494.8
343B	1.4	299.6	7.0	1501.8
344B	0.8	300.4	4.0	1505.8
345B	0.9	301.3	4.5	1510.3
346B	1.4	302.7	7.0	1517.3
347B	0.8	303.5	4.0	1521.3
348B	0.9	304.4	4.5	1525.8
349B	1.4	305.8	7.0	1532.8
350B	0.8	306.6	4.0	1536.8
351B	0.9	307.5	4.5	1541.3
352B	1.4	308.9	7.0	1548.3
353B	0.8	309.7	4.0	1552.3
354B	0.9	310.6	4.5	1556.8
355B	1.4	312.0	7.0	1563.8
356B	0.8	312.8	4.0	1567.8
357B	0.9	313.7	4.5	1572.3
358B	1.4	315.1	7.0	1579.3
359B	0.8	315.9	4.0	1583.3
360B	0.9	316.8	4.5	1587.8
361B	1.4	318.2	7.0	1594.8
362B	0.8	319.0	4.0	1598.8
363B	0.9	319.9	4.5	1603.3
364B	1.4	321.3	7.0	1610.3
365B	0.8	322.1	4.0	1614.3
366B	0.9	323.0	4.5	1618.8
367B	1.4	324.4	7.0	1625.8
368B	0.8	325.2	4.0	1629.8
369B	0.9	326.1	4.5	1634.3
370B	1.4	327.5	7.0	1641.3
371B	0.8	328.3	4.0	1645.3
372B	0.9	329.2	4.5	1649.8
373B	1.4	330.6	7.0	1656.8
374B	0.8	331.4	4.0	1660.8
375B	0.9	332.3	4.5	1665.3
376B	1.4	333.7	7.0	1672.3
377B	0.8	334.5	4.0	1676.3
378B	0.9	335.4	4.5	1680.8
379B	1.4	336.8	7.0	1687.8
380B	0.8	337.6	4.0	1691.8
381B	0.9	338.5	4.5	1696.3
382B	1.4	339.9	7.0	1703.3
383B	0.8	340.7	4.0	1707.3
384B	0.9	341.6	4.5	1711.8
385B	1.4	343.0	7.0	1718.8
386B	0.8	343.8	4.0	1722.8
387B	0.9	344.7	4.5	1727.3
388B	1.4	346.1	7.0	1734.3
389B	0.8	346.9	4.0	1738.3
390B	0.9	347.8	4.5	1742.8
391B	1.4	349.2	7.0	1749.8
392B	0.8	350.0	4.0	1753.8
393B	0.9	350.9	4.5	1758.3
394B	1.4	352.3	7.0	1765.3
395B	0.8	353.1	4.0	1769.3
396B	0.9	354.0	4.5	1773.8
397B	1.4	355.4	7.0	1780.8
398B	0.8	356.2	4.0	1784.8
399B	0.9	357.1	4.5	1789.3
400B	1.4	358.5	7.0	1796.3
401B	0.8	359.3	4.0	1800.3
402B	0.9	360.2	4.5	1804.8
403B	1.4	361.6	7.0	1811.8
404B	0.8	362.4	4.0	1815.8
405B	0.9	363.3	4.5	1820.3
406B	1.4	364.7	7.0	1827.3
407B	0.8	365.5	4.0	1831.3
408B	0.9	366.4	4.5	1835.8
409B	1.4	367.8	7.0	1842.8
410B	0.8	368.6	4.0	1846.8
411B	0.9	369.5	4.5	1851.3
412B	1.4	370.9	7.0	1858.3
413B	0.8	371.7	4.0	1862.3
414B	0.9	372.6	4.5	1866.8
415B	1.4	374.0	7.0	1873.8
416B	0.8	374.8	4.0	1877.8
417B	0.9	375.7	4.5	1882.3
418B	1.4	377.1	7.0	1889.3
419B	0.8	377.9	4.0	1893.3
420B	0.9	378.8	4.5	1897.8
421B	1.4	380.2	7.0	1904.8
422B	0.8	381.0	4.0	1908.8
423B	0.9	381.9	4.5	1913.3
424B	1.4	383.3	7.0	1920.3
425B	0.8	384.1	4.0	1924.3
426B	0.9	385.0	4.5	1928.8
427B	1.4	386.4	7.0	1935.8
428B	0.8	387.2	4.0	1939.8
429B	0.9	388.1	4.5	1944.3
430B	1.4	389.5	7.0	1951.3
431B	0.8	390.3	4.0	1955.3
432B	0.9	391.2	4.5	1959.8
433B	1.4	392.6	7.0	1966.8
434B	0.8	393.4	4.0	1970.8
435B	0.9	394.3	4.5	1975.3
436B	1.4	395.7	7.0	1982.3
437B	0.8	396.5	4.0	1986.3
438B	0.9	397.4	4.5	1990.8
439B	1.4	398.8	7.0	1997.8
440B	0.8	399.6	4.0	2001.8
441B	0.9	400.5	4.5	2006.3
442B	1.4	401.9	7.0	2013.3
443B	0.8	402.7	4.0	2017.3
444B	0.9	403.6	4.5	2021.8
445B	1.4	405.0	7.0	2028.8
446B	0.8	405.8	4.0	2032.8
447B	0.9	406.7	4.5	2037.3
448B	1.4	408.1	7.0	2044.3
449B	0.8	408.9	4.0	2048.3
450B	0.9	409.8	4.5	2052.8
451B	1.4	411.2	7.0	2059.8
452B	0.8	412.0	4.0	2063.8
453B	0.9	412.9	4.5	2068.3
454B	1.4	414.3	7.0	2075.3
455B	0.8	415.1	4.0	2079.3
456B	0.9	416.0	4.5	2083.8
457B	1.4	417.4	7.0	2090.8
458B	0.8	418.2	4.0	2094.8
459B	0.9	419.1	4.5	2099.3
460B	1.4	420.5	7.0	2106.3
461B	0.8	421.3	4.0	2110.3
462B	0.9	422.2	4.5	2114.8
463B	1.4	423.6	7.0	2121.8
464B	0.8	424.4	4.0	2125.8
465B	0.9	425.3	4.5	2130.3
466B	1.4	426.7	7.0	2137.3
467B	0.8	427.5	4.0	2141.3
468B	0.9	428.4	4.5	2145.8
469B	1.4	429.8	7.0	2152.8
470B	0.8	430.6	4.0	2156.8
471B	0.9	431.5	4.5	2161.3
472B	1.4	432.9	7.0	2168.3
473B	0.8	433.7	4.0	2172.3
474B	0.9	434.6	4.5	2176.8
475B	1.4	436.0	7.0	2183.8
476B	0.8	436.8	4.0	2187.8
477B	0.9	437.7	4.5	2192.3
478B	1.4	439.1	7.0	2199.3
479B	0.8	439.9	4.0	2203.3
480B	0.9	440.8	4.5	2207.8
481B	1.4	442.2	7.0	2214.8
482B	0.8	443.0	4.0	2218.8
483B	0.9	443.9	4.5	2223.3
484B	1.4	445.3	7.0	2230.3
485B	0.8	446.1	4.0	2234.3
486B	0.9	447.0	4.5	2238.8
487B	1.4	448.4	7.0	2245.8
488B	0.8	449.2	4.0	2249.8
489B	0.9	450.1	4.5	2254.3
490B	1.4	451.5	7.0	2261.3
491B	0.8	452.3	4.0	2265.3
492B	0.9	453.2	4.5	2269.8
493B	1.4	454.6	7.0	2276.8
494B	0.8	455.4	4.0	2280.8
495B	0.9	456.3	4.5	2285.3
496B	1.4	457.7	7.0	2292.3
497B	0.8	458.5	4.0	2296.3
498B	0.9	459.4	4.5	2300.8
499B	1.4	460.8	7.0	2307.8
500B	0.8	461.6	4.0	2311.8
501B	0.9	462.5	4.5	2316.3
502B	1.4	463.9	7.0	2323.3
503B	0.8	464.7	4.0	2327.3
504B	0.9	465.6	4.5	2331.8
505B	1.4	467.0	7.0	2338.8
506B	0.8	467.8	4.0	2342.8
507B	0.9	468.7	4.5	2347.3
508B	1.4	470.1	7.0	2354.3
509B	0.8	470.9	4.0	2358.3
510B	0.9	471.8	4.5	2362.8
511B	1.4	473.2	7.0	2369.8
512B	0.8	474.0	4.0	2373.8
513B	0.9	474.9	4.5	2378.3
514B	1.4	476.3	7.0	2385.3
515B	0.8



SUB-AREA NO.	AREA (AC.)	SUB-AREA Q (CFS)	SUB-AREA T.C. (MIN)
1A	9.2	40.9	7.0
2A	9.2	40.9	7.0
4B	7.2	31.9	7.0
5C	6.7	28.7	7.0
10C	6.9	30.6	6.0
11C	9.0	40.0	7.0
12D	3.0	15.0	6.0
22C	3.2	17.1	5.0
23D	5.8	28.0	6.0
25E	2.0	11.0	5.0
33D	12.2	44.9	7.0



OFFSITE SUBAREAS
(EXISTING CONDITION)
SCALE: 1"=500'

SEE SHEET NO. 1

LEGEND.

- SUB AREA TIME OF CONCENTRATION
- 1A / 9.2 — DRAINAGE SUBAREA / AREA IN ACRES
- L/S / AC — DESIGN "Q" FOR REACH / DRAINAGE AREA IN ACRES
- SUB AREA BOUNDARY
- Q cfs. GENERATED FROM SUBAREA

DATA.

HYDROLOGY MAP.....1-H1-35
SOIL NO.....065
STUDY FREQUENCY.....50 YRS.
RAINFALL ZONE.....1
D.P.A.....4
D.P.V.....106 C.Y./A.C.
BULK FACTOR.....1.66

GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.

DRAINAGE CONCEPT FOR TRACT NO. 53138

(EXISTING CONDITION)

NO.	DATE	DESCRIPTION	BY

B & E ENGINEERS
24 WEST SAINT JOSEPH STREET
ARCADIA, CA 91007
TEL. 626-446-4449 FAX 626-446-6566

SHEET 2 OF 2 SHEETS

Devil Canyon Water Surface Profile
Assuming Removal of Existing Dam

WATER SURFACE PROFILE - TITLE CARD LISTING

NG LINE NO 1 IS -

CHATSWORTH RIDGE ESTATE B AND E ENGINEERS .

NG LINE NO 2 IS -

WSP OF EXIST. DEVIL CANYON WATERCOURSE FN(DEVILCYN.INP)

NG LINE NO 3 IS -

JN 99610 ENTERED BY B.R. 12/16/99

ADD 1000 TO ELEVS. SHOWN IN CALC.

2/20/1999
9:44

F0515P

WATER SURFACE PROFILE - CROSS SECTION POINT LISTING

SECT NO	NO OF POINTS	X(1) , Y(1) X(8) , Y(8)	X(2) , Y(2) X(9) , Y(9)	X(3) , Y(3) X(10) ,Y(10)	X(4) , Y(4) X(11) ,Y(11)	X(5) , Y(5) X(N) , Y(N)	X(6) , Y(6) X(N+1),Y(N+1)	X(7) , Y(7) X(99) ,Y(99)
1	9	130.00 150.00 257.00 140.00	145.00 140.00 280.00 150.00	160.00 130.00	165.00 128.00	200.00 126.00	225.00 126.00	235.00 130.00
2	9	142.00 150.00 270.00 140.00	160.00 140.00 290.00 150.00	175.00 130.00	180.00 128.00	200.00 127.00	240.00 128.00	250.00 130.00
3	7	135.00 150.00	152.00 140.00	177.00 132.00	200.00 130.00	206.00 132.00	221.00 140.00	249.00 150.00
4	9	130.00 170.00 250.00 162.00	150.00 168.00 270.00 170.00	180.00 160.00	195.00 150.00	200.00 140.00	212.00 150.00	238.00 160.00
5	9	106.00 170.00 258.00 164.00	115.00 168.00 305.00 170.00	172.00 166.00	185.00 160.00	200.00 150.00	215.00 150.00	235.00 162.00
6	10	45.00 180.00 228.00 166.00	92.00 170.00 242.00 168.00	122.00 168.00 270.00 160.00	166.00 164.00	183.00 164.00	200.00 160.00	212.00 164.00
7	8	11.00 190.00 320.00 190.00	48.00 180.00	102.00 168.00	200.00 166.00	265.00 168.00	305.00 170.00	310.00 180.00
8	8	110.00 190.00 314.00 190.00	142.00 170.00	160.00 168.00	200.00 167.00	225.00 168.00	253.00 170.00	294.00 180.00
9	9	78.00 200.00 317.00 180.00	99.00 190.00 365.00 200.00	114.00 180.00	126.00 172.00	166.00 170.00	200.00 168.00	280.00 170.00
10	8	77.00 200.00 245.00 200.00	106.00 190.00	140.00 180.00	160.00 172.00	200.00 170.00	215.00 172.00	230.00 180.00
11	7	127.00 200.00	152.00 180.00	172.00 174.00	200.00 172.00	218.00 174.00	240.00 180.00	255.00 200.00
12	7	138.00 210.00	170.00 180.00	180.00 176.00	200.00 174.00	227.00 176.00	238.00 180.00	255.00 210.00
13	8	103.00 210.00 253.00 210.00	140.00 200.00	160.00 180.00	175.00 178.00	200.00 176.00	225.00 178.00	230.00 180.00
14	8	130.00 210.00 270.00 210.00	155.00 200.00	168.00 190.00	178.00 182.00	200.00 180.00	230.00 182.00	240.00 190.00
15	8	135.00 220.00 260.00 220.00	155.00 200.00	175.00 190.00	182.00 184.00	200.00 182.00	218.00 184.00	226.00 190.00
16	10	95.00 220.00 245.00 200.00	155.00 200.00 265.00 210.00	162.00 190.00 283.00 220.00	170.00 186.00	200.00 184.00	215.00 186.00	233.00 190.00

WATER SURFACE PROFILE - ELEMENT CARD LISTING

```
ENT NO   1 IS A SYSTEM OUTLET      *         *     *
                U/S DATA   STATION    INVERT  SECT                                W S ELEV
                                0.00  126.00    1                                    0.00

ENT NO   2 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                              250.00  127.00    2             0.060

ENT NO   3 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                              550.00  130.00    3             0.060

ENT NO   4 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                              740.00  140.00    4             0.060

ENT NO   5 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                              880.00  150.00    5             0.060

ENT NO   6 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             1235.00  160.00    6             0.060

ENT NO   7 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             1435.00  166.00    7             0.060

ENT NO   8 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             1680.00  167.00    8             0.060

ENT NO   9 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             1960.00  168.00    9             0.060

ENT NO  10 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             2080.00  170.00   10             0.060

ENT NO  11 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             2360.00  172.00   11             0.060

ENT NO  12 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             2680.00  174.00   12             0.060

ENT NO  13 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             2920.00  176.00   13             0.060

ENT NO  14 IS A TRANSITION         *         *     *
                U/S DATA   STATION    INVERT  SECT              N
                             3000.00  180.00   14             0.060
```

WATER SURFACE PROFILE LISTING

CHATSWORTH RIDGE ESTATE B AND E ENGINEERS
WSP OF EXIST. DEVIL CANYON WATERCOURSE FN(DEVILCYN.INP)
JN 99610 ENTERED BY B.R. 12/16/99

JN	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVGPR
%	SO					SF AVE	HF		NORM DEPTH			ZR		
.00	126.00	11.191	137.191	14320.0	16.56	4.256	141.447		11.191		1		0	0.00
STR	0.00400					.015926	3.98							
.00	127.00	17.556	144.556	14320.0	8.72	1.180	145.736		10.804		2		0	0.00
STR	0.01000													
.00	130.00	10.975	140.975	14320.0	29.20	13.239	154.214		15.169		3		0	0.00
STR	0.05263					.074955	14.24							
.00	140.00	24.915	164.916	14320.0	15.89	4.427	169.343		24.915		4		0	0.00
STR	0.07143					.021905	3.07							
.00	150.00	21.140	171.140	14320.0	10.01	1.557	172.697		19.300		5		0	0.00
STR	0.02817					.010592	3.76							
.00	160.00	15.167	175.167	14320.0	9.20	1.316	176.483		12.218		6		0	0.00
STR	0.03000					.006279	1.26							
.00	166.00	11.132	177.132	14320.0	6.58	0.672	177.804		6.699		7		0	0.00
STR	0.00408					.008077	1.98							
.00	167.00	11.146	178.146	14320.0	11.00	1.879	180.025		8.980		8		0	0.00
STR	0.00357					.007665	2.15							
.00	168.00	13.623	181.623	14320.0	6.58	0.669	182.292		7.851		9		0	0.00
STR	0.01667													
.00	170.00	12.370	182.370	14320.0	16.65	4.306	186.676		12.370		10		0	0.00
STR	0.00714					.016630	4.66							
0.00	172.00	18.061	190.061	14320.0	9.98	1.547	191.608		12.363		11		0	0.00
STR	0.00625					.007229	2.31							

WATER SURFACE PROFILE LISTING

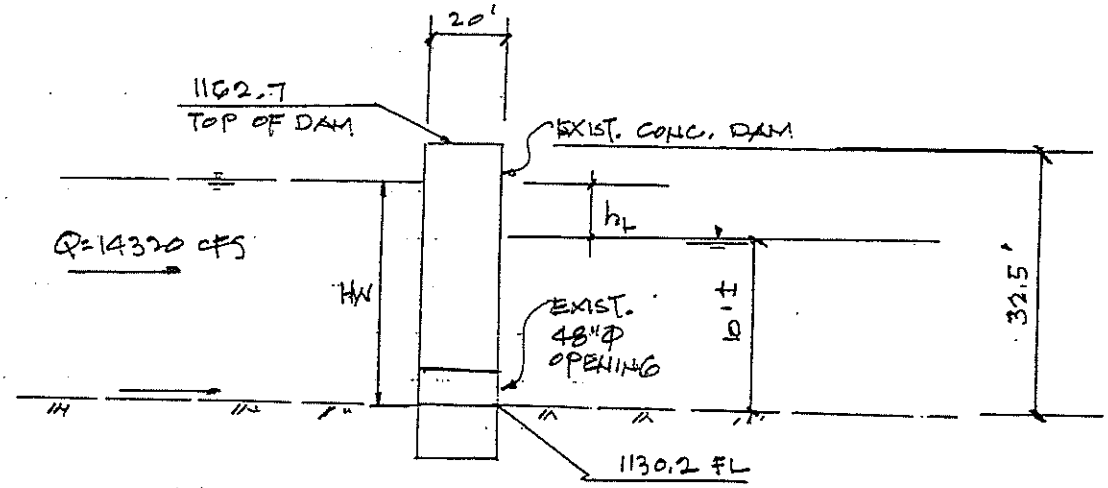
CHATSWORTH RIDGE ESTATE B AND E ENGINEERS
WSP OF EXIST. DEVIL CANYON WATERCOURSE FN(DEVILCYN.INP)
JN 99610 ENTERED BY B.R. 12/16/99

	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
	SO					SF AVE	HF		NORM DEPTH			Zk		
00	210.00	18.631	228.631	14320.0	8.77	1.194	229.825		12.224		23		0	0.00
TR	0.01905					.005357	1.13							
00	214.00	15.629	229.629	14320.0	9.34	1.354	230.983		10.853		24		0	0.00
TR	0.01050					.008570	1.71							
00	216.10	14.533	230.633	14320.0	12.02	2.242	232.875		11.551		25		0	0.00

Devil Canyon Water Surface Profile
Including Existing Dam

JH99610 3-29-00

HEADWATER DEPTH CALCULATIONS AT DAM



1. ASSUME 48"Φ OPENING ; A = 12.57 ft²

$V = 14320/12.57 = 1139.22$ FPS

$h_V = \overline{1139.22}^2/64.4 = 20{,}152.5' > 32.5'$

∴ FLOW WILL OVERTOP THE DAM.

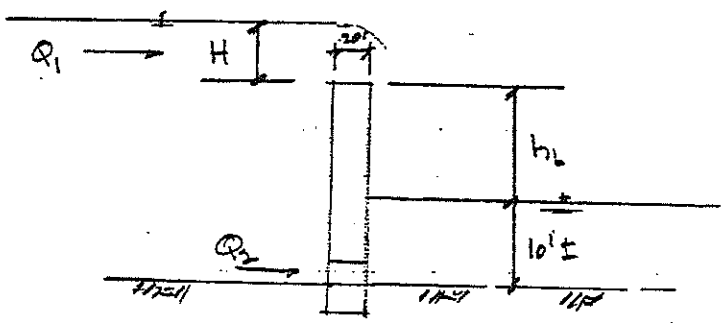
2. CALCULATE OVERFLOW OVER THE DAM WITH BROAD-CRESTED WEIR FORMULA.

a) $L = 130'$, $C = 2.80$

$Q = CLH^{3/2}$; $H = \left[\frac{Q}{CL}\right]^{2/3}$

$H = \left[\frac{14320}{2.80(130)}\right]^{2/3} = 11.57'$ WATER SURFACE ABOVE TOP OF DAM NEGLECTING THE 48"Φ OPENING

b) BY TRIAL AND ERROR, CALCULATE Q_s PASSING OVER THE DAM AND 48" OPENING.



TRY $H = 6.9'$

W.S. EL. OVER DAM $= 1162.7 + 6.9 = 1169.6$

$Q_1 = 2.8 \times 249 \times (6.9)^{3/2} = 12637$ CFS

FOR 48" ϕ OPENING;

$h_L = 1169.6 - 1140.2 = 29.4'$

$S_f = 29.4/20 = 1.47$

$Q_2 = \frac{1.486}{0.013} \times (1)(1.47)^{1/2}(12.57) = 1742$ CFS

$Q_1 + Q_2 = 12637 + 1742 = 14379$ CFS $>$ 14320 CFS

NO GOOD

TRY $H = 6.88'$

W.S. EL. OVER DAM $= 1162.7 + 6.87 = 1169.58$

$Q_1 = 2.8 \times 249 \times (6.88)^{3/2} = 12581$ CFS

FOR 48" ϕ OPENING:

$h_L = 1169.58 - 1140.2 = 29.38'$

$S_f = 29.38/20 = 1.469$

$Q_2 = \frac{1.486}{0.013}(1)(1.469)^{1/2}(12.57) = 1741$ CFS

$Q_1 + Q_2 = 12581 + 1741 = 14322$ CFS $\approx$ 14320 CFS

OK

3/29/2000
5:35

F0515P

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
1	5	0	0.00															
2	5	0	0.00															
3	5	0	0.00															
4	5	0	0.00															
5	5	0	0.00															
6	5	0	0.00															
7	5	0	0.00															
8	5	0	0.00															
9	5	0	0.00															
10	5	0	0.00															
11	5	0	0.00															
12	5	0	0.00															
13	5	0	0.00															
14	5	0	0.00															
15	5	0	0.00															
16	5	0	0.00															
17	5	0	0.00															
18	5	0	0.00															
19	5	0	0.00															
20	5	0	0.00															
21	5	0	0.00															
22	5	0	0.00															
23	5	0	0.00															
24	5	0	0.00															
25	5	0	0.00															
26	5	0	0.00															

) SECT NO	NO OF POINTS	X(1) , Y(1) X(8) , Y(8)	X(2) , Y(2) X(9) , Y(9)	X(3) , Y(3) X(10) ,Y(10)	X(4) , Y(4) X(11) ,Y(11)	X(5) , Y(5) X(N) , Y(N)	X(6) , Y(6) X(N+1),Y(N+1)	X(7) , Y(7) X(99) ,Y(99)
17	9	152.00 210.00 242.00 200.00	160.00 200.00 267.00 210.00	177.00 190.00	180.00 188.00	200.00 186.00	222.00 188.00	230.00 190.00
18	7	132.00 210.00	143.00 200.00	166.00 190.00	200.00 188.00	222.00 190.00	243.00 200.00	335.00 210.00
19	7	158.00 210.00	172.00 200.00	180.00 194.00	200.00 192.00	225.00 194.00	232.00 200.00	255.00 210.00
20	5	130.00 210.00	158.00 200.00	200.00 196.00	230.00 200.00	240.00 220.00		
21	5	162.00 230.00	200.00 200.00	215.00 202.00	225.00 210.00	270.00 230.00		
22	8	165.00 230.00 260.00 230.00	188.00 210.00	193.00 206.00	200.00 204.00	223.00 206.00	230.00 210.00	238.00 220.00
23	8	87.00 240.00 250.00 240.00	112.00 230.00	140.00 214.00	190.00 212.00	200.00 210.00	210.00 212.00	232.00 220.00
24	10	149.00 240.00 275.00 220.00	153.00 230.00 295.00 230.00	172.00 222.00 318.00 240.00	177.00 220.00	182.00 216.00	200.00 214.00	245.00 216.00
25	8	105.00 240.00 254.00 230.00	142.00 230.00	167.00 220.00	172.00 218.00	200.00 216.10	235.00 218.00	240.00 220.00

WATER SURFACE PROFILE - ELEMENT CARD LISTING

```
IT NO  15 IS A TRANSITION        *        *     *
              U/S DATA   STATION    INVERT  SECT            N
                          3780.00   188.00   18           0.060

IT NO  16 IS A TRANSITION        *        *     *
              U/S DATA   STATION    INVERT  SECT            N
                          3920.00   192.00   19           0.060

NT NO  17 IS A TRANSITION        *        *     *
              U/S DATA   STATION    INVERT  SECT            N
                          4070.00   196.00   20           0.060

NT NO  18 IS A TRANSITION        *        *     *
              U/S DATA   STATION    INVERT  SECT            N
                          4200.00   200.00   21           0.060

NT NO  19 IS A TRANSITION        *        *     *
              U/S DATA   STATION    INVERT  SECT            N
                          4320.00   204.00   22           0.060

NT NO  20 IS A TRANSITION        *        *     *
              U/S DATA   STATION    INVERT  SECT            N
                          4530.00   210.00   23           0.060

NT NO  21 IS A TRANSITION        *        *     *
              U/S DATA   STATION    INVERT  SECT            N
                          4740.00   214.00   24           0.060

NT NO  22 IS A TRANSITION        *        *     *
              U/S DATA   STATION    INVERT  SECT            N
                          4940.00   216.10   25           0.060

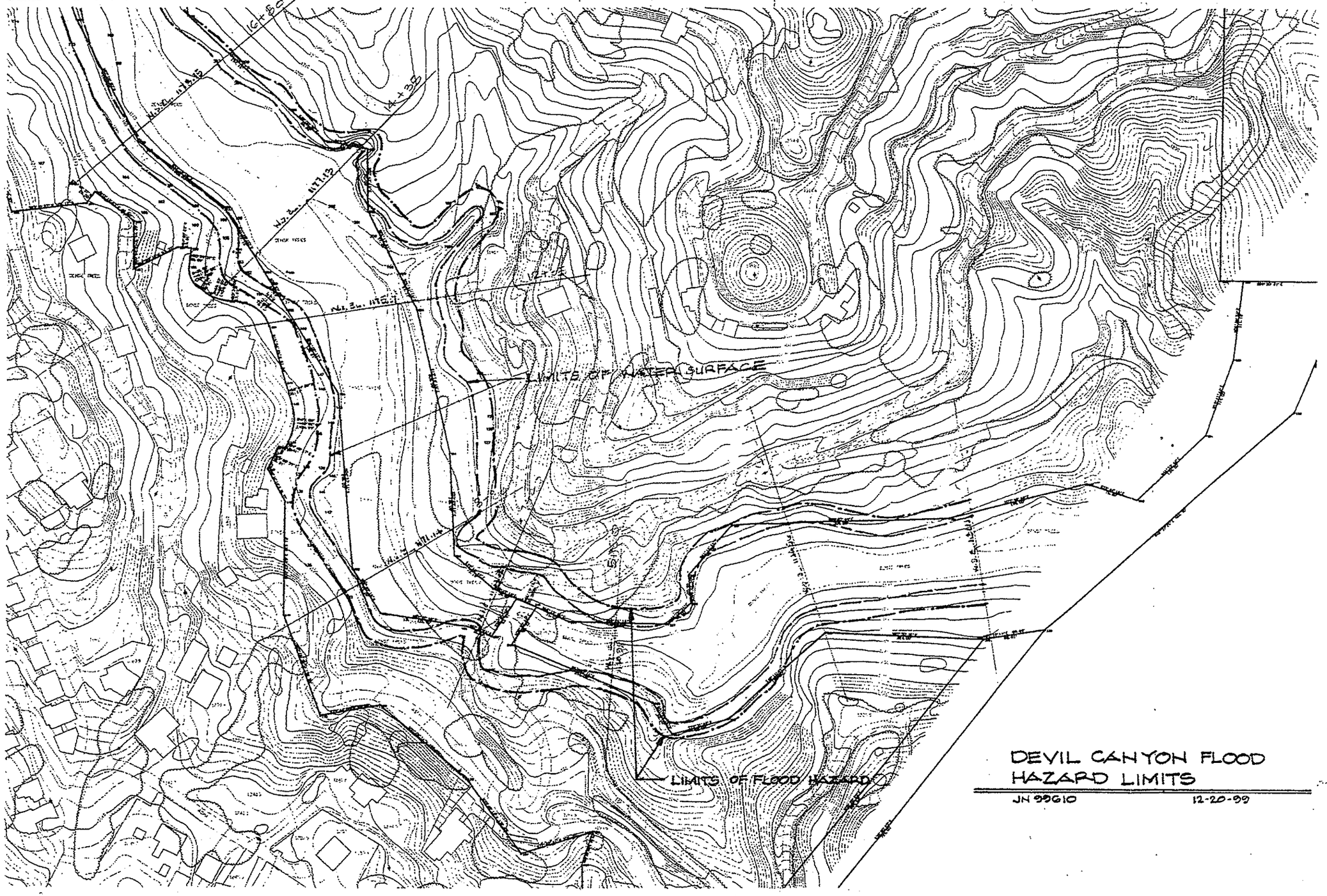
NT NO  23 IS A SYSTEM HEADWORKS                *                    *
              U/S DATA   STATION    INVERT  SECT                          W S ELEV
                          4940.00   216.10   25                              0.00
IT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING
RNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC
```

WATER SURFACE PROFILE LISTING

CHATSWORTH RIDGE ESTATE EXIST. DAM TO REMAIN (UPSTREAM SIDE)
WSP OF EXIST. DEVIL CANYON WATERCOURSE FN(DEVCYN.INP)
B & E ENGINEERS JN 99610 ENTERED BY B.R. 03/29/00

ION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
EM	SO					SF AVE	HF		NORM DEPTH			ZR		
0.00	182.00	18.335	200.335	14320.0	14.12	3.094	203.429		15.478		15		0	0.00
STR	0.00667					.009124	2.74							
0.00	184.00	21.122	205.122	14320.0	8.90	1.231	206.353		12.900		16		0	0.00
STR	0.01429					.005869	0.82							
0.00	186.00	19.436	205.436	14320.0	10.96	1.865	207.301		13.910		17		0	0.00
STR	0.02000					.006096	0.61							
10.00	188.00	19.004	207.004	14320.0	8.00	0.995	207.999		12.337		18		0	0.00
STR	0.02857													
20.00	192.00	14.275	206.275	14320.0	17.69	4.861	211.136		14.275		19		0	0.00
STR	0.02667													
70.00	196.00	9.760	205.760	14320.0	25.92	10.433	216.193		13.072		20		0	0.00
STR	0.03077					.064469	8.38							
00.00	200.00	19.720	219.720	14320.0	18.58	5.362	225.082		19.720		21		0	0.00
STR	0.03333					.020953	2.51							
20.00	204.00	20.803	224.803	14320.0	13.96	3.028	227.831		16.810		22		0	0.00
S STR	0.02857					.008622	1.81							
30.00	210.00	18.631	228.631	14320.0	8.77	1.194	229.825		12.224		23		0	0.00
S STR	0.01905					.005357	1.13							
40.00	214.00	15.629	229.629	14320.0	9.34	1.354	230.983		10.853		24		0	0.00
S STR	0.01050					.008570	1.71							
40.00	216.10	14.533	230.633	14320.0	12.02	2.242	232.875		11.551		25		0	0.00

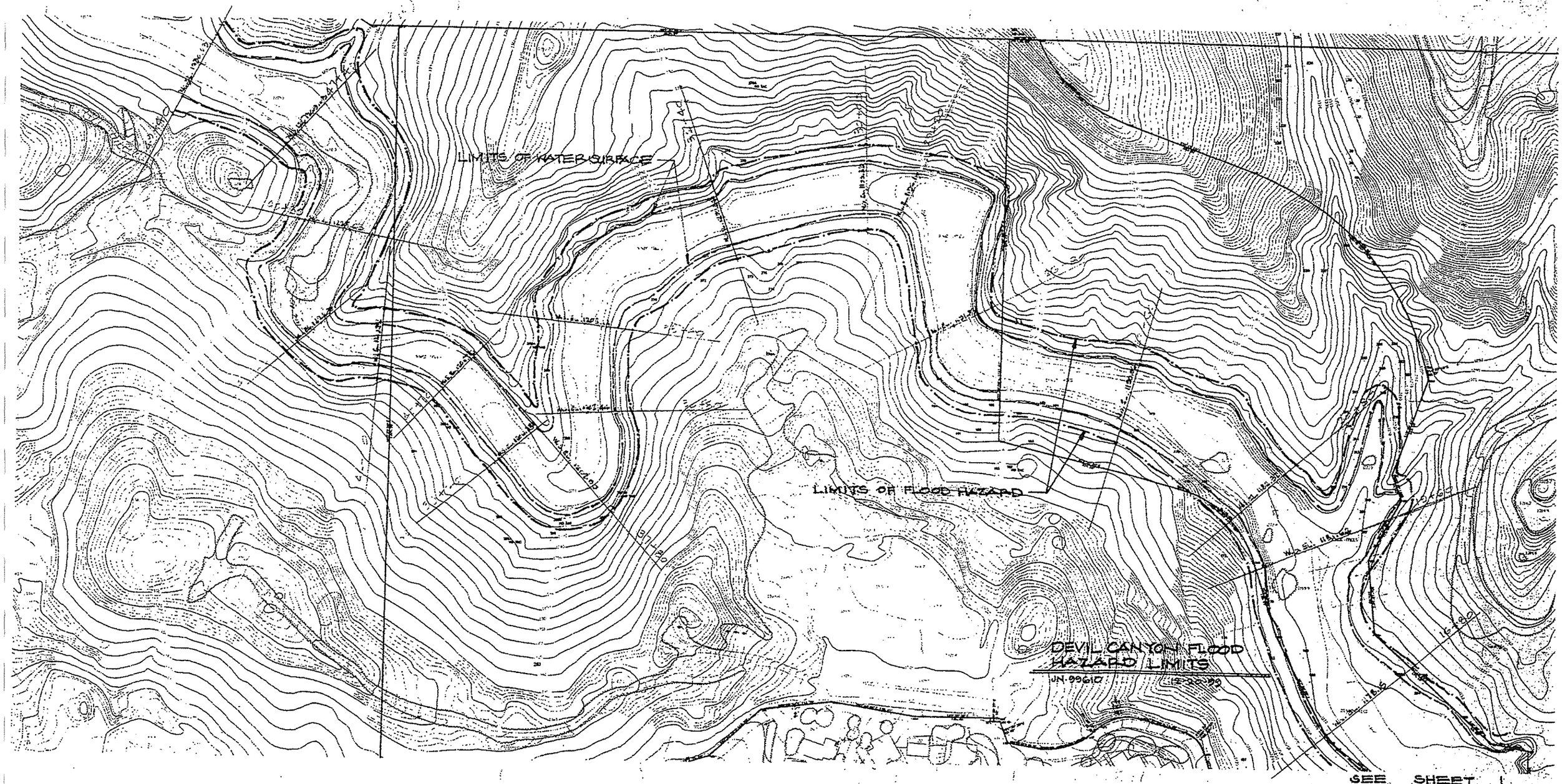
SEE SHEET 2



DEVIL CANYON FLOOD
HAZARD LIMITS

JN 99610 12-20-99

SHEET 1 OF 2 SHEETS



SHEET 2 OF 2 SHEETS

Capacity of existing 30" CMP

Caltrans existing system

Before Project Development

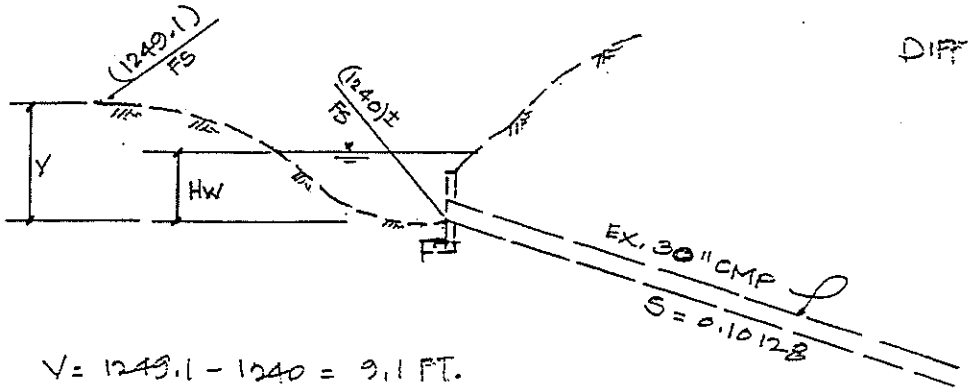
JN 99610 3-24-00

CALCULATION OF CAPACITY OF EXISTING 30" CMP (EXISTING CONDITION)

$Q_{50BB} = 61.5$ CFS

AT RAMP S-1

CREST ELEV: 1253.8 (TOPO)
1249.0 (CALTRANS)
DIFF. = 4.8'



$V = 1249.1 - 1240 = 9.1$ FT.

$S = \dfrac{1240 - (1221 - 4.8)}{235} = 0.10128$

FROM PAGE 2 (COMPUTER CALC);

$D_c = 2.40'$

$D_c/d = 2.40/2.50 = 0.96$, $A_c = 0.775(2.5)^2 = 4.84$

$V_c = 61.5/4.84 = 12.71$ FPS

$h_{vc} = (12.71)^2/64.4 = 2.51'$

$1.2 h_{vc} = 1.2 \times 2.51 = 3.01'$

$HW = D_c + 1.2 h_{vc} = 2.4 + 3.01 = 5.41' < 9.1'$ ok

MODIFIED RATIONAL METHOD HYDROLOGY

TRACT NO.47646 B&E ENGINEERS MAR 23, 2000 STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
9610	1A	7.	34.	7.	34.	1	215.	.08372	.00	.00	0.	189	6	L50	.00
9610	2A	2.	9.	9.	42.	0	0.	.00000	.00	.00	0.	189	7	L50	.00

:12 RATIONAL METHOD HYDROLOGY FLOWS calculated by
2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 1A (1A.INP) offsite
B & E ENGINEERS BY 3/23/00

Initial Area Travel Time:

Reach No.	Reach Time
Land	2.8
1- 1	1.9
1- 2	1.5
Total	6.1

:59 RATIONAL METHOD HYDROLOGY FLOWS calculated by
2.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 2A (2A.INP) offsite
B & E ENGINEERS BY 3/23/00

Input Data:

Rainfall Zone	Frequency (yrs.)	Initial Area Time (minutes) Assumed	Calculated	Max.Conv Code
L	50	7.	7	0

ient Area Data:

Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
Nat.Val	0	0- 0	65	.000	.034	2.2	1256.0	1245.0	.0	.00	0	0
Nat.Val	0	0- 0	65	.000	.034	.0	1256.0	1245.0	.0	.00	0	0

Definitions:
****
um Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
ixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=Urban Design ext. Q varies with frequency.
1=Urban Design external Q is constant.
No.: Street Cross-Section No. - See Street-Cross-Section Data list.
No.: Reach No. junctioning with top of this reach.

al Design Q's:
****
n Q's for laterals are calculated separately using a local Time of
ntration. Those lateral Q's calculated with the Main Line are for
Line Q development only and not for lateral design Q purposes.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	1281.5	1256.0	.127	.060	65	.000

59 RATIONAL METHOD HYDROLOGY FLOWS calculated by

.1

CHATSWORTH RIDGE ESTATE
T.C. CALC. 2A (2A.INP) offsite
B & E ENGINEERS BY 3/23/00

.ch Data:

.ch	Conveyance (ft)			Z		Length	Effect. Area (ac.)	Q (cfs)
.	Type	Depth	Width	Hor	Vert	(ft)	Slope	at top	at top
1	Nat.Val	.00	.0	.00	.00	320.0	.0344	.2	4.8
2	Nat.Val	.00	.0	.00	.00	320.0	.0344	2.2	9.6
let								2.2	9.6

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.000	.000	.000	.000	.500	0.	36.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

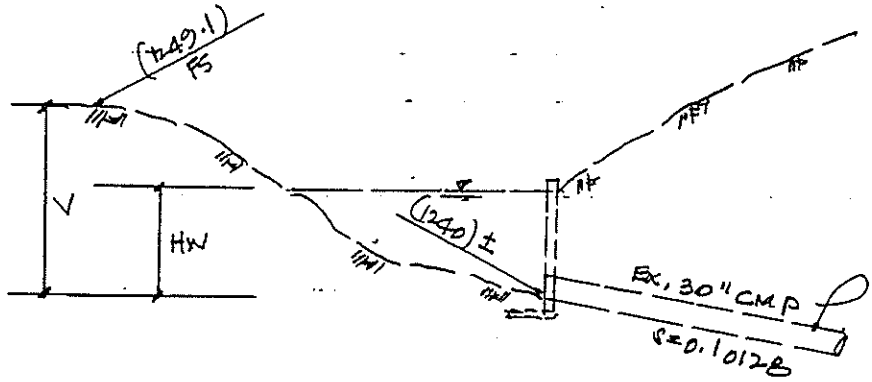
Capacity of existing 30" CMP

Caltrans existing system
After Project Development

HN.287000 JN99610

CALCULATION OF CAPACITY OF EXISTING 30" CMP (ULTIMATE CONDITION)

$Q_{50BB} = 48.2$ CFS



$V = 1249.1 - 1240.0 = 9.1$ FT.

FROM PAGE 2 (COMPUTER CALC.)

$D_c = 2.26'$

$D_c/d = 2.26/2.5 = 0.904$, $A_c = 0.746 \times 2.5^2 = 4.66$ ft²

$V_c = 48.2/4.66 = 10.34$ FPS

$h_{v_c} = \frac{10.34^2}{64.4} = 1.66'$

$1.2 h_{v_c} = 1.2(1.66) = 1.99'$

$HW = D_c + 1.2 h_{v_c} = 2.26 + 1.99 = 4.25' < 9.1'$ o/k

Hydrology Definitions

Best Management Practice (BMP): In water pollution control, the best means available to control pollution of waterways from non-point sources, as opposed to best available technology, which applies to pollution control for point sources.

Burned and Bulked Runoff (Qbb): Runoff from burned areas that is laden with burned vegetation, fines, rocks, and other debris.

Capital Flood (Qcap): The runoff resulting from a theoretical storm based on Los Angeles County Department of Public Works methodology. The "model" storm is derived from 50-year frequency rainfall values which occur in a time sequence patterned after actual major extra-tropical storms occurring in the Los Angeles Region. The calculations of runoff are also based on the soil types and amount of impervious surfaces in a watershed area, and on the assumption that undeveloped portions of the watershed are burned, resulting in significant amounts of debris and sediment being added to the runoff.

Catch Basin: A precast concrete structure installed within a street gutter and under the curb to "catch" surface storm water runoff and convey it to an underground storm drain structure.

Clear Runoff (Qc): Clear runoff that is absent of fines, rocks, vegetation, and other debris

Closed Drainage System: A series of covered or enclosed drainage conduits used to convey storm runoff. Proposed in lower elevations of the tributary drainage courses wherever least development runoff flows would be less than 2,000 cubic feet per second.

Coefficient of Runoff: A variable in the rational runoff formula which is dependent upon soil type, rainfall intensity, and the percent of imperviousness.

Debris Basin: A basin designed to trap sediment and debris from runoff before the runoff is discharged.

Desilting Basin: A basin planted with grasses, shrubs, or other vegetation and a corrugated metal standpipe used to reduce the velocity of incoming storm flows long enough to allow silt and other debris to settle out of the flowing water before the water is discharged downstream.

Detention Basin: A basin in which storm flows are captured and stored and, therefore, not available for producing surface runoff.

Erosion: The wearing away of land surfaces by water, wind, and ice, or by gravity.

Impervious: A substance that will not permit water to flow through it.

Infiltration: Downward entry of water into soil.

Interception: That portion of precipitation intercepted by vegetation. Intercepted precipitation is disposed of by drip, stem flow, or evaporation (or sometimes sublimation, in the case of snow, sleet, hail, or freezing rain).

Open Drainage System: A series of uncovered or unenclosed drainages devices used to convey storm runoff. Proposed in lower elevations of the tributary drainage courses wherever least development runoff flows would exceed 2,000 cubic feet per second.

Q: Peak runoff measured in cubic feet per second.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

LOS ANGELES REGION

STAFF REPORT AND RECORD OF DECISION

STANDARD URBAN STORM WATER MITIGATION PLANS

AND

NUMERICAL DESIGN STANDARDS FOR BEST MANAGEMENT PRACTICES

SUPPLEMENT

BOARD DIRECTED CHANGES

The Regional Board at its January 26, 2000, meeting directed the Regional Board Executive Officer to amend the Standard Urban Storm Water Mitigation Plans (SUSMPs) as indicated by the change sheet presented at the meeting (dated January 25, 2000), and changes directed by the Regional Board during the meeting. The Regional Board also adopted the same SUSMP requirements for the City of Long Beach under its separate municipal storm water permit (Board Order No. 99-060) for project categories that require SUSMPs.

Regional Board Counsel designated the record for the proceeding to include: (i) all staff files and the transcript of proceedings for the January 26, 2000, Hearing; (ii) all staff files and transcript of proceedings for the September 16, 1999, Board Information Item Discussion; (iii) all staff files for the August 10, 1999, Workshop, (iv) all SUSMP Proposals circulated by the Permittees, (v) all SUSMP Proposals circulated by the Regional Board Staff, (vi) all comments received and responses; (vii) and all exhibits presented to the Board.

This "Supplement" document enumerates the significant changes made to the SUSMP that were directed by the Board at the hearing and the bases for the changes in the "Transcript of Proceedings", testimony presented or materials submitted to the Regional Board, and other relevant documents.

Applicability of the SUSMP

The SUSMP requirements apply to all projects in the nine enumerated categories for the Los Angeles County MS4 Program. While some development planning/ construction requirements in the permit are made applicable only to "Discretionary Projects", this limitation does not cover the seven "enumerated project categories" in Board Order No.

Definition of Parking Lots

The definition of "Parking Lots " has been reworded to eliminate the "stand alone" limitation, so that it now applies to all parking lots with 5,000 square feet or more or with 25 parking spaces or more and exposed to storm water.[6]

Definition of Redevelopment

The definition of "Redevelopment" has been reworded to include a minimum threshold of at least 5,000 square feet of impervious area addition to an existing property in order for the SUSMP requirements to apply. The threshold value is consistent with other threshold values in the SUSMP, such as Parking Lots and Restaurants.[7]

Definition of Restaurant

The definition of "Restaurant" has been reworded to limit applicability to "stand-alone" facilities and exclude co-located stalls or food counters in general purpose establishments such as markets and grocery stores.[8]

Definition of Retail Gasoline Outlet

The definition of "Retail Gasoline Outlet" has been reworded to include all retail gasoline outlets that sell gasoline and lubricating oils without consideration of the proportion of receipts derived from such sales.[9]

Conflict with Local Practices

The paragraph has been reworded to allow local ordinances to differ from the SUSMP so long as they are more stringent.[10]

Responsibility and Conditions for BMP Transfer

The language has been modified to ensure that the responsibility for the maintenance of Structural or Treatment Control BMPs is properly transferred with the sale of a property and is mandatory.[11]

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[6] Ibid. at 301 and 306. Board Members Cloke and Diamond discuss and direct staff to eliminate the "stand-alone" limitation.

[7] Ibid. at 67 and 302. Board Chairman Nahai discusses the absence of a minimum threshold and directs staff to set a minimum value to address his concerns of proportionality aberrations.

[8] Ibid. at 68. Board Chairman interprets applicability and Dr. Swamikannu confirms the interpretation.

[9] Ibid. at 46, 49, 308. Board Members discuss the staff proposed definition based on primary activity and direct staff to extend the definition to include all gas stations that pump gas.

[10] Ibid. at 308. Board Members discuss the language and provide specific language for the purpose of local program consistency and to ensure adherence to the SUSMP requirements.

STANDARD URBAN STORM WATER MITIGATION PLAN

FOR LOS ANGELES COUNTY AND CITIES IN LOS ANGELES COUNTY

Final
Approved – Regional Board Executive Officer
March 8, 2000.

All projects that fall into one of seven categories are identified in the Los Angeles County MS4 Permit as requiring SUSMPs. These categories are:

- Single-Family Hillside Residences
- 100,000 Square Foot Commercial Developments
- Automotive Repair Shops
- Retail Gasoline Outlets
- Restaurants
- Home Subdivisions with 10 to 99 housing units
- Home Subdivisions with 100 or more housing units

The Regional Board Executive Officer has designated two additional categories subject to SUSMP requirements for the Los Angeles County MS4 Permit. These categories are:

- Location within or directly adjacent to or discharging directly to an environmentally sensitive area, and
- Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff

The City of Long Beach permit requires SUSMP for the following categories only: (i) 10-99 home subdivisions; (ii) 100 or more subdivisions; (iii) 100,000 or more square foot commercial developments; and (iv) Projects located adjacent to or discharging to environmentally sensitive areas. For the remaining five categories, equivalent requirements have been included directly in or are expected to be developed shortly under the City of Long Beach Storm Water Management Plan.

Permittees shall amend codes and promulgate ordinances not later than September 8, 2000, to give legal effect to the SUSMP requirements. The SUSMP requirements for projects identified herein shall take effect not later than October 8, 2000.

DEFINITIONS

"100,000 Square Foot Commercial Development" means any commercial development that creates at least 100,000 square feet of impermeable area, including parking areas."Automotive Repair Shop" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.

"Best Management Practice (BMP)" means any program, technology, process, siting criteria, operational methods or measures, or engineered systems, which when implemented prevent, control, remove, or reduce pollution.

"Commercial Development" means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, multi-apartment buildings, car wash facilities, mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.

"Restaurant" means a stand-alone facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption. (SIC code 5812).

"Retail Gasoline Outlet" means any facility engaged in selling gasoline and lubricating oils.

"Source Control BMP" means any schedules of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that aim to prevent storm water pollution by reducing the potential for contamination at the source of pollution.

"Storm Event" means a rainfall event that produces more than 0.1 inch of precipitation and that, which is separated from the previous storm event by at least 72 hours of dry weather.

"Structural BMP" means any structural facility designed and constructed to mitigate the adverse impacts of storm water and urban runoff pollution (e.g. canopy, structural enclosure). The category may include both Treatment Control BMPs and Source Control BMPs.

"Treatment" means the application of engineered systems that use physical, chemical, or biological processes to remove pollutants. Such processes include, but are not limited to, filtration, gravity settling, media adsorption, biodegradation, biological uptake, chemical oxidation and UV radiation.

"Treatment Control BMP" means any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical, biological, or chemical process.

CONFLICTS WITH LOCAL PRACTICES

Where provisions of the SUSMP requirements conflict with established local codes, (e.g., specific language of signage used on storm drain stenciling), the Permittee may continue the local practice and modify the SUSMP to be consistent with the code, except that to the extent that the standards in the SUSMP are more stringent than those under local codes, such more stringent standards shall apply.

SUSMP PROVISIONS APPLICABLE TO ALL CATEGORIES

The Maryland Stormwater Design Manual; *Florida Development Manual: A Guide to Sound Land and Water Management*; Denver *Urban Storm Drainage Criteria Manual, Volume 3 – Best Management Practices* and *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* , USEPA Report No. EPA-840-B-92-002, as "likely to have significant impact" beneficial to water quality for targeted pollutants that are of concern at the site in question. However, it is possible that a combination of BMPs not so designated, may in a particular circumstance, be better suited to maximize the reduction of the pollutants.

Examples of BMPs that can be used for minimizing the introduction of pollutants of concern generated from site runoff are identified in Table 2. Any BMP not specifically approved by the Regional Board in Resolution No. 99-03, "Approving Best Management Practices for Municipal Storm Water and Urban Runoff Programs in Los Angeles County", for development planning may be used if they have been recommended in one of the above references.

4. PROTECT SLOPES AND CHANNELS

Project plans must include BMPs consistent with local codes and ordinances and the SUSMP to decrease the potential of slopes and/or channels from eroding and impacting storm water runoff:

- Convey runoff safely from the tops of slopes and stabilize disturbed slopes.
- Utilize natural drainage systems to the maximum extent practicable
- Control or reduce or eliminate flow to natural drainage systems to the maximum extent practicable
- Stabilize permanent channel crossings.
- Vegetate slopes with native or drought tolerant vegetation.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion, with the approval of all agencies with jurisdiction, e.g., the U.S. Army Corps of Engineers and the California Department of Fish and Game

5. PROVIDE STORM DRAIN SYSTEM STENCILING AND SIGNAGE

Storm drain stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets. The stencil contains a brief statement that prohibits the dumping of improper materials into the storm water conveyance system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message.

- All storm drain inlets and catch basins within the project area must be

8. PROVIDE PROOF OF ONGOING BMP MAINTENANCE

Improper maintenance is one of the most common reasons why water quality controls will not function as designed or which may cause the system to fail entirely. It is important to consider who will be responsible for maintenance of a permanent BMP, and what equipment is required to perform the maintenance properly. As part of project review, if a project applicant has included or is required to include, Structural or Treatment Control BMPs in project plans, the Permittee shall require that the applicant provide verification of maintenance provisions through such means as may be appropriate, including, but not limited to legal agreements, covenants, CEQA mitigation requirements and/or Conditional Use Permits.

For all properties, the verification will include the developer's signed statement, as part of the project application, accepting responsibility for all structural and treatment control BMP maintenance until the time the property is transferred and, where applicable, a signed agreement from the public entity assuming responsibility for Structural or Treatment Control BMP maintenance. The transfer of property to a private or public owner must have conditions requiring the recipient to assume responsibility for maintenance of any Structural or Treatment Control BMP to be included in the sales or lease agreement for that property, and will be the owner's responsibility. The condition of transfer shall include a provision that the property owners conduct maintenance inspection of all Structural or Treatment Control BMPs at least once a year and retain proof of inspection. For residential properties where the Structural or Treatment Control BMPs are located within a common area which will be maintained by a homeowner's association, language regarding the responsibility for maintenance must be included in the projects conditions, covenants and restrictions (CC&Rs). Printed educational materials will be required to accompany the first deed transfer to highlight the existence of the requirement and to provide information on what storm water management facilities are present, signs that maintenance is needed, how the necessary maintenance can be performed, and assistance that the Permittee can provide. The transfer of this information shall also be required with any subsequent sale of the property.

If Structural or Treatment Control BMPs are located within a public area proposed for transfer, they will be the responsibility of the developer until they are accepted for transfer by the County or other appropriate public agency. Structural or Treatment Control BMPs proposed for transfer must meet design standards adopted by the public entity for the BMP installed and should be approved by the County or other appropriate public agency prior to its installation.

9. DESIGN STANDARDS FOR STRUCTURAL OR TREATMENT CONTROL BMPs

Structural or Treatment control BMPs selected for use at any project covered by this

A. 100,000 SQUARE FOOT COMMERCIAL DEVELOPMENTS

1. PROPERLY DESIGN LOADING/UNLOADING DOCK AREAS

Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:

- Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
- Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

2. PROPERLY DESIGN REPAIR/MAINTENANCE BAYS

Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:

- Repair/maintenance bays must be indoors or designed in such a way that doesn't allow storm water runon or contact with storm water runoff.
- Design a repair/maintenance bay drainage system to capture all washwater, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.

3. PROPERLY DESIGN VEHICLE/EQUIPMENT WASH AREAS

The activity of vehicle/equipment washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for washing/steam cleaning of vehicles and equipment. The area in the site design must be:

- Self-contained and/ or covered, equipped with a clarifier, or other pretreatment facility, and properly connected to a sanitary sewer.

B. RESTAURANTS

1. PROPERLY DESIGN EQUIPMENT/ACCESSORY WASH AREAS

The activity of outdoor equipment/accessory washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for the

2. PROPERLY DESIGN REPAIR/MAINTENANCE BAYS

Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:

- Repair/maintenance bays must be indoors or designed in such a way that doesn't allow storm water run-on or contact with storm water runoff.
- Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.

3. PROPERLY DESIGN VEHICLE/EQUIPMENT WASH AREAS

The activity of vehicle/equipment washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for washing/steam cleaning of vehicles and equipment. This area must be:

- Self-contained and/or covered, equipped with a clarifier, or other pretreatment facility, and properly connected to a sanitary sewer or to a permitted disposal facility.

4. PROPERLY DESIGN LOADING/UNLOADING DOCK AREAS

Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:

- Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
- Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

E. PARKING LOTS

1. PROPERLY DESIGN PARKING AREA

Parking lots contain pollutants such as heavy metals, oil and grease, and polycyclic aromatic hydrocarbons that are deposited on parking lot surfaces by motor-vehicles. These pollutants are directly transported to surface waters. To minimize the offsite transport of pollutants, the following design criteria are required:

12. LIMITATION ON USE OF INFILTRATION BMPs

Three factors significantly influence the potential for storm water to contaminate ground water. They are (i) pollutant mobility, (ii) pollutant abundance in storm water, (iii) and soluble fraction of pollutant. The risk of contamination of groundwater may be reduced by pretreatment of storm water. A discussion of limitations and guidance for infiltration practices is contained in, *Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report No. EPA/600/R-94/051, USEPA (1994).*

In addition, the distance of the groundwater table from the infiltration BMP may also be a factor determining the risk of contamination. A water table distance separation of ten feet depth in California presumptively poses negligible risk for storm water not associated with industrial activity or high vehicular traffic.

Infiltration BMPs are not recommended for areas of industrial activity or areas subject to high vehicular traffic (25,000 or greater average daily traffic (ADT) on main roadway or 15,000 or more ADT on any intersecting roadway) unless appropriate pretreatment is provided to ensure groundwater is protected and the infiltration BMP is not rendered ineffective by overload.

13. ALTERNATIVE CERTIFICATION FOR STORM WATER TREATMENT MITIGATION

In lieu of conducting detailed BMP review to verify Structural or Treatment Control BMPs adequacy, a Permittee may elect to accept a signed certification from a Civil Engineer or a Licensed Architect registered in the State of California, that the plan meets the criteria established herein. The Permittee is encouraged to verify that certifying person(s) have been trained on BMP design for water quality, not more than two years prior to the signature date. Training conducted by an organization with storm water BMP design expertise (e.g., a University, American Society of Civil Engineers, American Society of Landscape Architects, American Public Works Association, or the California Water Environment Association) may be considered qualifying.

14. RESOURCES AND REFERENCE

TABLE 1

SUGGESTED RESOURCES	HOW TO GET A COPY

Second Nature: Adapting LA's Landscape for Sustainable Living (1999) by Tree People Detailed discussion of BMP designs presented to conserve water, improve water quality, and achieve flood protection.	Tree People 12601 Mullholland Drive Beverly Hills, CA 90210 818-753-4600 (?)
Florida Development Manual: A Guide to Sound Land and Water Management (1988) Presents detailed guidance for designing BMPs	Florida Department of the Environment 2600 Blairstone Road, Mail Station 3570 Tallahassee, FL 32399 850-921-9472
Stormwater Management in Washington State (1999) Vols. 1-5 Presents detailed guidance on BMP design for new development and construction.	Department of Printing State of Washington Department of Ecology P.O. Box 798 Olympia, WA 98507-0798 360-407-7529
Maryland Stormwater Design Manual (1999) Presents guidance for designing storm water BMPs	Maryland Department of the Environment 2500 Broening Highway Baltimore, MD 21224 410-631-3000
Texas Nonpoint Source Book – Online Module (1998)www.txnpsbook.org Presents BMP design and guidance information on-line	Texas Statewide Storm Water Quality Task Force North Central Texas Council of Governments 616 Six Flags Drive Arlington, TX 76005 817-695-9150
Urban Storm Drainage, Criteria Manual – Volume 3, Best Management Practices (1999) Presents guidance for designing BMPs	Urban Drainage and Flood Control District 2480 West 26th Avenue, Suite 156-B Denver, CO 80211 303-455-6277
Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (1993) Report No. EPA–840-B-92-002. Provides an overview of, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs.	National Technical Information Service U.S. Department of Commerce Springfield, VA 22161 800-553-6847
National Stormwater Best Management Practices (BMP) Database, Version 1.0 Provides data on performance and evaluation of storm water BMPs	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 703-296-6000

TABLE 2

EXAMPLE BEST MANAGEMENT PRACTICES (BMPs)

The following are examples of BMPs that can be used for minimizing the introduction of pollutants of concern that may result in significant impacts, generated from site runoff to the storm water conveyance system. (See Table 1: Suggested Resources for additional sources of information):

- Provide reduced width sidewalks and incorporate landscaped buffer areas between sidewalks and streets. However, sidewalk widths must still comply with regulations for the Americans with Disabilities Act and other life safety requirements.
- Design residential streets for the minimum required pavement widths needed to comply with all zoning and applicable ordinances to support travel lanes; on-street parking; emergency, maintenance, and service vehicle access; sidewalks; and vegetated open channels.
- Comply with all zoning and applicable ordinances to minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turnarounds should be considered.
- Use permeable materials for private sidewalks, driveways, parking lots, or interior roadway surfaces (examples: hybrid lots, parking groves, permeable overflow parking, etc.).
- Use open space development that incorporates smaller lot sizes.
- Reduce building density.
- Comply with all zoning and applicable ordinances to reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together.
- Comply with all zoning and applicable ordinances to reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.
- Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas, and avoid routing rooftop runoff to the roadway or the storm water conveyance system.
- Vegetated swales and strips
- Extended/dry detention basins
- Infiltration basin
- Infiltration trenches
- Wet ponds
- Constructed wetlands
- Oil/Water separators
- Catch basin inserts
- Continuous flow deflection/ separation systems
- Storm drain inserts
- Media filtration
- Bioretention facility
- Dry-wells
- Cisterns
- Foundation planting
- Catch basin screens
- Normal flow storage/ separation systems
- Clarifiers
- Filtration systems
- Primary waste water treatment systems

TABLE 3 A

HABITAT PROTECTION IN LOS ANGELES COUNTY AREA1

Figure 1	AFFECTED AREA	DESIGNATION	DESIGNATING AGENCY
1.	Malibu Coastline	SEA	LACDRP
2.	Point Dume	SEA	LACDRP
3.	Zuma Canyon	SEA	LACDRP
4.	Upper La Sierra Canyon	SEA	LACDRP
5.	Malibu Canyon and Lagoon	SEA	LACDRP
5.	Malibu Creek State Park Buffer Area	SEA	LACDRP
6.	Las Virgenes	SEA	LACDRP
7.	Hepatic Gulch	SEA	LACDRP
9.	Cold Creek	SEA	LACDRP
10.	Tuna Canyon	SEA	LACDRP
11.	Temescal-Rustic-Sullivan Canyons	SEA	LACDRP
12.	Palo Comado Canyon	SEA	LACDRP
13.	Chatsworth Reservior	SEA	LACDRP
14.	Simi Hills	SEA	LACDRP
15.	Tonner Canyon/Chino Hills	SEA	LACDRP
16.	Buzzard Peak/ San Jose Hills	SEA	LACDRP
17.	Powder Canyon/Punte Hills	SEA	LACDRP
18.	Way Hills	SEA	LACDRP
19.	San Francisquito Canyon	SEA	LACDRP
20.	Santa Susana Mountains	SEA	LACDRP
21.	Santa Susana Pass	SEA	LACDRP
22.	Santa Fe Dam Floodplain	SEA	LACDRP
23.	Santa Clara River	SEA	LACDRP
24.	Tujunga Valley/Hansen Dam	SEA	LACDRP
25.	San Dimas Canyon	SEA	LACDRP
26.	San Antonio Canyon Mouth	SEA	LACDRP
27.	Portuguese Bend Landslide	SEA	LACDRP
28.	El Segundo Dunes	SEA	LACDRP
29.	Ballona Creek	SEA	LACDRP
30.	Alamitos Bay	SEA	LACDRP
31.	Rolling Hills Canyons	SEA	LACDRP
32.	Agua Amarga Canyon	SEA	LACDRP
33.	Terminal Island	SEA	LACDRP
34.	Palos Verdes Peninsula Coastline	SEA	LACDRP
35.	Harbor Lake Regional Park	SEA	LACDRP
36.	Madrona Marsh	SEA	LACDRP
37.	Griffith Park	SEA	LACDRP
39.	Encino Reservoir	SEA	LACDRP
40.	Verdugo Mountains	SEA	LACDRP

1 This list is a compilation of data from the Department of Fish & Game, State Water Resources Control Board, and the Los Angeles County Department of Regional Planning as of February 29, 2000. Areas in this may changes, as area are added or deleted by the designating agencies.

FIGURE 1

SIGNIFICANT ECOLOGICAL AREAS IN LOS ANGELES COUNTY

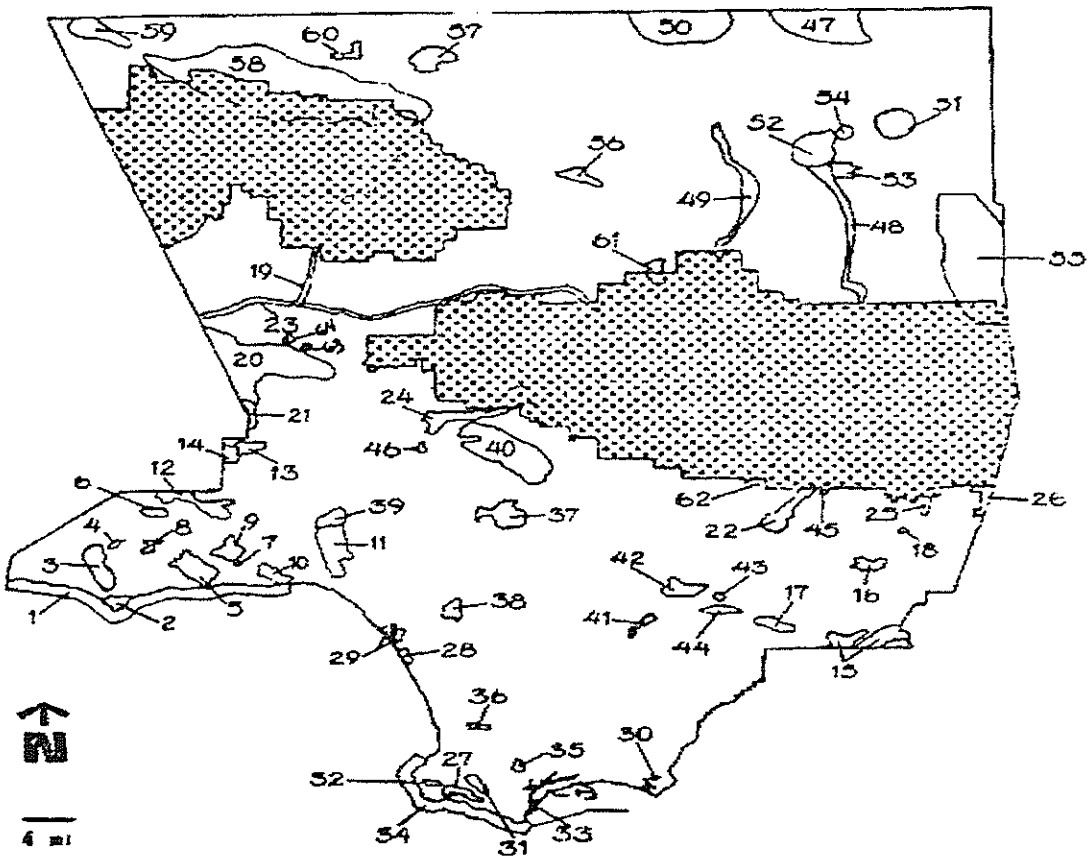
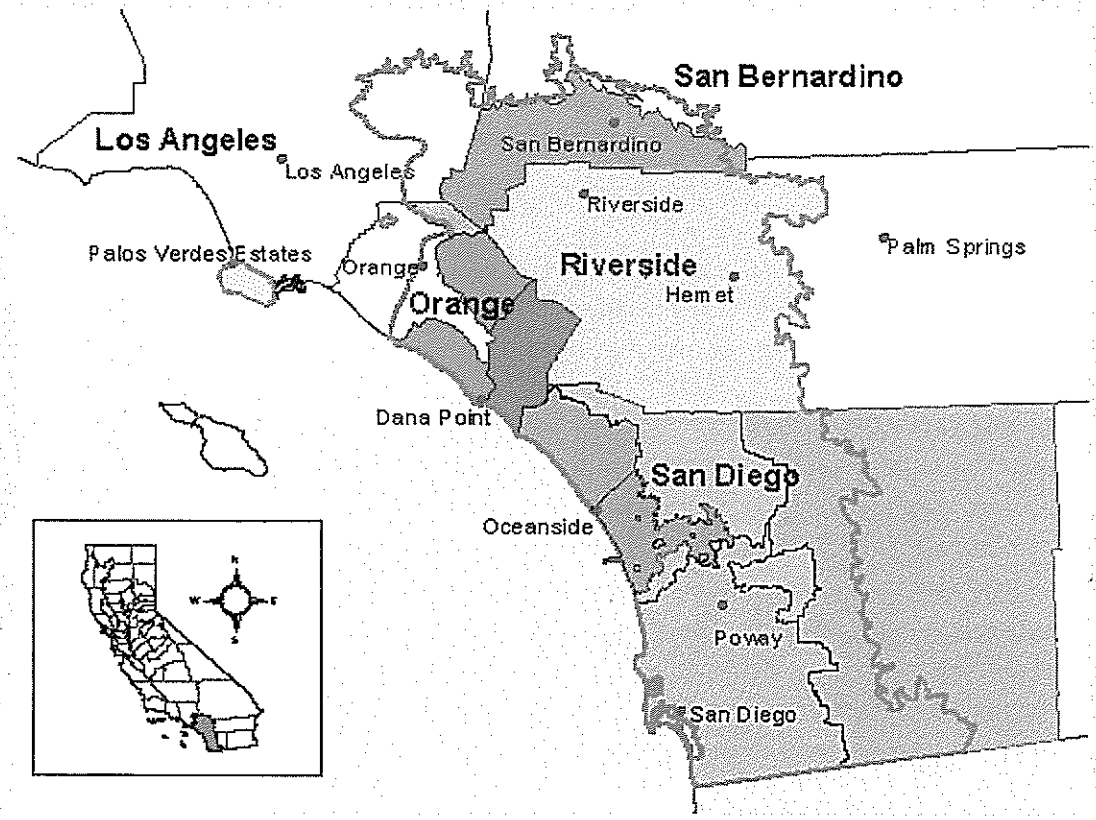


FIGURE 3

Southern Coastal Sage Scrub NCCP Region



WATERSHED MANAGEMENT INITIATIVE

STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS
January 20, 2000
Contact Ken Coulter at (916) 657-0682 for further details

WMI OVERVIEW

A. Goals and objectives

A key goal of the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) is to provide water resource protection, enhancement, and restoration while balancing economic and environmental impacts. This is done using an integrated planning approach called the Watershed Management Initiative (WMI). The main ideas that define the WMI and distinguish it from previous efforts are as follows:

1. Water resource problems are identified and prioritized primarily on the basis of water quality within individual watersheds (geographic drainage areas used for management purposes). Unique solutions are developed for each watershed that consider all local conditions and pollution sources and rely on the input and involvement of local stakeholders.

2. Historically, the SWRCB's programs have functioned on a statewide and/or region-wide basis. This has worked reasonably well for controlling conventional pollutants from point sources, but has not proven adequate to address nonpoint sources of pollution. The WMI will better coordinate existing efforts to regulate point source problems along with efforts to address challenges from the threat of nonpoint source pollution. This involves establishing working relationships between staff who previously worked only within a single program.

3. The RWQCBs work collaboratively with local stakeholder groups. In conjunction with the SWRCB, they attempt to coordinate the actions of governmental agencies and programs to best assist the local groups. Better coordination of the many overlapping state and federal activities, especially those involving regulations and funding, is critical to the success of local watershed groups.

B. Framework for implementation

The SWRCB and RWQCBs, in partnership with the U.S. Environmental Protection Agency (USEPA), have developed an integrated planning process to more effectively and efficiently direct the limited State and federal funds to the highest priority activities. Statewide priorities are developed collaboratively by the SWRCB, USEPA and the RWQCBs. These priorities and the planning process are described in the WMI Integrated Plan.

Process for Development of the Final California Unified Watershed Assessment

(in response to the federal Clean Water Action Plan, October 1, 1998)

Introduction

The Clean Water Action Plan, released by President William Clinton and Vice-President Albert Gore on February 19, 1998, requested that States and Tribes, with assistance from federal agencies and input from stakeholders and the public, convene a collaborative process to develop a Unified Watershed Assessment (UWA) to guide allocation of new federal resources for watershed protection. The Plan calls for watersheds to be placed into one of four categories:

Category I - Watersheds that are candidates for increased restoration activities due to impaired water quality or other impaired natural resource goals (emphasis on aquatic systems).

Category II - Watersheds with good water quality that, through regular program activities, can be sustained and improved.

Category III - Watersheds with pristine or sensitive areas on federal, state or tribal lands that need protection.

Category IV - Watersheds where more information is needed in order to categorize them.

The Plan also calls for states and tribes, in collaboration with others, to establish priorities among Category I watersheds for the purpose of targeting proposed new federal funds during the 1999 and 2000 federal fiscal years. A deadline of August 1 was established to complete a draft Assessment and list of Priority Watersheds to be sent out for public review. The Plan established a deadline of October 1 to issue a final Assessment and Prioritization. The October 1 deadline coincides with the beginning of the federal fiscal year and the potential availability of new funds for restoring watersheds. Not all the priority watersheds identified in the Unified Watershed Assessment (UWA) will necessarily receive funding under the Clean Water Action Plan and the extent to which Congress will provide funding, if any, is unknown at this time.

The Plan also calls for specific activities to be completed after October 1, including identifying restoration action strategies for the priority Category I watersheds and developing a long term schedule for addressing the nonpriority Category I watersheds.

Description of the California Process

In California, the process for developing the UWA was convened jointly by State Water Resources Control Board staff and the United States Department of Agriculture Natural Resources Conservation Service, in collaboration with Tribes, other state and federal natural resource agencies, local governments, universities, and a variety of stakeholder groups. The over 100 Tribal Nations located within California were given the option of collaborating with the state process, or convening a

UWA, and to develop the public process for commenting on the draft assessment. The University of California at Davis, Information Center for the Environment, played a key role in assembling, analyzing and processing the various databases and assessments in Geographic Information Systems (GIS) format to compile the UWA using the criteria set by the working group.

A Draft California Unified Watershed Assessment was released for public review through a mail-out to over 2,100 stakeholders and posting on the California NRCS Website on August 1, 1998. A copy of the Draft California UWA was also submitted to the National UWA Workgroup on August 1, 1998. Written comments on the product were due to the State Water Resources Control Board by August 31, 1998.

Over 170 written comments were received on the Draft Assessment. These were reviewed at a September 8 meeting of the State Technical Committee, with Committee members being asked for their recommendations on how to process and incorporate the comments. The California working group met on September 14 and 18 to incorporate the State Technical Committee recommendations and public comments into a final assessment for California. The working group was expanded at these meetings to include greater representation from local governments, watershed groups and state agencies, namely, the Regional Council of Rural Counties, Nevada County Resource Conservation District, Yuba River Watershed Group, and Caltrans.

There has been much interest in California in the development of the Unified Watershed Assessment, including interest in the process, the product itself, and the ways in which the product will be used, now and in the future. From the beginning of the process, and continuing in the written comments, there was great concern over the short time frame given to produce the assessment product. To address this concern, the UWA is being viewed in California as a dynamic ongoing process, with the October 1, 1998, version of the product being used to target federal fiscal year 1999 and 2000 funds only. The assessment will continue to be reviewed and improved by the working group, with greater local government and stakeholder involvement, before future funding decisions are made.

Watershed Boundaries

The watershed boundaries being used in the assessment are the federal 8-digit cataloging unit boundaries, also known as federal hydrologic units, established by the U.S. Geologic Survey. These boundaries were obtained from the CALWATER 2.0 database, currently available from Teale Data Center and the California Department of Fish and Game. A modification of the 8-digit boundary was made in one watershed, the Tulare-Buena Vista Lakes Basin, located in Central California, and it was broken into three separate watersheds, using the state hydrologic subarea boundaries for the division. Using these boundaries, a total of 149 watersheds fall completely or partially in California. A crosswalk exists that matches the federal 8-digit cataloging unit with the state hydrologic subarea boundaries.

substantially met. Category II watersheds were defined by first placing watersheds in Category I, according to the criteria outlined above. Second, the criteria for Category III watersheds were applied to the remaining watersheds and classified, as appropriate. Third, it was decided that all remaining watersheds (if any were left unclassified) would be placed in Category II, by default. These would then be examined individually by the working group to be sure Category II was the appropriate classification for them.

Criteria for Category III Watersheds:
Category III watersheds are those that have significant areas of government-owned lands (federal, state and tribal lands) that contain pristine or sensitive areas that need protection. Watersheds are considered to be Category III, if they are not impaired (i.e. not Category I), and a significant portion (more than 25 percent) of the watershed consists of:

Criteria for Pristine or Sensitive Areas	Database/Assessment Used
-Designated wilderness areas, National Park Service Lands, BLM Areas of Critical Environmental Concern, National Recreation Areas, State Parks & Reserves	Managed Areas Data Layer of U.S. Geologic Survey GAP Analysis Program (Level 1 Management Areas)
-Federal and State Wild and Scenic Rivers (DF&G	Federal and State Wild and Scenic Rivers data layer)

Criteria for Category IV Watersheds and Information Needs:
The initial Unified Watershed Assessment attempted to determine whether there were important environmental restoration needs in each individual watershed. At the scale of major watersheds (Hydrologic Units) treated in the California UWA, there is sufficient information in virtually every watershed to show whether any major waterways are impaired. Therefore, the California UWA does not identify any Category IV watersheds (insufficient information available). It is important to note, however, that this is not meant to imply that we do not need any more information about the condition of California watersheds. Even if there is enough information to document pressing restoration needs in many watersheds, assessment data for any given watershed are often incomplete and fragmentary. Resources are needed to develop better assessment data and information systems.

The working group, which represented a broad cross-section of agencies and stakeholders with an interest in water quality and land use policy, achieved a surprising level of consensus in setting priorities for watershed restoration. This success may be due in large part to the availability of pre-existing synthetic data sources and assessment tools for evaluating water-related resources. A variety of regional efforts, including the Sierra Nevada Ecosystem Project, the Interagency Ecological Program for the Bay-Delta Ecosystem, and Natural Community Conservation Planning efforts in Southern California, have developed integrated data and bioregional assessments for major portions of the California landscape. More recently, the California Biodiversity Council (which includes the heads of most of the state and federal resource management agencies in California) has sponsored a variety of efforts to coordinate data and provide better information to local policymakers. Data libraries and assessment tools from two Biodiversity Council initiatives, the California Rivers Assessment and the Natural Resources Project Inventory, provided an assessment framework for the UWA, augmented by data contributions from a number of other participants.

Criteria for Priority Watersheds

High Value

- Presence of Tribal Lands (from BIA Database)
- % Native Fish Species Richness (from Dr. Peter Moyle, UCD)
- Numbers of rare, aquatic, riparian and wetlands species present (DF&G Natural Diversity Database)
- Wetland & Vernal Pools Ranking (DF&G, Coastal Conservancy, EPA, NRCS, UCD-ICE professional judgment)
- Presence of anadromous salmonid fish species (NMFS Anadromous Species Status Review)
- Percentage of watershed with protected areas (USGS GAP Analysis Program - Level 1 Mgt. Areas)
- Percentage of watershed in native vegetation (USGS GAP Analysis Program - Vegetation Data Layer)
- State and Federal Wild and Scenic Rivers (DF&G data layer)
- Aquatic Diversity Management Areas (Dr. Peter Moyle, UCD)

High Risk

- Watersheds identified as having impairments for beneficial uses (SWRCB 303(d) list)
- Population Density (CA Dept. of Finance)
- Presence of proposed and listed threatened and endangered aquatic, wetland, anadromous salmonid and total species (DF&G Natural Diversity Database & NMFS Anadromous Species Status Review)
- High susceptibility for sediment production due to very high fuels hazard (CDF Wildfire Potential database); landslides (USFS Analysis of CDF state roads data and State Geologic Map of CA, Jennings, 1977); or surface erosion (USFS Analysis of STATSGO soils data)

High Opportunity

- SWRCB and RWQCB impaired and priority watersheds from 303(d) list and Watershed Management Initiative
- USDA Geographic Priority Areas identified by Local Working Groups (from USDA Environmental Quality Incentives Program)
- Number of watershed projects (from Natural Resource Projects Inventory database, excluding the noxious weeds database, UCD-ICE)
- Presence of Tribes with clean water programs (i.e. those Tribes with the "Treated as A State," or TAS designation from EPA)

Specific Geographic Information Systems (GIS) databases were used to apply these criteria to each of the watersheds. Watersheds were assigned numerical rankings for the state of the watershed with respect to each criterion. The rankings for the individual criteria for each watershed were then added together to create a total point count for each watershed within each area of importance - i.e. for high value, high risk and high opportunity.

The final California Unified Watershed Assessment identifies 66 priority Category I watersheds. The final list of priority watersheds was developed using a combination of the criteria/data analysis; public comments; and current watershed priorities of the State Water Resources Control Board. The data analysis yielded 34 priority watersheds by selecting those watersheds that ranked out to be above average (top 50 percent) in all three areas of high value, high risk and high opportunity, combined. The working group weighted the criteria used equally (in other words, each of the elements listed above contributed more or less equally to the draft recommendations.) The public comments yielded

California Unified Watershed Assessment
CUWA Watershed Boundaries

Information Center for the Environment
University of California, Davis

CALIFORNIA UNIFIED WATERSHED ASSESSMENT

October 1, 1998

CATEGORY I (IMPAIRED) PRIORITY WATERSHEDS

Reference Number	Watershed Name
16050101*	Lake Tahoe
16050102	Truckee
16050201*	Upper Carson
16050301	East Walker
16050302	West Walker
18010102*	Mad-Redwood
18010105*	Lower Eel
18010106*	South Fork Eel
18010108*	Big-Navarro-Garcia
18010109*	Gualala-Salmon
18010110*	Russian
18010111	Bodega Bay
18010207*	Shasta
18010209	Lower Klamath
18010211*	Trinity
18010212*	South Fork Trinity
18020002	Upper Pit
18020101	Sacramento-Lower Cow-Lower Clear
18020107	Lower Yuba
18020109*	Lower Sacramento
18020110*	Lower Cache
18020111	Lower American
18020116*	Upper Cache
18020119	Mill-Big Chico
18020125	Upper Yuba
18020126	Upper Bear
18020127	Upper Coon-Upper Auburn
18020128	North Fork American
18030006	Upper Tule
18040001*	Middle San Joaquin- Lower Chowchilla
18040002*	Middle San Joaquin- Lower Merced-Lower Stanislaus
18040003*	San Joaquin Delta
18040005*	Lower Cosumnes-Lower Mokelumne
18040006	Upper San Joaquin
18040013	Upper Cosumnes
18040014	Panoche-San Luis Reservoir
18050001*	Suisun Bay

18010210	Salmon
18020003	Lower Pit
18020004	McCloud
18020005	Sacramento Headwaters
18020102	Lower Cottonwood
18020103	Sacramento-Lower Thomes
18020104	Sacramento-Stone Corral
18020105	Lower Butte
18020106	Lower Feather
18020108	Lower Bear
18020112	Sacramento-Upper Clear
18020113	Cottonwood Headwaters
18020114	Upper Elder-Upper Thomes
18020115	Upper Stony
18020117	Upper Putah
18020118	Upper Cow-Battle
18020120	Upper Butte
18020121	North Fork Feather
18020122	East Branch North Fork Feather
18020123	Middle Fork Feather
18020124	Honcut Headwaters
18020128	North Fork American
18020129	South Fork American
18030001	Upper Kern
18030002	South Fork Kern
18030003	Middle Kern-Upper Tehachapi-Grapevine
18030004	Upper Poso
18030005	Upper Deer-Upper White
18030007	Upper Kaweah
18030008	Mill
18030009	Upper Dry
18030010	Upper King
18030011	Upper Los Gatos-Avenal
18030012a	Tulare-Buena Vista Lakes
18030012b	Tulare-Buena Vista Lakes
18030012c	Tulare-Buena Vista Lakes
18040004	Lower Calaveras-Mormon Slough
18040007	Upper Chowchilla-Upper Fresno
18040008	Upper Merced
18040009	Upper Tuolumne
18040010	Upper Stanislaus
18040011	Upper Calaveras
18040012	Upper Mokelumne
18060003	Carrizo Plain
18060004	Estrella

TABLE 7A. SUMMARY SCHEDULE FOR TMDL DEVELOPMENT
Assumes these activities are funded to adhere to this schedule

Los Angeles River Watershed

303(d) Listed Waterbody (Reach)	Pollutant	Type of TMDL	TMDL Start Date - FY (start of monitoring)	TMDL Completion Date - FY (Basin Plan amendment)	Comments
Sepulveda Channel/Canyon	NH3	nitrogen and related effects	1999/00	2001/02	
Tujunga Wash (d/s Hansen Dam to Los Angeles River)	NH3				
Tujunga Wash (d/s Hansen Dam to Los Angeles River)	scum, odors				
Los Angeles River Reach 5 (within Sepulveda Basin)	NH3				
Los Angeles River Reach 5 (within Sepulveda Basin)	scum, odors				
Los Angeles River Reach 4 (Sepulveda Dam to Riverside Dr.)	NH3				
Los Angeles River Reach 4 (Sepulveda Dam to Riverside Dr.)	scum, odors				
Los Angeles River Reach 3 (Riverside Dr. to Figueroa St.)	NH3				
Los Angeles River Reach 3 (Riverside Dr. to Figueroa St.)	odors, scum				
Los Angeles River Reach 2 (Figueroa St. to u/s Carson St.)	NH3				
Los Angeles River Reach 2 (Figueroa St. to u/s Carson St.)	odors, scum				
Los Angeles River Reach 1(u/s Carson St. to estuary)	NH3				
Los Angeles River Reach 1(u/s Carson St. to estuary)	pH				
Los Angeles River Reach 1(u/s Carson St. to estuary)	scum				
Burbank Western Channel	NH3				
Burbank Western Channel	Algae				
Verdugo Wash (Reaches 1 & 2)	algae				
Arroyo Seco Rch 1 (d/s Devil's Gate Dam) & Rch 2 (W. Holly Ave. to Devil's Gate)	algae				
Rio Hondo Reach 1 (Santa Ana Fwy to Los Angeles River)	NH3				
Rio Hondo Reach 1 (Santa Ana Fwy to Los Angeles River)	pH				
Rio Hondo Reach 2 (from Whittier Narrows Flood Control Basin to Spreading Grounds)	NH3				
Compton Creek	pH				
Tujunga Wash (d/s Hansen Dam to Los Angeles River)	coliform	coliform	1999/00	2001/02	
Los Angeles River Reach 6 (u/s of Sepulveda Basin)	coliform				
Los Angeles River Reach 4 (Sepulveda Dam to Riverside Dr.)	coliform				
Los Angeles River Reach 2 (Figueroa St. to u/s Carson St.)	coliform				
Los Angeles River Reach 1(u/s Carson St. to estuary)	coliform				
Verdugo Wash (Reaches 1 & 2)	Coliform				
Arroyo Seco Rch 1 (d/s Devil's Gate Dam) & Rch 2 (W. Holly Ave. to Devil's Gate)	Coliform				
Rio Hondo Reach 1 (Santa Ana Fwy to Los Angeles River)	coliform				
Rio Hondo Reach 2 (from Whittier Narrows Flood Control Basin to Spreading Grounds)	coliform				
Compton Creek	coliform				

TABLE 7A. SUMMARY SCHEDULE FOR TMDL DEVELOPMENT
Assumes these activities are funded to adhere to this schedule

Los Angeles River Watershed

303(d) Listed Waterbody (Reach)	Pollutant	Type of TMDL	TMDL Start Date - FY (start of monitoring)	TMDL Completion Date - FY (Basin Plan amendment)	Comments
Los Angeles River Reach 5 (within Sepulveda Basin)	ChemA	historic pest.	2002/03	2005/06	
Echo Park Lake Peck Rd Lake	PCBs DDT, chlordane	PCBs and historic pest.	2007/08	2010/11	
Peck Rd Lake Lincoln Park Lake Echo Park Lake	Pb Pb Cu, Pb	metals	2007/08	2010/11	
Los Angeles River Reach 5 (within Sepulveda Basin) Los Angeles River Reach 2 (Figueroa St. to u/s Carson St.)	oil oil	oil	2007/08	2010/11	Further assessment needed
Los Angeles River Reach 6 (u/s of Sepulveda Basin)	Volatile organics	VOCs	2007/08	2010/11	

APPENDIX L

NOISE TECHNICAL REPORT

Giroux & Associates
Environmental Consultants

NOISE IMPACT ANALYSIS

CHATSWORTH RIDGE ESTATES PROJECT

CHATSWORTH, CALIFORNIA

Prepared for:

HDR/Urban Vision
Attn: Deanna Hansen
707 Wilshire Blvd., Ste. 5320
Los Angeles, CA 90017

Date:

November 14, 2001

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NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is commonly defined as unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of sound pressure ratioed to the level barely detectable by a young person with good auditory acuity is called a decibel (dB). Because sound or noise can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale similar to the Richter Scale used in earthquake magnitude is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called "A-weighting" written as dB(A). Any further reference to decibels written as "dB" should be understood to be A-weighted.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or, alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

An interior CNEL of 45 dB(A) is mandated by multiple family dwellings in Title 24 of the California Code of Regulations. In 1988, the State Building Standards Commission recommended that the 45 dB CNEL interior standard be expanded to include all habitable rooms for all residential occupancy, including single family. The Los Angeles County has required a 45 dB CNEL interior standard for all occupancies well before the adoption of the statewide guidelines. Since typical noise attenuation within residential structures with closed windows is about 20 dB, an exterior noise exposure of 65 dB CNEL is generally the noise/land use compatibility guideline for new residential dwellings in California. A 65 dB CNEL exterior level is also the noise threshold where noise begins to substantially interfere with enjoyment of any outdoor recreational amenity such as a yard, patio, spa/pool, etc. Mitigation of exterior noise to at least 65

TABLE 1

ON-SITE NOISE MONITORING SUMMARY
(dBA)

Location	LEQ	Lmax	Lmin	L10	L50	L90
Site #1	63	67	59	65	63	61
Site #2	69	75	64	71	69	67

Source: Larson Davis Model 700B Sound Level Meter
August 18, 2000; 1330-1415.

TABLE 2

EXTENDED ON-SITE NOISE MONITORING SUMMARY
(dB[A])

	< ------- LOT 2 ------- >		< -------LOT 15------- >	
	DAY 1	DAY 2	DAY 1	DAY 2
24-Hour CNEL	71	70	59	58
Peak 1-Hour Leq	70	68	56	60
When (?)	6-7 a.m.	4-5 p.m.	5-7 a.m.	9-10 a.m.
2nd-Hi Hour Leq	68	67	56	59
When (?)	5-6 a.m. 7-8 a.m.	6-7 a.m. 3-4 p.m.	Noon-1 p.m.	5-6 a.m.
Quietest Hour	59	54	44	40
When (?)	2-3 a.m.	2-3 a.m.	4-5 a.m.	M.n.-1 a.m.

Source: On-site monitoring, 03/12-14/01.

function of the equipment used and short-term variations are strongly influenced by topographical factors that may somewhat change during the course of the project. Construction noise tends to occur in discrete phases dominated initially by earth-moving sources and later for finish construction. The heavy equipment noise typically ranges up to about 90 dB(A) at 50 feet from the source. Figure 1 summarizes the noise generation for typical construction activities.

Point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance. The loudest construction will require more than 1000 feet of distance between the source and a nearby receiver to reduce the 90 dB(A) source strength to a generally acceptable 65 dB exterior exposure level. However, the complicated terrain of the project site will shield nearby receivers from direct line of sight noise propagation such that the construction equipment noise "envelope" will be smaller than 1000 feet. Construction noise may, at times, be audible at the existing residences near the project site. Such events will be intermittent depending upon the intervening terrain. The number of potentially impacted receivers and the duration of clear audibility of construction equipment activity noise will be small.

Construction noise sources are not strictly relatable to a 24-hour community noise standard because they occur only during selected times and the source strength varies sharply with time. Construction activities are also treated separately in various community noise ordinances because they do not represent a chronic, permanent noise source. To abate the potential nuisance from construction noise, especially in very close proximity to any nearby noise-sensitive development, the Los Angeles County Noise Ordinance (Section 12.08.440 of the County Code) limits the hours of allowable construction activities and establishes noise performance standards at the nearest residential structures.

Section 12.08.440(A) limits the allowable hours of construction activities to 7 a.m. to 7 p.m. on Monday through Saturday except in an emergency. The noise performance standards in Section 12.08.440(B) of the Code distinguish between short-term (less than ten days) and long-term activities with the following standards:

Short-Term Activity:

	Single Family	Multi-Family	Semi-Residential
Daily, 7 a.m. - 8 p.m.	75	80	85
8 p.m. - 7 a.m. + Sunday & Holiday	60	65	70

Long-Term Activity:

Daily, 7 a.m. - 8 p.m.	60	65	70
8 p.m. - 7 a.m. + Sunday & Holiday	50	55	60

These noise values are indicated to be maxima. Because of their stringency for long-term operations, they could possibly be exceeded within close proximity to adjacent development for brief periods. If, however, they were exceeded with any considerable magnitude, either in terms of number of events or degree of excess noise, the County has the authority to shut the construction activity down. Because of the transitory nature of most construction activity noise impacts, the enforcement authority relative to the noise performance standards in Section 12.08.440(B) have been rarely invoked.

Enforcement of the ordinance thus provides a reasonable measure of protection for nearby residents in those localized instances where major earthworks occur within close proximity to existing residences. With a combination of an adequate distance buffer for most major earthworks, terrain shielding for many receivers and compliance with County ordinances, site development will not create a significant noise impact on the adjacent community.

Traffic Noise Impacts

The proposed development will generate around 4,422 vehicle trips per day (Linscott, Law & Greenspan, 2001). Traffic noise changes on areawide roadways were calculated using the FHWA Highway Traffic Noise Model (FHWA-RD-77-108) initialized with traffic input parameters (i.e., traffic volumes) supplied by the EIR traffic consultant. The impact analysis was conducted in areas of

TABLE 3

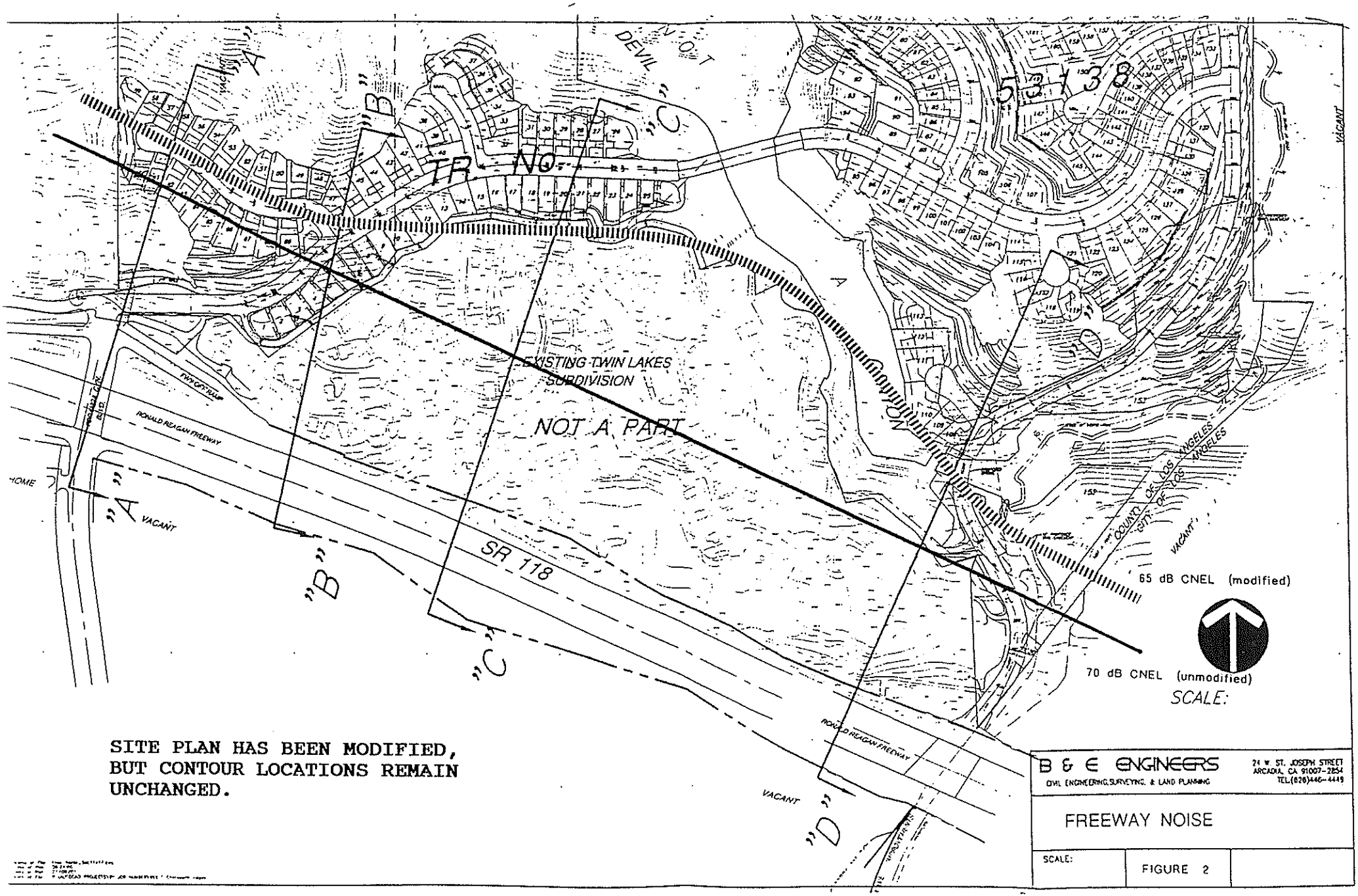
CHATSWORTH ESTATES PROJECT
TRAFFIC NOISE IMPACT ANALYSIS
(CNEL in dBA at 100 feet from each roadway centerline)

	2001	----- FUTURE - 2005 -------		
	Exist.	With Ambient Growth	With Related Project	With Project
Poema Place:				
W of Topanga Cyn. Blvd.	56.4	56.4	59.0	59.0
Mayan Drive:				
E of Topanga Cyn. Blvd. (no fwy.)	51.2	51.2	52.2	58.7
E of Topanga Cyn. Blvd. (w/fwy.)	65.1	65.1	65.2	65.9
Santa Susana Pass Road:				
W of Topanga Cyn. Blvd.	57.6	58.0	59.6	59.6
Browns Canyon Road:				
E of DeSoto Ave.	49.2	49.6	63.8	63.8
Rinaldi Street:				
W of Canoga Avenue	45.6	45.9	45.9	45.9
E of Canoga Avenue	54.8	55.1	55.1	55.7
Chatsworth Street:				
W of Topanga Cyn. Blvd.	52.8	53.3	53.3	53.3
Topanga Cyn.-Canoga Ave.	59.4	59.8	60.7	60.7
Canoga Ave.-DeSoto Ave.	61.1	61.5	62.5	62.9
E of DeSoto Avenue	63.0	63.5	63.9	63.9
Devonshire Street:				
W of Topanga Cyn. Blvd.	62.6	63.0	63.0	63.0
Topanga Cyn.-Canoga Ave.	65.1	65.5	65.8	65.9
Canoga Ave.-DeSoto Ave.	66.9	67.3	67.5	67.5
E of DeSoto Avenue	66.5	66.9	67.1	67.1
Topanga Canyon Boulevard:				
Poema Pl.-SR-118 WB Ramps (no fwy)	57.3	57.3	59.7	61.8
Poema Pl.-SR-118 WB Ramps (w/fwy)	65.7	65.7	66.1	66.7
SR-118 EB Ramps-Sta.Susana Pass	69.3	69.7	70.0	70.1
Sta. Susana Pass Rd.-Chatsworth	69.3	69.8	70.1	70.1
Chatsworth St.-Devonshire St.	68.9	69.3	69.7	69.8
S of Devonshire Street	68.5	68.9	69.4	69.5

TABLE 4

CHATSWORTH ESTATES PROJECT
TRAFFIC NOISE IMPACT ANALYSIS
(Distance to 65 dB CNEL Contour [feet] from Centerline)

	2001	------ FUTURE - 2005 ------		
	Exist.	With Ambient Growth	With Related Project	With Project
Poema Place:				
W of Topanga Cyn. Blvd.	<50	<50	<50	<50
Mayan Drive:				
E of Topanga Cyn. Blvd. (no fwy)	<50	<50	<50	<50
E of Topanga Cyn. Blvd. (w/fwy)	100	100	105	115
Santa Susana Pass Road:				
W of Topanga Cyn. Blvd.	<50	<50	<50	<50
Browns Canyon Road:				
E of DeSoto Ave.	<50	<50	85	85
Rinaldi Street:				
W of Canoga Avenue	<50	<50	<50	<50
E of Canoga Avenue	<50	<50	<50	<50
Chatsworth Street:				
W of Topanga Cyn. Blvd.	<50	<50	<50	<50
Topanga Cyn.-Canoga Ave.	<50	<50	<50	<50
Canoga Ave.-DeSoto Ave.	55	60	70	70
E of DeSoto Avenue	75	80	85	85
Devonshire Street:				
W of Topanga Cyn. Blvd.	70	75	75	75
Topanga Cyn.-Canoga Ave.	100	110	115	115
Canoga Ave.-DeSoto Ave.	135	140	145	145
E of DeSoto Avenue	125	135	140	140
Topanga Canyon Boulevard:				
Poema Pl.-SR-118 WB Ramps (no fwy)	<50	<50	<50	60
Poema Pl.-SR-118 WB Ramps (w/fwy)	110	110	120	130
SR-118 EB Ramps-Sta.Susana Pass	195	205	215	215
Sta. Susana Pass Rd.-Chatsworth	195	205	220	220
Chatsworth St.-Devonshire St.	185	195	205	210
S of Devonshire Street	170	185	195	200



SITE PLAN HAS BEEN MODIFIED, BUT CONTOUR LOCATIONS REMAIN UNCHANGED.

B & E ENGINEERS
CIVIL ENGINEERING, SURVEYING, & LAND PLANNING
24 W. ST. JOSEPH STREET
ARCADIA, CA 91007-2854
TEL.(626)446-4449

FREEWAY NOISE

SCALE:

FIGURE 2

MITIGATION

Temporary construction noise may be occasionally audible at scattered homes within/around the project site. Such impacts will be highly localized as there is generally both adequate distance and terrain shielding to minimize residential exposure to site construction activity noise. Construction noise impacts will be further minimized by compliance with County Noise Ordinance Section 12.08.440 limiting allowable hours of construction activities and prohibiting the creation of any excessively loud, unnecessary or unusual equipment noise.

No significant off-site noise impacts deriving from project-related traffic were identified requiring impact mitigation.

Potential on-site noise impacts are confined to the development perimeter in closest proximity to SR-118. Exterior levels at usable space such as patios are predicted to slightly exceed the Los Angeles County exterior noise standard of 65 dB CNEL. The following mitigation measures are required to meet all noise exposure guidelines:

(1) A solid masonry (or similarly effective barrier) is required at the top of the rear yard slope along the southern lot perimeter of Lots 1-11 and Lots 45-55.

(2) Freeway-facing, second-story windows along the southernmost tier of development will require acoustical upgrades such as thicker glass or dual-paned glazing.

(3) Central air conditioning should be a standard feature in all southern project-perimeter homes.

APPENDIX M

TRAFFIC STUDY

LINSCOTT LAW & GREENSPAN
ENGINEERS

MEMORANDUM

DATE: October 24, 2001

TO: Hans Giraud, Hans Giraud & Associates

FROM: David Shender, LLG Engineers

REFERENCE: 1-982714-2

SUBJECT: Chatsworth Ridge Estates Project
Updated tables/exhibits based on 484 dwelling units

As requested, we have prepared the following updated analysis associated with the proposed Chatsworth Ridge Estates Project. As you know, our office prepared a traffic impact study (dated March 22, 2001) which examined the potential project related traffic impacts in association with development of 538 dwelling units. The following paragraphs provide the updated analyses for this project which reflects a reduction from 538 dwellings units to 484 dwelling units.

Project Trip Generation

Table 2 attached summarizes the traffic generation forecast for the 484-dwelling unit project. As shown, the proposed project is expected to generate 348 vehicle trips (87 inbound and 261 outbound) and 445 vehicle trips (285 inbound and 160 outbound) during the weekday AM and PM peak hours, respectively. Over a 24-hour period, the project is forecasted to generate 4,422 daily trip ends during a typical weekday (2,211 inbound and 2,211 outbound trips).

The attached Exhibits 7 and 8 display the updated project traffic volumes for the AM and PM peak hours, respectively.

Traffic Impact Analysis: Future With Project Condition

The attached Exhibits 14 and 15 display the future with project traffic volumes at the study intersections for the AM and PM peak hours, respectively. Summaries of the updated V/C ratios and LOS values are shown in Tables 5 and 6. The LOS worksheets for the study intersections are also attached.

In summary, due to the reduced number of dwelling units, the V/C ratios for the "With Project" conditions as well as the incremental impacts due to the project are slightly less that those stated in the March 22, 2001 traffic impact study. However, the number of study intersections with significant impacts during the AM and PM peak hours remains unchanged at three. With the previously recommended mitigation measures at the impacted locations, the project impacts at the three study intersections are expected to be fully mitigated.

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Table 2
PROJECT TRIP GENERATION [1]
Chatsworth Ridge Estates Residential

24-Oct-2001

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Single Family Residential	484 DU	4,422	87	261	348	285	160	445
TOTAL		**4,422**	**87**	**261**	**348**	**285**	**160**	**445**

[1] Source: ITE "Trip Generation", 6th Edition, 1997.
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 210 (Single Family Detached Housing) trip generation rates.

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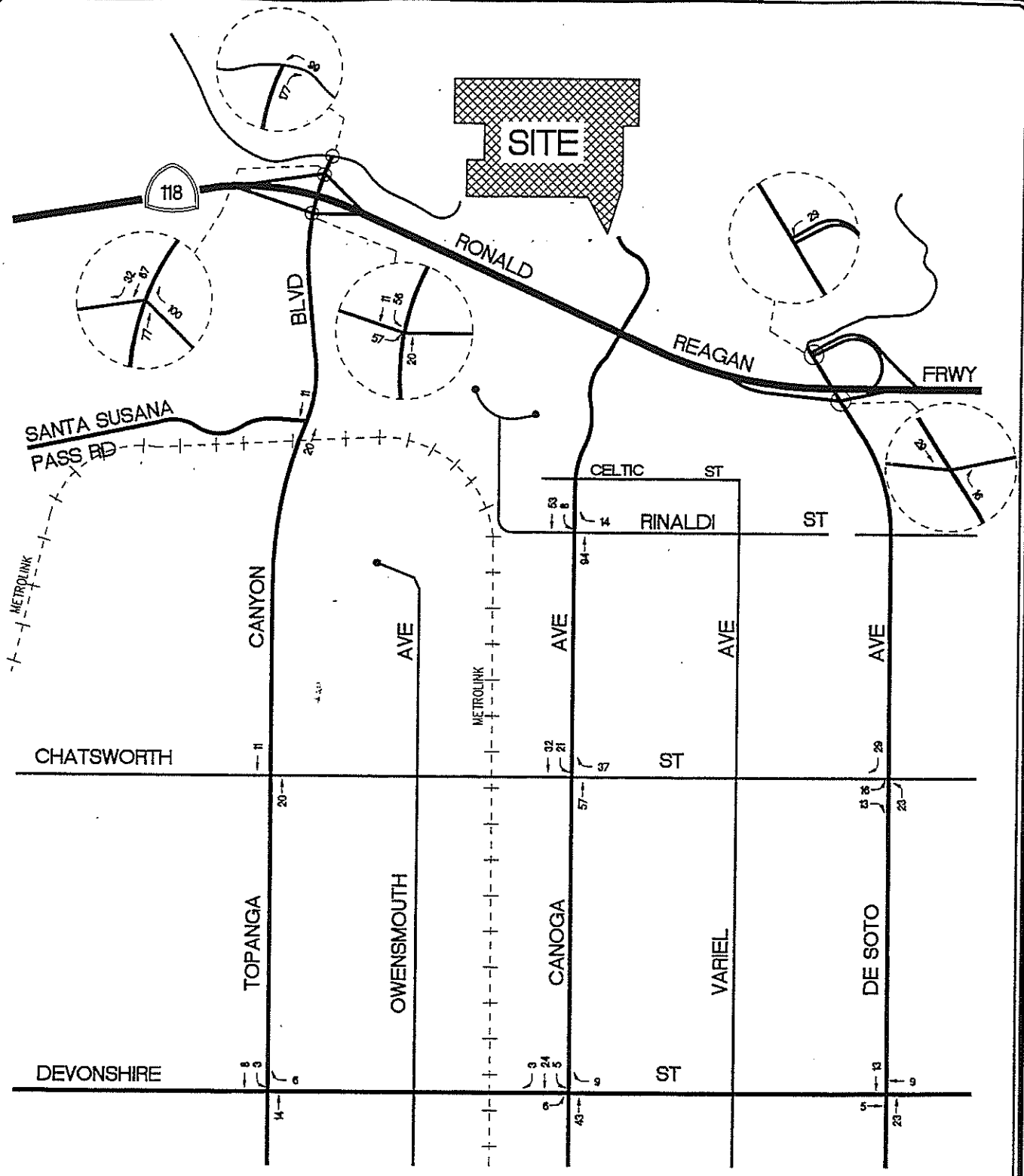
TABLE 6
SUMMARY OF VOLUME TO CAPACITY RATIOS AND LEVELS OF SERVICE
CITY OF LOS ANGELES STUDY INTERSECTIONS
AM AND PM PEAK HOURS
Chatsworth Ridge Estates

10/24/2001

NO.	INTERSECTION	PK HR	[1] 2000 EXISTING V/C	LOS	[2] YEAR 2005 W/AMBIENT GROWTH V/C	LOS	[3] YEAR 2005 W/RELATED PROJECTS V/C	LOS	[4] YEAR 2005 WITH PROJECT V/C	LOS	CHANGE V/C [(4)-(3)]	SIGNIF. IMPACT	[5] YEAR 2005 WITH MITIGATION V/C	LOS	CHANGE V/C [(5)-(3)]	MITI-GATED
3	Topanga Canyon Boulevard and SR-118 EB On/Off Ramps	AM	1.222	F	1.345	F	1.466	F	1.530	F	0.064	YES	1.460	F	-0.006	YES
		PM	1.133	F	1.246	F	1.345	F	1.391	F	0.046	YES	1.321	F	-0.024	YES
4	Topanga Canyon Boulevard and Santa Susana Pass Road	AM	0.994	E	1.093	F	1.165	F	1.171	F	0.006	NO	1.171	F	0.006	-
		PM	0.832	D	0.915	E	0.998	E	1.005	F	0.007	NO	1.005	F	0.007	-
5	Topanga Canyon Boulevard and Chatsworth Street	AM	0.824	D	0.906	E	0.959	E	0.965	E	0.006	NO	0.965	E	0.006	-
		PM	0.870	D	0.957	E	1.035	F	1.041	F	0.006	NO	1.041	F	0.006	-
6	Topanga Canyon Boulevard and Devonshire Street	AM	0.730	C	0.803	D	0.879	D	0.884	D	0.005	NO	0.884	D	0.005	-
		PM	1.045	F	1.149	F	1.239	F	1.246	F	0.007	NO	1.246	F	0.007	-
7	Canoga Avenue and Rinaldi Street	AM	0.111	A	0.122	A	0.122	A	0.158	A	0.036	NO	0.158	A	0.036	-
		PM	0.082	A	0.090	A	0.090	A	0.158	A	0.068	NO	0.158	A	0.068	-
8	Canoga Avenue and Chatsworth Street	AM	0.348	A	0.383	A	0.431	A	0.465	A	0.034	NO	0.465	A	0.034	-
		PM	0.289	A	0.318	A	0.388	A	0.440	A	0.052	NO	0.440	A	0.052	-
9	Canoga Avenue and Devonshire Street	AM	0.429	A	0.472	A	0.501	A	0.527	A	0.026	NO	0.527	A	0.026	-
		PM	0.576	A	0.634	B	0.650	B	0.668	B	0.018	NO	0.668	B	0.018	-
10	De Soto Avenue and SR-118 WB On/Off Ramps	AM	0.782	C	0.860	D	1.173	F	1.177	F	0.004	NO	1.177	F	0.004	-
		PM	0.503	A	0.554	A	0.875	D	0.887	D	0.012	NO	0.887	D	0.012	-
11	De Soto Avenue and SR-118 EB On/Off Ramps	AM	0.701	C	0.771	C	1.035	F	1.038	F	0.003	NO	1.038	F	0.003	-
		PM	0.585	A	0.644	B	0.933	E	0.935	E	0.002	NO	0.935	E	0.002	-
12	De Soto Avenue and Chatsworth Street	AM	1.008	F	1.109	F	1.221	F	1.244	F	0.023	YES	1.174	F	-0.047	YES
		PM	1.163	F	1.279	F	1.371	F	1.382	F	0.011	YES	1.312	F	-0.059	YES
13	De Soto Avenue and Devonshire Street	AM	0.814	D	0.896	D	0.965	E	0.973	E	0.008	NO	0.973	E	0.008	-
		PM	1.008	F	1.108	F	1.196	F	1.205	F	0.009	NO	1.205	F	0.009	-



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NOT TO SCALE

8

PROJECT TRAFFIC VOLUMES

PM PEAK HOUR

CHATSWORTH RIDGE ESTATES

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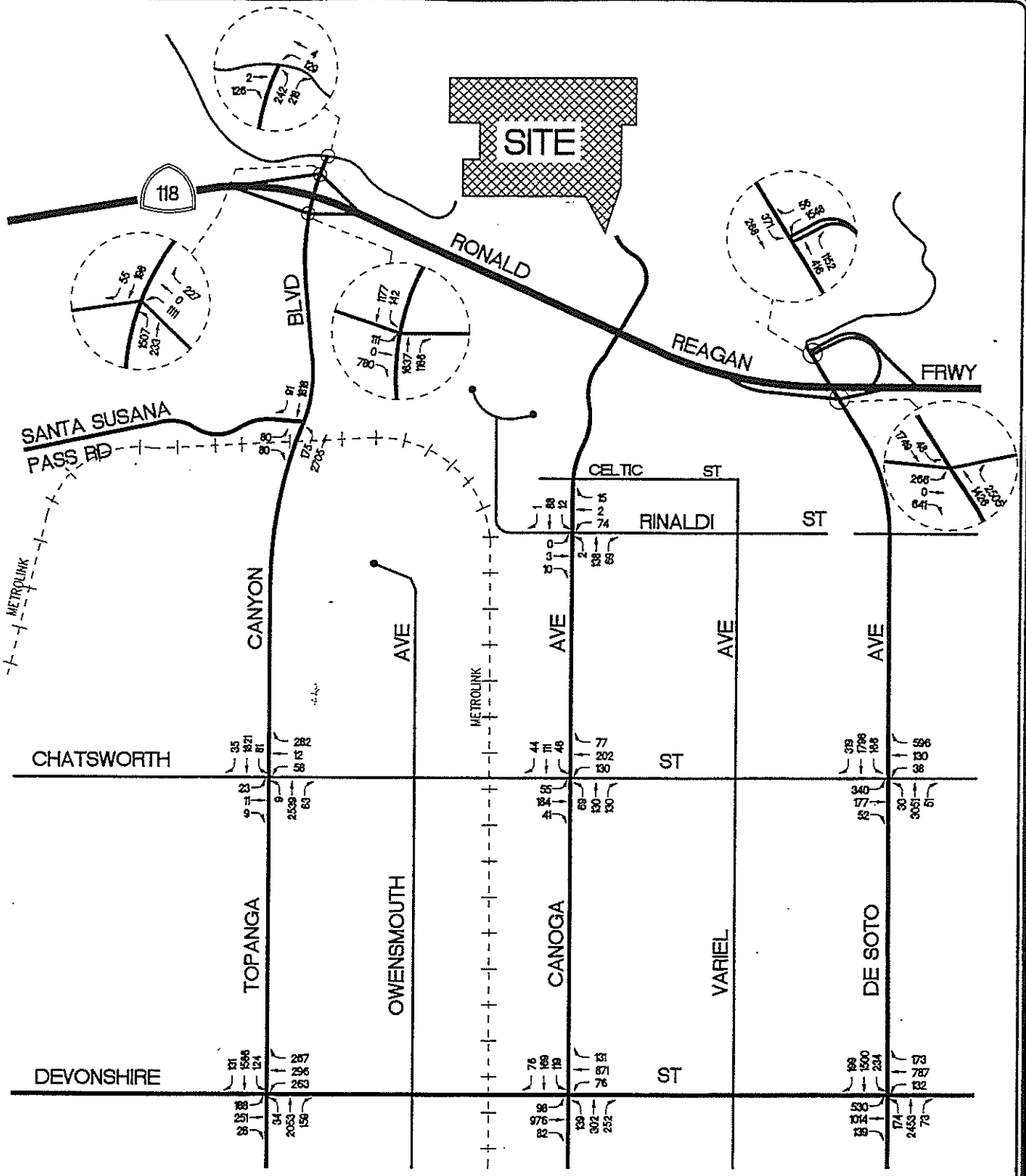

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NOT TO SCALE

15
FUTURE WITH PROJECT TRAFFIC VOLUMES
PM PEAK HOUR
CHATSWORTH RIDGE ESTATES

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626.796.2322

INTERSECTION CAPACITY UTILIZATION

N-S St: Topanga Canyon Boulevard/Mayan Drive
E-W St: SR-118 WB On/Off Ramps/Poema Place
Project: Chatsworth Ridge Estates/ 1-982714-2
File: ICU21

Topanga Canyon Boulevard/Mayan Drive @ SR-118 WB On/Off Ramps/Poema Place
Peak hr: PM
Annual Growth: 2.00%

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/AMBIENT GROWTH			2005 W/PROJECT SITE TRAFFIC				2005 W/PROJECT MITIGATION				2005 W/RELATED PROJECTS			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2, 5	V/C	Added	Total	2, 5	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	1278	2880	0.444 *	128	1406	0.488 *	0	1406	2880	0.488 *	0	1406	2880	0.488 *	101	1507	2880	0.523 *
Nb Thru	87	1600	0.054	9	96	0.060	77	173	1600	0.108	0	173	1600	0.108	60	233	1600	0.145
Nb Right	0	0	-	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Sb Left	24	0	0.000	2	26	0.000	99	125	0	0.000	0	125	0	0.000	4	129	0	0.000
Sb Thru 3	4	1600	0.018 *	0	4	0.019 *	0	4	1600	0.081 *	0	4	2880	0.045 *	0	4	2880	0.046 *
Sb Right	0	0	-	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Eb Left	0	0	0.000	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0.000
Eb Thru 4	2	1600	0.044 *	0	2	0.048 *	0	2	1600	0.048 *	0	2	2880	0.027 *	0	2	2880	0.044 *
Eb Right	68	0	-	7	75	-	0	75	0	-	0	75	0	-	51	126	0	-
Wb Left	929	0	0.000	93	1022	0.000	0	1022	0	0.000	0	1022	0	0.000	89	1111	0	0.000
Wb Thru	0	2880	0.349 *	0	0	0.363 *	0	0	2880	0.418 *	0	0	2880	0.355 *	0	0	2880	0.386 *
Wb Right	75	0	-	8	83	-	100	183	0	-	0	183	1600	0.114	44	227	1600	0.142
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.954			1.039				1.136				1.015				1.100
LOS			E			F				F				F				F

02:42 PM

* Key conflicting movement as a part of ICU
1 Counts conducted by:Accutek
2 Capacity expressed in veh/hour of green
3 Southbound movement considers the westbound movement and volumes from Mayan Drive.
4 Eastbound movement considers the eastbound movement and volumes from Poema Place.
5 Project mitigation measures include: (i) widening of the westbound SR-118 off-ramp to provide one left-turn lane, one through/left-turn lane, and one right-turn only lane; (ii) widening of Mayan Drive to provide one left-turn lane and one through/left-turn lane; and (iii) widening of Poema Place to provide one through/right-turn lane and one right-turn only lane.

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CRITICAL MOVEMENT ANALYSIS

N-S St: Topanga Canyon Boulevard
E-W St: SR-118 EB On/Off Ramps
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA3
Counts by: Accutek

Topanga Canyon Boulevard @ SR-118 EB On/Off Ramps
Peak Hour: PM
Annual Growth: 2.0%

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	1342	1	1184	134	1476	1	1302	141	1617	1	1402	20	1637	1	1412	0	1637	1	1412
Comb. T-R		1	1184			1	1302			1	1402			1	1412			1	1412
NB Right	1026	0	-	103	1129	0	-	58	1186	0	-	0	1186	0	-	0	1186	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	57	1	57	6	63	1	63	23	86	1	86	56	142	1	142	0	142	1	142
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	959	2	480	96	1055	2	527	111	1166	2	583	11	1177	2	588	0	1177	2	588
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	31	0	-	3	34	0	-	20	54	0	-	57	111	0	-	0	111	0	-
Comb. L-T		1	31			1	34			1	54			1	111			1	111
EB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	678	2	373	68	746	2	410	34	780	2	429	0	780	2	429	0	780	2	429
Comb. L-T-R -		0				0				0				0				0	
WB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1241			N-S:	1365			N-S:	1487			N-S:	1553			N-S:	1553
		E-W:	373			E-W:	410			E-W:	429			E-W:	429			E-W:	429
		SUM:	1614			SUM:	1775			SUM:	1916			SUM:	1982			SUM:	1982
No. of Phases:			3				3				3				3				3
Volume / Capacity:			1.133				1.246				1.345				1.391			*	1.321
Level of Service:			F				F				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.
** V/C ratio reduced by 0.07 to reflect contribution to the City's ATSAC system.*

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234 E. Colorado Blvd., Suite 400 Pasadena, CA 91101
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CRITICAL MOVEMENT ANALYSIS

Topanga Canyon Boulevard @ Santa Susana Pass Road
Peak Hour: PM
Annual Growth: 2.0%

N-S St: Topanga Canyon Boulevard
E-W St: Santa Susana Pass Road
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA4
Counts by: Accutek

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	138	1	138	14	152	1	152	23	175	1	175	0	175	1	175	0	175	1	175
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	2295	2	1148	230	2525	2	1262	161	2685	2	1343	20	2705	2	1353	0	2705	2	1353
Comb. T-R		0	-			0	-			0	-			0	-			0	-
NB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	1547	2	774	155	1702	2	851	105	1807	2	903	11	1818	2	909	0	1818	2	909
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	46	1	46	5	51	1	51	40	91	1	91	0	91	1	91	0	91	1	91
Comb. L-T-R -		0				0				0				0				0	
EB Left	38	1	38	4	42	1	42	38	80	1	80	0	80	1	80	0	80	1	80
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	47	1	47	5	52	1	52	28	80	1	80	0	80	1	80	0	80	1	80
Comb. L-T-R -		0				0				0				0				0	
WB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1148			N-S:	1262			N-S:	1343			N-S:	1353			N-S:	1353
		E-W:	38			E-W:	42			E-W:	80			E-W:	80			E-W:	80
		SUM:	1186			SUM:	1304			SUM:	1422			SUM:	1432			SUM:	1432
No. of Phases:			3				3				3				3				3
Volume / Capacity:			0.832				0.915				0.998				1.005				1.005
Level of Service:			D				E				E				F				F

Assumptions:

Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

Topanga Canyon Boulevard @ Chatsworth Street
Peak Hour: PM
Annual Growth: 2.0%

N-S St: Topanga Canyon Boulevard
E-W St: Chatsworth Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA5
Counts by: Accutek

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	8	1	8	1	9	1	9	0	9	1	9	0	9	1	9	0	9	1	9
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	2125	1	1078	213	2338	1	1185	182	2519	1	1291	20	2539	1	1301	0	2539	1	1301
Comb. T-R		1	1078			1	1185			1	1291			1	1301			1	1301
NB Right	30	0	-	3	33	0	-	30	63	0	-	0	63	0	-	0	63	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	57	1	57	6	63	1	63	18	81	1	81	0	81	1	81	0	81	1	81
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	1529	1	781	153	1682	1	859	128	1810	1	923	11	1821	1	928	0	1821	1	928
Comb. T-R		1	781			1	859			1	923			1	928			1	928
SB Right	32	0	-	3	35	0	-	0	35	0	-	0	35	0	-	0	35	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	21	0	-	2	23	0	-	0	23	0	-	0	23	0	-	0	23	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	10	0	39	1	11	0	43	0	11	0	43	0	11	0	43	0	11	0	43
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	8	0	-	1	9	0	-	0	9	0	-	0	9	0	-	0	9	0	-
Comb. L-T-R -		1				1				1				1				1	
WB Left	17	1	17	2	19	1	19	39	58	1	58	0	58	1	58	0	58	1	58
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	11	0	-	1	12	0	-	0	12	0	-	0	12	0	-	0	12	0	-
Comb. T-R		1	87			1	96			1	97			1	97			1	97
WB Right	254	1	178	25	279	1	196	3	282	1	198	0	282	1	198	0	282	1	198
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1135			N-S:	1248			N-S:	1372			N-S:	1362			N-S:	1362
		E-W:	170			E-W:	187			E-W:	180			E-W:	180			E-W:	180
		SUM:	1305			SUM:	1435			SUM:	1552			SUM:	1562			SUM:	1562
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.870				0.957				1.035				1.041				1.041
Level of Service:			D				E				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opl. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

N-S St: Topanga Canyon Boulevard
E-W St: Devonshire Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA6
Counts by: Accutek

Topanga Canyon Boulevard @ Devonshire Street
Peak Hour: PM
Annual Growth: 2.0%

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	31	1	31	3	34	1	34	0	34	1	34	0	34	1	34	0	34	1	34
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	1681	1	899	168	1849	1	988	190	2039	1	1099	14	2053	1	1106	0	2053	1	1106
Comb. T-R		1	899			1	988			1	1099			1	1106			1	1106
NB Right	116	0	-	12	128	0	-	31	159	0	-	0	159	0	-	0	159	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	98	1	98	10	108	1	108	13	121	1	121	3	124	1	124	0	124	1	124
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	1294	2	471	129	1423	2	518	155	1578	2	570	8	1586	2	572	0	1586	2	572
Comb. T-R		1	471			1	518			1	570			1	572			1	572
SB Right	119	0	-	12	131	0	-	0	131	0	-	0	131	0	-	0	131	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	171	1	171	17	188	1	188	0	188	1	188	0	188	1	188	0	188	1	188
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	228	1	127	23	251	1	139	0	251	1	139	0	251	1	139	0	251	1	139
Comb. T-R		1	127			1	139			1	139			1	139			1	139
EB Right	25	0	-	3	28	0	-	0	28	0	-	0	28	0	-	0	28	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	183	2	101	18	201	2	111	62	263	2	145	0	263	2	145	0	263	2	145
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	269	1	269	27	296	1	296	0	296	1	296	0	296	1	296	0	296	1	296
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	218	1	218	22	240	1	240	21	261	1	261	6	267	1	267	0	267	1	267
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:	N-S:		997	N-S:			1096	N-S:			1220	N-S:			1230	N-S:			1230
	E-W:		440	E-W:			484	E-W:			484	E-W:			484	E-W:			484
	SUM:		1437	SUM:			1580	SUM:			1704	SUM:			1714	SUM:			1714
No. of Phases:			4				4				4				4				4
Volume / Capacity:			1.045				1.149				1.239				1.246				1.246
Level of Service:			F				F				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

Canoga Avenue @ Rinaldi Street
Peak Hour: PM
Annual Growth: 2.0%

N-S St: Canoga Avenue
E-W St: Rinaldi Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA7
Counts by: Accutek

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	2	1	2	0	2	1	2	0	2	1	2	0	2	1	2	0	2	1	2
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	40	1	40	4	44	1	44	0	44	1	44	94	138	1	138	0	138	1	138
Comb. T-R		0	-			0	-			0	-			0	-			0	-
NB Right	63	1	63	6	69	1	69	0	69	1	69	0	69	1	69	0	69	1	69
Comb. L-T-R -		0				0				0				0				0	
SB Left	4	1	4	0	4	1	4	0	4	1	4	8	12	1	12	0	12	1	12
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	32	1	32	3	35	1	35	0	35	1	35	53	88	1	88	0	88	1	88
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1
Comb. L-T-R -		0				0				0				0				0	
EB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	3	0	12	0	3	0	13	0	3	0	13	0	3	0	13	0	3	0	13
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	9	0	-	1	10	0	-	0	10	0	-	0	10	0	-	0	10	0	-
Comb. L-T-R -		1				1				1				1				1	
WB Left	67	1	67	7	74	1	74	0	74	1	74	0	74	1	74	0	74	1	74
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	2	0	-	0	2	0	-	0	2	0	-	0	2	0	-	0	2	0	-
Comb. T-R		1	3			1	3			1	3			1	17			1	17
WB Right	1	0	-	0	1	0	-	0	1	0	-	14	15	0	-	0	15	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	44			N-S:	48			N-S:	48			N-S:	150			N-S:	150
		E-W:	79			E-W:	87			E-W:	87			E-W:	87			E-W:	87
		SUM:	123			SUM:	135			SUM:	135			SUM:	237			SUM:	237
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.082				0.090				0.090				0.158				0.158
Level of Service:			A				A				A				A				A

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

N-S St: Canoga Avenue
E-W St: Chatsworth Street
Project: Chatsworth Ridge Estates/ 1-962714-2
File Name: CMA8
Counts by: Accutek

Canoga Avenue @ Chatsworth Street
Peak Hour: PM
Annual Growth: 2.0%

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	63	0	-	6	69	0	-	0	69	0	-	0	69	0	-	0	69	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	66	0	227	7	73	0	250	0	73	0	271	57	130	0	328	0	130	0	328
Comb. T-R		0	-			0	-			0	-			0	-			0	-
NB Right	98	0	-	10	108	0	-	22	130	0	-	0	130	0	-	0	130	0	-
Comb. L-T-R -		1				1				1				1				1	
SB Left	23	0	-	2	25	0	-	0	25	0	-	21	46	0	-	0	46	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	72	0	135	7	79	0	149	0	79	0	149	32	111	0	202	0	111	0	202
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	40	0	-	4	44	0	-	0	44	0	-	0	44	0	-	0	44	0	-
Comb. L-T-R -		1				1				1				1				1	
EB Left	50	0	-	5	55	0	-	0	55	0	-	0	55	0	-	0	55	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	123	0	210	12	135	0	231	48	184	0	279	0	184	0	279	0	184	0	279
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	37	0	-	4	41	0	-	0	41	0	-	0	41	0	-	0	41	0	-
Comb. L-T-R -		1				1				1				1				1	
WB Left	87	1	87	9	96	1	96	35	130	1	130	0	130	1	130	0	130	1	130
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	117	1	117	12	129	1	129	73	202	1	202	0	202	1	202	0	202	1	202
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	36	1	36	4	40	1	40	0	40	1	40	37	77	1	77	0	77	1	77
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:	N-S:		187	N-S:			206	N-S:			227	N-S:			305	N-S:			305
	E-W:		247	E-W:			272	E-W:			355	E-W:			355	E-W:			355
	SUM:		434	SUM:			477	SUM:			582	SUM:			660	SUM:			660
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.289				0.318				0.388				0.440				0.440
Level of Service:			A				A				A				A				A

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

N-S St: Canoga Avenue
E-W St: Devonshire Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA9
Counts by: Accutek

Canoga Avenue @ Devonshire Street
Peak Hour: PM
Annual Growth: 2.0%

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	121	1	121	12	133	1	133	6	139	1	139	0	139	1	139	0	139	1	139
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	216	1	216	22	238	1	238	22	259	1	256	43	302	1	277	0	302	1	277
Comb. T-R		1	229			1	252			1	256			1	277			1	277
NB Right	229	0	-	23	252	0	-	0	252	0	-	0	252	0	-	0	252	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	104	1	104	10	114	1	114	0	114	1	114	5	119	1	119	0	119	1	119
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	100	1	100	10	110	1	110	35	145	1	145	24	169	1	169	0	169	1	169
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	66	1	66	7	73	1	73	0	73	1	73	3	76	1	76	0	76	1	76
Comb. L-T-R -		0				0				0				0				0	
EB Left	84	1	84	8	92	1	92	0	92	1	92	6	98	1	98	0	98	1	98
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	852	1	462	85	937	1	508	39	976	1	529	0	976	1	529	0	976	1	529
Comb. T-R		1	462			1	508			1	529			1	529			1	529
EB Right	72	0	-	7	79	0	-	3	82	0	-	0	82	0	-	0	82	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	69	1	69	7	76	1	76	0	76	1	76	0	76	1	76	0	76	1	76
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	726	1	419	73	799	1	460	73	871	1	497	0	871	1	501	0	871	1	501
Comb. T-R		1	419			1	460			1	497			1	501			1	501
WB Right	111	0	-	11	122	0	-	0	122	0	-	9	131	0	-	0	131	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	333			N-S:	366			N-S:	370			N-S:	397			N-S:	397
		E-W:	531			E-W:	584			E-W:	605			E-W:	605			E-W:	605
		SUM:	864			SUM:	950			SUM:	975			SUM:	1002			SUM:	1002
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.576				0.634				0.650				0.668				0.668
Level of Service:			A				B				B				B				B

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

N-S St: De Soto Avenue
E-W St: SR-118 WB On/Off Ramps
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA10
Counts by: Accutek

De Soto Avenue @ SR-118 WB On/Off Ramps
Peak Hour: PM
Annual Growth: 2.0%

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	9	1	9	1	10	1	10	406	416	2	208	0	416	2	208	0	416	2	208
Comb. T-R		0	-			0	-			0	-			0	-			0	-
NB Right *	1046	2	575	105	1151	2	633	2	1152	2	634	0	1152	2	634	0	1152	2	634
Comb. L-T-R -		0				0				0				0				0	
SB Left	1	0	-	0	1	0	-	370	371	2	204	0	371	2	204	0	371	2	204
Comb. L-T		1	13			1	14			0	-			0	-			0	-
SB Thru	24	1	13	2	26	1	14	242	268	1	268	0	268	1	268	0	268	1	268
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	1350	2	743	135	1485	2	817	34	1519	2	835	29	1548	2	851	0	1548	2	851
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	5	1	5	1	6	1	6	51	56	1	56	0	56	1	56	0	56	1	56
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	13			N-S:	14			N-S:	412			N-S:	412			N-S:	412
		E-W:	743			E-W:	817			E-W:	835			E-W:	851			E-W:	851
		SUM:	755			SUM:	831			SUM:	1247			SUM:	1263			SUM:	1263
No. of Phases:			2				2				3				3				3
Volume / Capacity:			0.503				0.554				0.875				0.887				0.887
Level of Service:			A				A				D				D				D

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.
** Northbound right turn movement is free under existing and with ambient growth conditions.*

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CRITICAL MOVEMENT ANALYSIS

De Soto Avenue @ SR-118 EB On/Off Ramps
Peak Hour: PM
Annual Growth: 2.0%

N-S St: De Soto Avenue
E-W St: SR-118 EB On/Off Ramps
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA11
Counts by: Accutek

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	1037	1	858	104	1141	1	943	285	1426	1	1086	0	1426	1	1089	0	1426	1	1089
Comb. T-R		1	858			1	943			1	1086			1	1089			1	1089
NB Right *	2261	1	1583	226	2487	1	1741	2	2489	1	1742	16	2505	1	1753	0	2505	1	1753
Comb. L-T-R -		0				0				0				0				0	
SB Left	18	1	18	2	20	1	20	28	48	1	48	0	48	1	48	0	48	1	48
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	1339	2	670	134	1473	2	736	247	1720	2	860	29	1749	2	875	0	1749	2	875
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	2	0	-	0	2	0	-	264	266	0	-	0	266	0	-	0	266	0	-
Comb. L-T		1	2			1	2			1	266			1	266			1	266
EB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right *	580	1	580	58	638	1	638	3	641	1	641	0	641	1	641	0	641	1	641
Comb. L-T-R -		0				0				0				0				0	
WB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	876			N-S:	963			N-S:	1134			N-S:	1136			N-S:	1136
		E-W:	2			E-W:	2			E-W:	266			E-W:	266			E-W:	266
		SUM:	878			SUM:	965			SUM:	1400			SUM:	1402			SUM:	1402
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.585				0.644				0.933				0.935				0.935
Level of Service:			A				B				E				E				E

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.
** Eastbound right turn movement is free.*

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CRITICAL MOVEMENT ANALYSIS

De Soto Avenue @ Chatsworth Street
Peak Hour: PM
Annual Growth: 2.0%

N-S St: De Soto Avenue
E-W St: Chatsworth Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA12
Counts by: Acculek

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	6	1	6	1	7	1	7	0	7	1	7	23	30	1	30	0	30	1	30
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	2553	2	862	255	2808	2	948	243	3051	2	1034	0	3051	2	1034	0	3051	2	1034
Comb. T-R		1	862			1	948			1	1034			1	1034			1	1034
NB Right	32	0	-	3	35	0	-	16	51	0	-	0	51	0	-	0	51	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	149	1	149	15	164	1	164	2	166	1	166	0	166	1	166	0	166	1	166
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	1473	2	737	147	1620	2	810	178	1798	2	899	0	1798	2	899	0	1798	2	899
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	202	1	202	20	222	1	222	68	290	1	290	29	319	1	319	0	319	1	319
Comb. L-T-R -		0				0				0				0				0	
EB Left	255	1	255	26	281	1	281	43	324	1	324	16	340	1	340	0	340	1	340
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	136	1	86	14	150	1	94	27	177	1	108	0	177	1	114	0	177	1	114
Comb. T-R		1	86			1	94			1	108			1	114			1	114
EB Right	35	0	-	4	39	0	-	0	39	0	-	13	52	0	-	0	52	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	6	1	6	1	7	1	7	32	38	1	38	0	38	1	38	0	38	1	38
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	81	1	81	8	89	1	89	41	130	1	130	0	130	1	130	0	130	1	130
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	540	1	540	54	594	1	594	2	596	1	596	0	596	1	596	0	596	1	596
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1011			N-S:	1112			N-S:	1200			N-S:	1200			N-S:	1200
		E-W:	646			E-W:	711			E-W:	753			E-W:	769			E-W:	769
		SUM:	1657			SUM:	1822			SUM:	1953			SUM:	1969			SUM:	1969
No. of Phases:			3				3				3				3				3
Volume / Capacity:			1.163				1.279				1.371				1.382			*	1.312
Level of Service:			F				F				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 100% of overlapping left turn.
** V/C ratio reduced by 0.07 to reflect contribution to the City's ATSAC system.*

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CRITICAL MOVEMENT ANALYSIS

N-S St: De Soto Avenue
E-W St: Devonshire Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA13
Counts by: Acculek

De Soto Avenue @ Devonshire Street
Peak Hour: PM
Annual Growth: 2.0%

Date: 10/24/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	152	2	84	15	167	2	92	7	174	2	96	0	174	2	96	0	174	2	96
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	1975	2	680	198	2173	2	748	257	2430	2	834	23	2453	2	842	0	2453	2	842
Comb. T-R		1	680			1	748			1	834			1	842			1	842
NB Right	66	0	-	7	73	0	-	1	73	0	-	0	73	0	-	0	73	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	212	2	117	21	233	2	128	1	234	2	129	0	234	2	129	0	234	2	129
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	1162	2	448	116	1278	2	492	208	1487	2	562	13	1500	2	566	0	1500	2	566
Comb. T-R		1	448			1	492			1	562			1	566			1	566
SB Right	181	0	-	18	199	0	-	0	199	0	-	0	199	0	-	0	199	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	482	2	265	48	530	2	292	0	530	2	292	0	530	2	292	0	530	2	292
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	885	1	504	89	974	1	554	35	1009	1	574	5	1014	1	576	0	1014	1	576
Comb. T-R		1	504			1	554			1	574			1	576			1	576
EB Right	123	0	-	12	135	0	-	4	139	0	-	0	139	0	-	0	139	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	120	2	66	12	132	2	73	0	132	2	73	0	132	2	73	0	132	2	73
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	647	2	324	65	712	2	356	66	778	2	389	9	787	2	393	0	787	2	393
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	156	1	156	16	172	1	172	2	173	1	173	0	173	1	173	0	173	1	173
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	797			N-S:	877			N-S:	963			N-S:	972			N-S:	972
		E-W:	589			E-W:	647			E-W:	681			E-W:	685			E-W:	685
		SUM:	1386			SUM:	1524			SUM:	1644			SUM:	1657			SUM:	1657
No. of Phases:			4				4				4				4				4
Volume / Capacity:			1.008				1.108				1.196				1.205				1.205
Level of Service:			F				F				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

TRAFFIC IMPACT STUDY
CHATSWORTH RIDGE ESTATES PROJECT
CHATSWORTH, CALIFORNIA

Prepared for:

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March 22, 2001
(Revised November 15, 2001)
1-982714-2

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EXECUTIVE SUMMARY

The purpose of this study is to evaluate the traffic impacts associated with the development of 538 single-family residential units, to be located north of the State Route 118 Freeway between Topanga Canyon Boulevard and De Soto Avenue in the unincorporated area of Los Angeles County. The project is expected to generate 387 vehicle trips during the AM peak hour and 489 vehicle trips during the PM peak hour. Over a 24-hour period the proposed project is forecasted to generate 4,874 daily trip ends during a typical weekday.

While the project site is in an unincorporated area of Los Angeles County, the street system that provides access to the site is primarily located within the City of Los Angeles. In order to evaluate the potential impacts to the local street system, the City of Los Angeles Department of Transportation (LADOT) staff determined that 13 intersections (two of which are located in County of Los Angeles' jurisdiction) were required for analysis to determine changes in operations following occupancy and utilization of the project. The Intersection Capacity Utilization (ICU) method (County of Los Angeles intersections) and the Critical Movement Analysis (CMA) method (City of Los Angeles intersections) were utilized to determine Volume-to-Capacity ratios and corresponding Levels of Service. The study intersections analyzed are as follows:

1. Topanga Canyon Boulevard & Poema Place/Mayan Drive (County)
2. Topanga Canyon Boulevard & SR-118 WB On/Off Ramps (County)
3. Topanga Canyon Boulevard & SR-118 EB On/Off Ramps
4. Topanga Canyon Boulevard & Santa Susana Pass Road
5. Topanga Canyon Boulevard & Chatsworth Street
6. Topanga Canyon Boulevard & Devonshire Street
7. Canoga Avenue & Rinaldi Street
8. Canoga Avenue & Chatsworth Street
9. Canoga Avenue & Devonshire Street
10. De Soto Avenue & SR-118 WB On/Off Ramps
11. De Soto Avenue & SR-118 EB On/Off Ramps
12. De Soto Avenue & Chatsworth Street
13. De Soto Avenue & Devonshire Street

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De Soto Avenue & Chatsworth Street

- Fund the implementation of the City of Los Angeles ATSAC system at this intersection.

To summarize, the recommended traffic mitigation measures at the Topanga Canyon Boulevard terminus area provide significant improvements to traffic flow based on the following:

- The incorporation of the Poema Place and Mayan Drive/A Street approaches within the overall traffic signal control of the intersection substantially improves the efficiency (and safety) of traffic movements to and from these streets.

- The additional capacity provided at the intersection (i.e., expanding the Poema Place approach from one to two lanes, expanding the Mayan Drive/A Street approach from one to two lanes, and providing a new right-turn only lane on the SR 118 westbound off-ramp) allows for more vehicles to travel through the intersection during a green light phase, thus reducing the queues and delays currently experienced by motorists.

Incremental, but not significant impacts are forecasted at the remaining ten study intersections. Furthermore, the traffic analysis also determined that Canoga Avenue would continue to operate at very good levels of service, even after the addition of traffic generated by the proposed project (e.g., all three study intersections on Canoga Avenue are projected to continue operate at LOS A during the AM peak hour and LOS A or LOS B during the PM peak hour).

Other key items discussed in the report include a Congestion Management Program (CMP) roadway impact analysis and a transit impact analysis. The Topanga Canyon Boulevard and SR-118 Freeway Westbound On/Off Ramps intersection is a CMP monitoring location. Based on the CMP significant impact criteria, a project-related impact is anticipated at this intersection. The roadway improvement measure for this intersection, as described above, is expected to improve overall operations of this intersection, thereby reducing the project impacts to less than significant levels. No other CMP monitoring locations would be significantly impacted by the proposed project.

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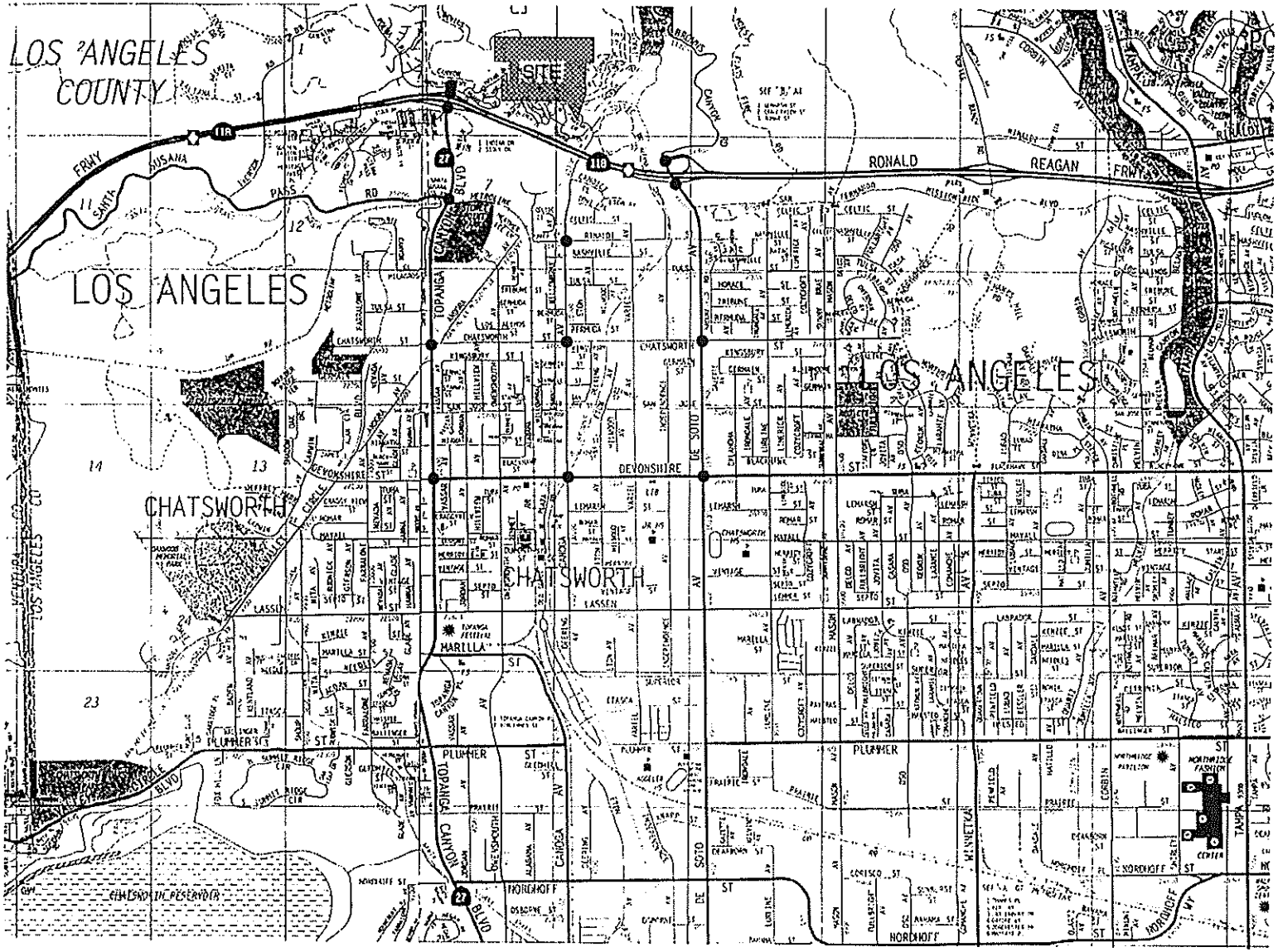
TRAFFIC IMPACT STUDY
CHATSWORTH RIDGE ESTATES PROJECT
CHATSWORTH, CALIFORNIA

INTRODUCTION

This traffic analysis has been conducted to identify and evaluate the potential impacts that traffic generated by the development of the proposed Chatsworth Ridge Estates Residential Project will have on the local roadway network. The proposed project is located north of the State Route 118 Freeway between Topanga Canyon Boulevard and De Soto Avenue in the unincorporated area of Los Angeles County. The development will provide a total of 538 residential units.

The traffic analysis follows County of Los Angeles and City of Los Angeles traffic study guidelines and evaluates potential project-related impacts associated with the proposed development at 13 key intersections in the vicinity of the project site. The study intersections were determined by City of Los Angeles Department of Transportation (LADOT) staff, and confirmed with staff from the Los Angeles County Department of Public Works (LACDPW), Traffic and Lighting Division. While the project site is in an unincorporated area of Los Angeles County, 11 of the 13 study intersections are located within the City of Los Angeles. The Critical Movement Analysis (CMA) method was used to determine Volume-to-Capacity (V/C) ratios and Levels of Service (LOS) at the 11 City of Los Angeles study intersections while the Intersection Capacity Utilization (ICU) method was used to determine the V/C and LOS at the two County of Los Angeles study intersections.



MAP SOURCE: THOMAS BROS. GUIDE

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NOT TO SCALE

1

VICINITY MAP

CHATSWORTH RIDGE ESTATES

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Nine of the 13 study intersections selected for analysis are controlled by traffic signals. The existing lane configurations at the 13 study intersections are displayed in Exhibit 3. A brief description of the important roadways in the project vicinity is provided in the following paragraphs.

The Ronald Reagan Freeway (State Route 118) extends from the Foothill Freeway (Route 210) to Ventura County. The freeway serves Simi Valley as well as the northern portions of the San Fernando Valley. In the project vicinity, the Ronald Reagan Freeway generally consists of four mainline travel lanes plus a high occupancy vehicle (HOV) lane in each direction. On/Off Ramps were analyzed at both Topanga Canyon Boulevard and De Soto Avenue as part of this study. It should be noted that the freeway ramps located at De Soto Avenue are presently not signalized.

Topanga Canyon Boulevard is a state highway (SR 27) and a major north-south route across the San Fernando Valley which terminates just north of the SR 118 Freeway. Two travel lanes are provided on Topanga Canyon Boulevard in each direction. Near Devonshire Street, three southbound travel lanes are provided. The posted speed limits on Topanga Canyon Boulevard vary between 40 and 45 miles per hour (MPH). Tow Away No Stopping Anytime (TANSAT) signs are posted on both sides of Topanga Canyon Boulevard in the project vicinity. Near Santa Susana Pass Road, parking is generally permitted on both sides of Topanga Canyon Boulevard between 6:00 AM and 10:00 PM. South of Chatsworth Street, no parking is permitted on the west side of Topanga Canyon Boulevard.

Canoga Avenue is a north-south roadway in the project vicinity. One through travel lane is generally provided in each direction. Near Devonshire Street, two travel lanes are provided in each direction. Canoga Avenue is posted for a 35 MPH speed limit. North of Rinaldi Street, parking is prohibited on both sides of Canoga Avenue. South of Rinaldi Street, parking is permitted in some areas.

De Soto Avenue is a north-south roadway which terminates just north of the SR 118 Freeway. Two travel lanes are provided in each direction north of Chatsworth Street and three travel lanes are provided in each direction south of Chatsworth Street. The posted speed limits on De Soto Avenue vary between 40 MPH and 45 MPH. In the project vicinity, no parking on De Soto Avenue is permitted.

Poema Place/Mayan Drive is an east-west roadway that connects with Topanga Canyon Boulevard and forms a "Tee" intersection. Poema Place comprises the west leg of the intersection and Mayan Drive (a private road) comprises the east leg of the intersection. The posted speed limit on Poema Place is 35 MPH and parking is generally permitted. It should be noted that Mayan Drive, which is currently unimproved (i.e., no curb and gutter), will provide immediate access to the proposed project site.

Santa Susana Pass Road is an east-west roadway located south of the proposed project and terminates at Topanga Canyon Boulevard. One through travel lane is provided in each direction. The posted speed limit on Santa Susana Pass Road is 35 MPH Bike lanes are provided while parking is not permitted on Santa Susana Pass Road.

Rinaldi Street is a residential east-west roadway south of the project area. Rinaldi Street provides one through travel lane in each direction. Parking is generally permitted on Rinaldi Street east of Canoga Avenue. West of Canoga Avenue, Rinaldi Street is signed as "Not a Through Street".

Chatsworth Street is an east-west roadway located south of the project area. One travel lane is generally provided in each direction. Parking is permitted in some area on Chatsworth Street. The posted speed limit on Chatsworth Street is 35 MPH.

MTA Line 167

MTA Line 167 provides service along De Soto Street, Devonshire Street, and Lassen Street in the project vicinity, including service to the Chatsworth Transportation Center. In the AM peak hour, Line 167 provides headways of three buses in the westbound/northbound direction and three buses in the eastbound/southbound direction. During the PM peak hour, Line 167 provides headways of two buses in each direction.

MTA Line 168

MTA Line 168 provides service along Topanga Canyon Boulevard and Lassen Street in the project vicinity, including service to the Chatsworth Transportation Center. During the AM peak hour, Line 168 provides headways of one bus in the eastbound and one bus in the westbound direction. During the PM peak hour, Line 168 provides headways of one bus per hour in each direction.

MTA Line 243

MTA Line 243 provides service along Canoga Avenue, De Soto Avenue, Mason Avenue, Devonshire Street, and Lassen Street in the project vicinity, including service to the Chatsworth Transportation Center. During the AM peak hour in the project vicinity, Line 243 provides headways of five buses in the northbound direction and four buses in the southbound direction. During the PM peak hour, Line 243 provides headways of two buses per hour in each direction.

MTA Line 245

MTA Line 245 provides service along Topanga Canyon Boulevard, Canoga Avenue, Devonshire Street, and Lassen Street in the project vicinity, including service to the Chatsworth Transportation Center. During the AM peak hour, Line 245 provides headways of two buses in the northbound direction and two buses in the southbound direction. During the PM peak hour, Line 245 provides headways of one bus in each direction.

West Valley Smart Shuttle

The West Valley Smart Shuttle provides both demand-response and fixed-route service in the project vicinity. The Smart Shuttle provides headways every thirty minutes at several access points in the project study area, including the Chatsworth Transportation Center, the Chatsworth High School, Lawrence Middle School, and Mason Recreation Center & Park.

Metrolink Commuter Rail

Metrolink is a regional commuter train system which provides service within the Los Angeles, Ventura, Orange, Riverside, and San Bernardino counties. The Chatsworth Metrolink station is located approximately one-half block south of Devonshire Boulevard between Canoga Avenue and Owensmouth Avenue at the Chatsworth Transportation Center. The Chatsworth Metrolink station connects with several bus transit operators including six MTA lines, the LADOT Commuter Express Line 419, SCT Line 791, the Simi Valley Transit Route C, and the West Valley Smart Shuttle.

TRAFFIC COUNTS

Manual counts of vehicular turning movements were conducted at each of the thirteen study intersections during the morning (AM) and afternoon (PM) commuter periods to determine the peak hour traffic volumes. Traffic volumes at the study intersections show the typical peak periods between 7:00 AM to 10:00 AM and between 3:00 PM to 6:00 PM which are generally associated with weekday peak commuter hours. Table 1 summarizes the AM and PM peak hour manual counts at the study intersections. The existing traffic volumes at the study intersections during the AM and PM peak hours are shown in Exhibits 4 and 5, respectively. Summary sheets of the manual counts are contained in Appendix A.

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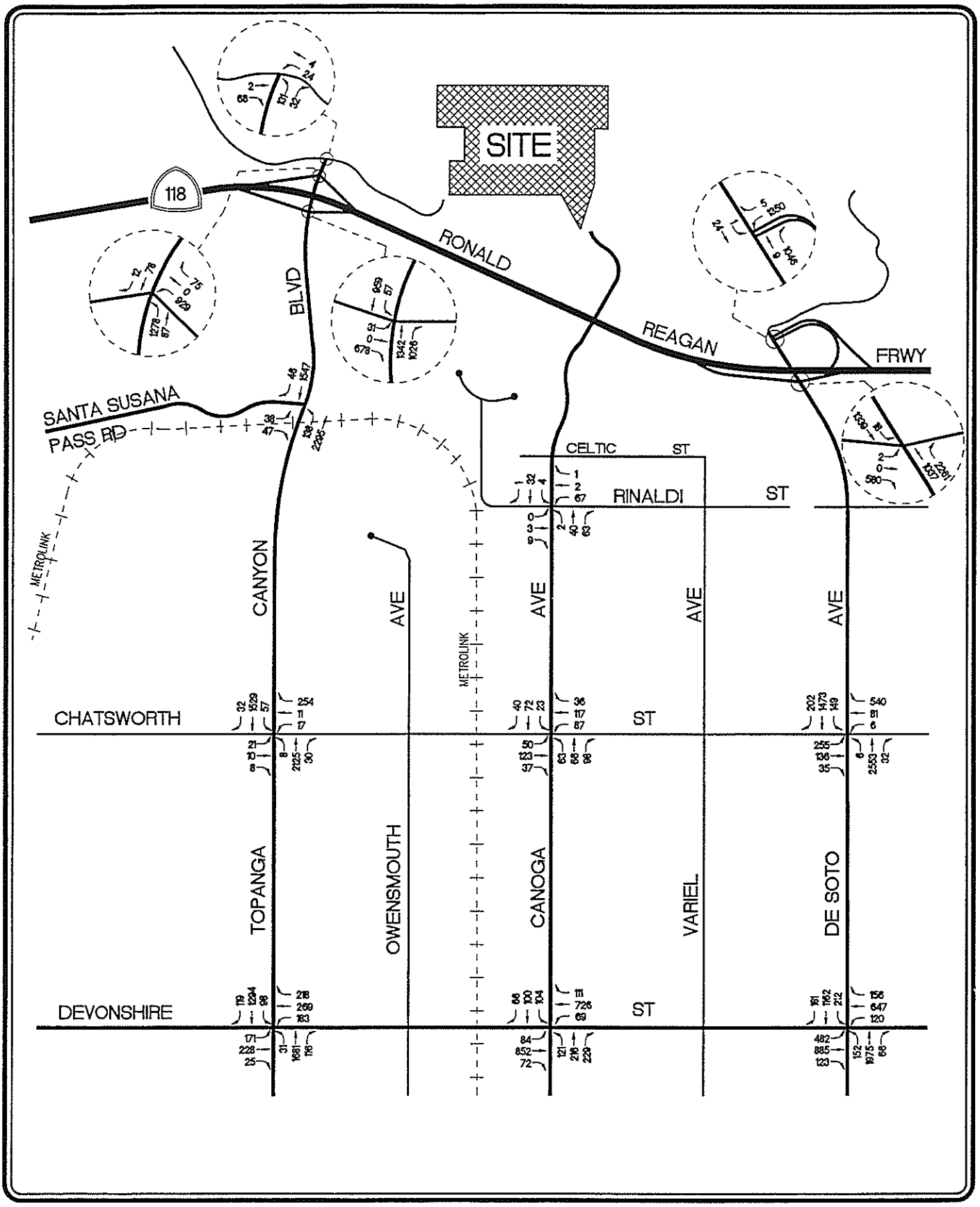
Table 1 (CONTINUED)
EXISTING TRAFFIC VOLUMES
Chatsworth Ridge Estates

13-Mar-2000

INT.	INTERSECTION	DATE	DIR	AM PEAK HOUR BEGAN	AM PEAK HOUR VOLUME	PM PEAK HOUR BEGAN	PM PEAK HOUR VOLUME
10	De Soto Avenue and SR-118 WB On/Off Ramps [1]	01/04/00	NB	7:15	474	4:45	1,055
			SB		6		25
			EB		0		0
			WB		2,121		1,355
11	De Soto Avenue and SR-118 EB On/Off Ramps [1]	01/04/00	NB	7:15	1,626	4:45	3,298
			SB		2,099		1,357
			EB		777		582
			WB		0		17,722
12	De Soto Avenue and Chatsworth Street [1]	01/04/00	NB	7:30	1,265	4:30	2,591
			SB		2,635		1,824
			EB		354		426
			WB		336		627
13	De Soto Avenue and Devonshire Street [1]	01/04/00	NB	7:30	1,078	4:45	2,193
			SB		2,122		1,555
			EB		758		1,490
			WB		864		923

[1] Counts conducted by Accutek



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EXISTING TRAFFIC VOLUMES

PM PEAK HOUR

CHATSWORTH RIDGE ESTATES

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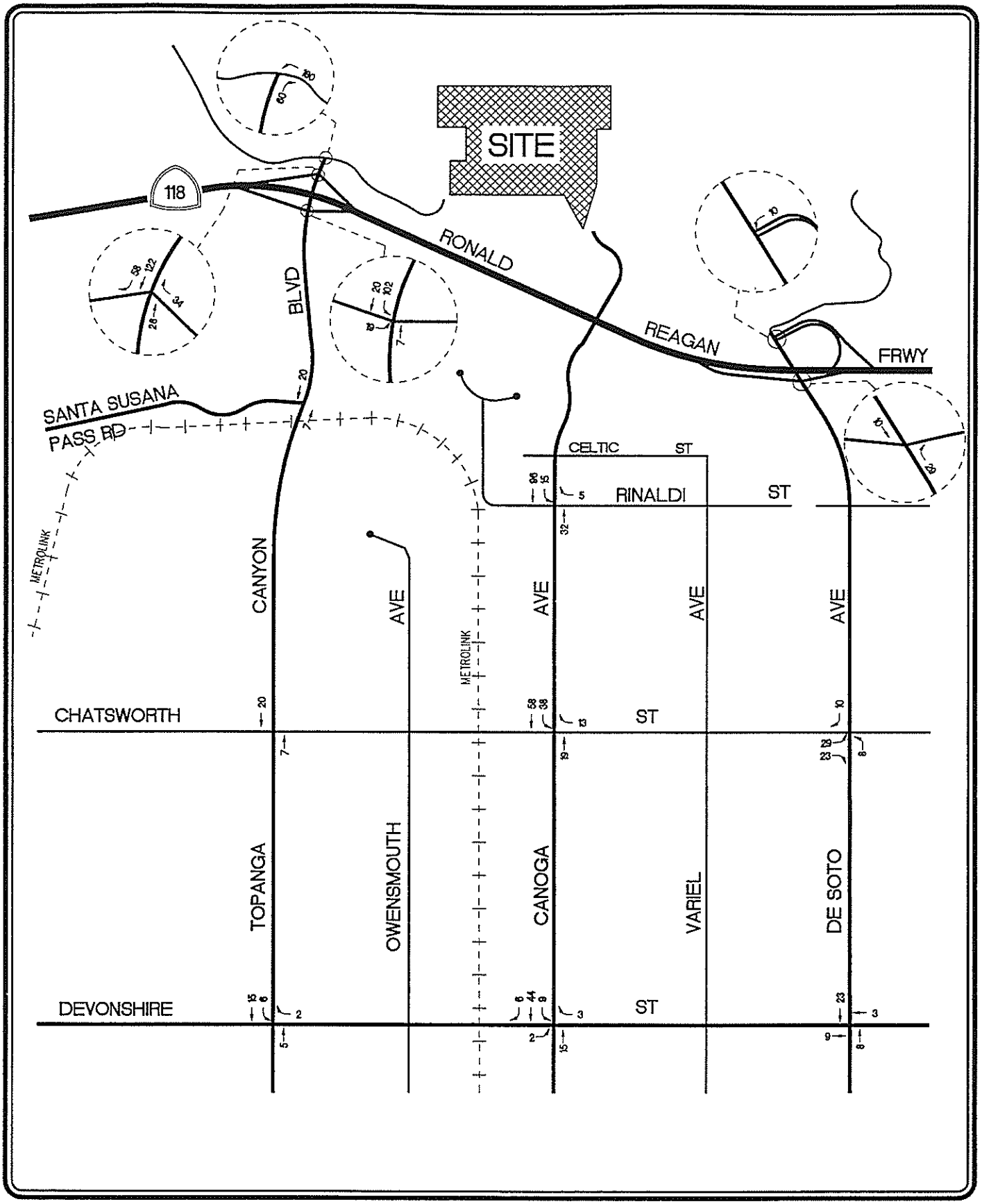
Table 2
PROJECT TRIP GENERATION [1]
Chatsworth Ridge Estates Residential

10-Nov-2000

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Single Family Residential	538 DU	4,874	97	290	387	313	176	489
TOTAL		**4,874**	**97**	**290**	**387**	**313**	**176**	**489**

[1] Source: ITE "Trip Generation", 6th Edition, 1997.
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 210 (Single Family Detached Housing) trip generation rates.



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7
PROJECT TRAFFIC VOLUMES
AM PEAK HOUR
CHATSWORTH RIDGE ESTATES

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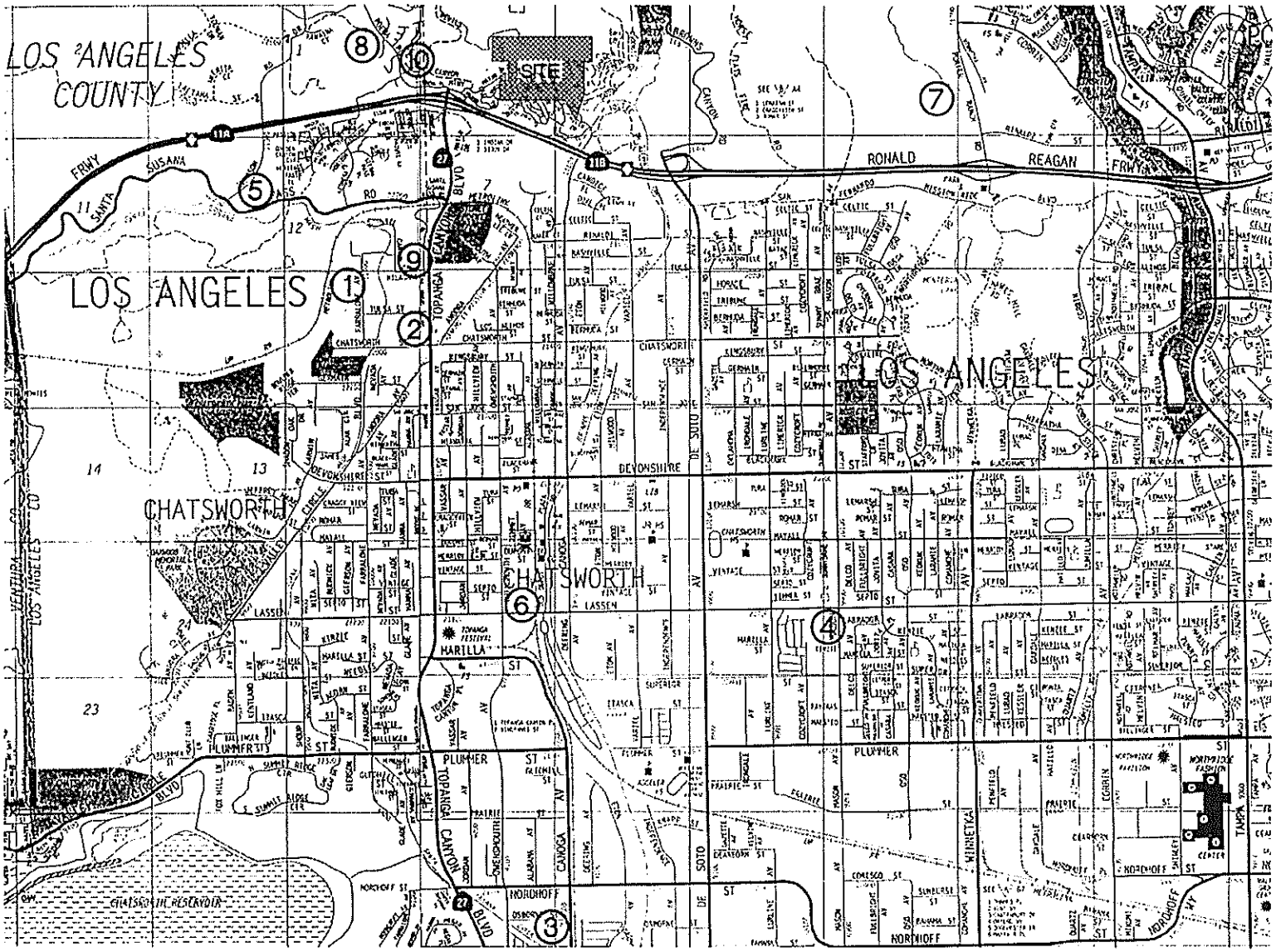
projects research was conducted based on information on file at the City of Los Angeles Department of Planning and the City of Los Angeles Department of Transportation. The list of other known development projects in the area is presented in Table 3. Exhibit 9 shows the location of the related projects.

Traffic volumes expected to be generated by the related projects were calculated using rates provided in the ITE *Trip Generation* manual, or were obtained from previously approved traffic impact studies. Table 4 shows the related projects respective traffic generation for the AM and PM peak hours, as well as on a daily basis for a typical weekday. Exhibits 10 and 11 display the anticipated distribution of the related projects traffic volumes to the study intersections during the AM and PM peak hours, respectively.

In order to account for unknown related projects not included in this analysis, the existing traffic volumes were increased at an annual rate of two percent (2%) to the year 2005 (i.e., the anticipated year of project build-out). Application of this "ambient growth" factor allows for a conservative "worst case" forecast of future traffic volumes in the area.

TRAFFIC IMPACT ANALYSIS METHODOLOGY

The County of Los Angeles study intersections were evaluated using the Intersection Capacity Utilization (ICU) method of analysis, and the City of Los Angeles study intersections were evaluated using the Critical Movement Analysis (CMA) method of analysis. Both methods determine Volume-to-Capacity (V/C) ratio on a critical lane basis. The overall intersection V/C ratio is subsequently assigned a Level of Service (LOS) value to describe intersection operations. The LOS vary from LOS A (free flow) to LOS F (jammed condition). It should be noted that LOS D is typically recognized as the minimum acceptable level of service in urban areas. Appendix B provides descriptions of both the ICU and CMA methods and their corresponding Levels of Service.



MAP SOURCE: THOMAS BROS. GUIDE

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LOCATION OF RELATED PROJECTS

CHATSWORTH RIDGE ESTATES

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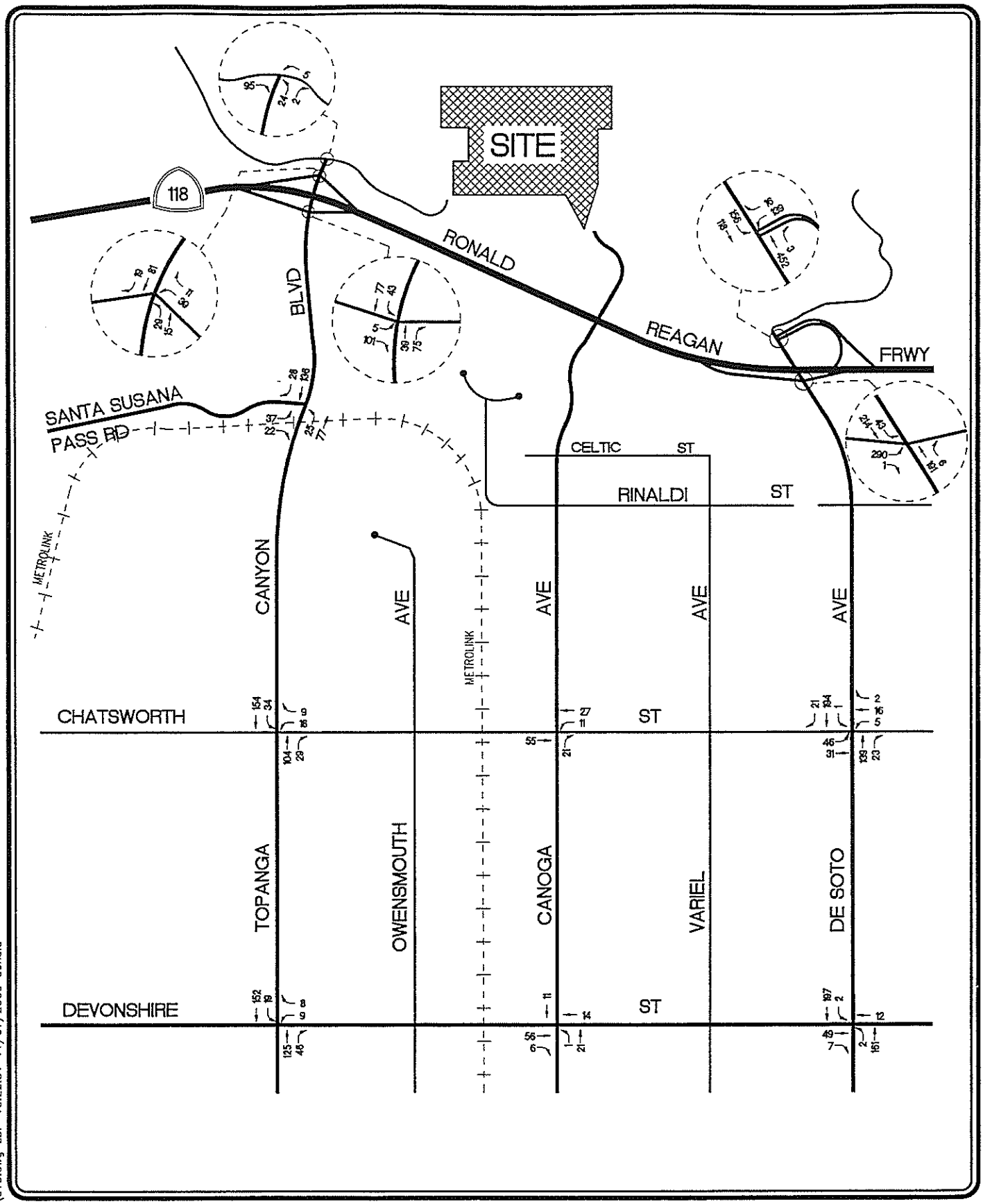

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RELATED PROJECTS TRAFFIC VOLUMES

AM PEAK HOUR

CHATSWORTH RIDGE ESTATES

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Impact Criteria and Thresholds

The relative impact of the added project traffic volumes expected to be generated by the proposed Chatsworth Ridge Estates project during the AM and PM peak hours was evaluated based on analysis of future operating conditions at the thirteen study intersections, without and with the proposed project. The previously discussed capacity analysis procedures were utilized to evaluate the future V/C relationships and service level characteristics at each study intersection.

For the two County of Los Angeles study intersections, the significance of the potential project generated traffic impacts was identified using the traffic impact analysis guidelines set forth in the County of Los Angeles Department of Public Works' "Traffic Impact Analysis Report Guidelines", January, 1997. According to the County's published guidelines, the impact is considered significant if the project related increase in the V/C ratio equals or exceeds the following threshold:

	Pre-Project V/C	LOS	Project Related Increase in V/C
•	>0.700-0.800	C	equal to or greater than 0.04
•	>0.800-0.900	D	equal to or greater than 0.02
•	> 0.900	E-F	equal to or greater than 0.01

For the 11 City of Los Angeles study intersections, the significance of the potential project generated traffic impacts was identified using the traffic impact criteria set forth in LADOT's "Traffic Study Policies and Procedures," November, 1993. According to the City's published traffic study guidelines, a significant transportation impact is determined based on the following sliding scale criteria:

	Final V/C	LOS	Project Related Increase in V/C
•	>0.700-0.800	C	equal to or greater than 0.04
•	>0.800-0.900	D	equal to or greater than 0.02
•	> 0.900	E-F	equal to or greater than 0.01

The traffic volumes for each new condition were added to the volumes in the prior condition to determine the change in capacity utilization at the following study intersections:

1. Topanga Canyon Boulevard & Poema Place/Mayan Drive (County)
2. Topanga Canyon Boulevard & SR-118 WB On/Off Ramps (County)
3. Topanga Canyon Boulevard & SR-118 EB On/Off Ramps
4. Topanga Canyon Boulevard & Santa Susana Pass Road
5. Topanga Canyon Boulevard & Chatsworth Street
6. Topanga Canyon Boulevard & Devonshire Street
7. Canoga Avenue & Rinaldi Street
8. Canoga Avenue & Chatsworth Street
9. Canoga Avenue & Devonshire Street
10. De Soto Avenue & SR-118 WB On/Off Ramps
11. De Soto Avenue & SR-118 EB On/Off Ramps
12. De Soto Avenue & Chatsworth Street
13. De Soto Avenue & Devonshire Street

Summaries of the V/C ratios and LOS values during the AM and PM peak hours are shown in Table 5 for the two County of Los Angeles study intersections and are shown in Table 6 for the 11 City of Los Angeles study intersections. Appendix B contains the ICU and CMA data worksheets for the study intersections.

It should be noted that the Mayan Drive/Poema Place and SR-118 Westbound On/Off Ramps intersections with Topanga Canyon Boulevard are within close proximity (i.e., less than 50 feet). Field observations confirm that the movement of traffic of the Mayan Drive/Poema Place intersection which is currently under stop sign control, is highly dependent on the traffic signal operations at the adjacent signalized intersection of Topanga Canyon Boulevard/SR-118 Westbound On/Off Ramps. Therefore, the traffic analysis has assumed that these two intersections function as a single signalized location.

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TABLE 6
SUMMARY OF VOLUME TO CAPACITY RATIOS AND LEVELS OF SERVICE
CITY OF LOS ANGELES STUDY INTERSECTIONS
AM AND PM PEAK HOURS
Chatsworth Ridge Estates

03/21/2001

NO.	INTERSECTION	PK HR	[1] 2000 EXISTING V/C	LOS	[2] YEAR 2005 W/AMBIENT GROWTH V/C	LOS	[3] YEAR 2005 W/RELATED PROJECTS V/C	LOS	[4] YEAR 2005 WITH PROJECT V/C	LOS	CHANGE V/C [(4)-(3)]	SIGNIF. IMPACT	[5] YEAR 2005 WITH MITIGATION V/C	LOS	CHANGE V/C [(5)-(3)]	MITI-GATED
3	Topanga Canyon Boulevard and	AM	1.222	F	1.345	F	1.466	F	1.538	F	0.072	YES	1.468	F	0.002	YES
	SR-118 EB On/Off Ramps	PM	1.133	F	1.246	F	1.345	F	1.396	F	0.051	YES	1.326	F	-0.019	YES
4	Topanga Canyon Boulevard and	AM	0.994	E	1.093	F	1.165	F	1.172	F	0.007	NO	1.172	F	0.007	-
	Santa Susana Pass Road	PM	0.832	D	0.915	E	0.998	E	1.006	F	0.008	NO	1.006	F	0.008	-
5	Topanga Canyon Boulevard and	AM	0.824	D	0.906	E	0.959	E	0.966	E	0.007	NO	0.966	E	0.007	-
	Chatsworth Street	PM	0.870	D	0.957	E	1.035	F	1.042	F	0.007	NO	1.042	F	0.007	-
6	Topanga Canyon Boulevard and	AM	0.730	C	0.803	D	0.879	D	0.886	D	0.007	NO	0.886	D	0.007	-
	Devonshire Street	PM	1.045	F	1.149	F	1.239	F	1.248	F	0.009	NO	1.248	F	0.009	-
7	Canoga Avenue and	AM	0.111	A	0.122	A	0.122	A	0.164	A	0.042	NO	0.164	A	0.042	-
	Rinaldi Street	PM	0.082	A	0.090	A	0.090	A	0.165	A	0.075	NO	0.165	A	0.075	-
8	Canoga Avenue and	AM	0.348	A	0.383	A	0.431	A	0.469	A	0.038	NO	0.469	A	0.038	-
	Chatsworth Street	PM	0.289	A	0.318	A	0.388	A	0.445	A	0.057	NO	0.445	A	0.057	-
9	Canoga Avenue and	AM	0.429	A	0.472	A	0.501	A	0.530	A	0.029	NO	0.530	A	0.029	-
	Devonshire Street	PM	0.576	A	0.634	B	0.650	B	0.669	B	0.019	NO	0.669	B	0.019	-
10	De Soto Avenue and	AM	0.782	C	0.860	D	1.173	F	1.177	F	0.004	NO	1.177	F	0.004	-
	SR-118 WB On/Off Ramps	PM	0.503	A	0.554	A	0.875	D	0.887	D	0.012	NO	0.887	D	0.012	-
11	De Soto Avenue and	AM	0.701	C	0.771	C	1.035	F	1.039	F	0.004	NO	1.039	F	0.004	-
	SR-118 EB On/Off Ramps	PM	0.585	A	0.644	B	0.933	E	0.935	E	0.002	NO	0.935	E	0.002	-
12	De Soto Avenue and	AM	1.008	F	1.109	F	1.221	F	1.247	F	0.026	YES	1.177	F	-0.044	YES
	Chatsworth Street	PM	1.163	F	1.279	F	1.371	F	1.383	F	0.012	YES	1.313	F	-0.058	YES
13	De Soto Avenue and	AM	0.814	D	0.896	D	0.965	E	0.974	E	0.009	NO	0.974	E	0.009	-
	Devonshire Street	PM	1.008	F	1.108	F	1.196	F	1.205	F	0.009	NO	1.205	F	0.009	-

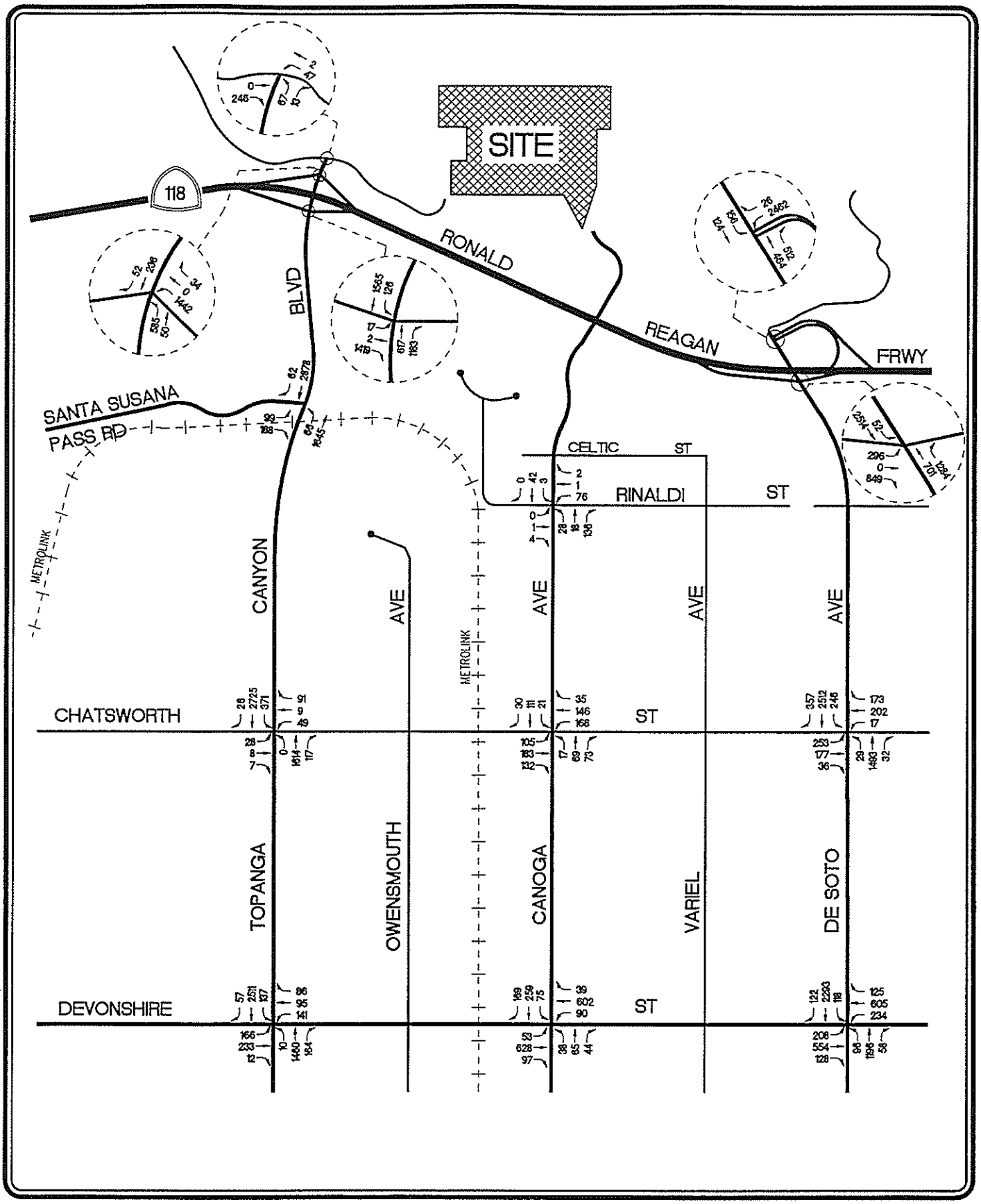
4. Topanga Canyon Boulevard & Santa Susana Pass Road (LOS F - AM Peak Hour, LOS E - PM Peak Hour)
5. Topanga Canyon Boulevard & Chatsworth Street (LOS E - AM/PM Peak Hours)
6. Topanga Canyon Boulevard & Devonshire Street (LOS F - PM Peak Hour)
12. De Soto Avenue & Chatsworth Street (LOS F - AM/PM Peak Hours)
13. De Soto Avenue & Devonshire Street (LOS F - PM Peak Hour)

The remaining study intersections are expected to operate at acceptable Levels of Service (LOS D or better) during both the AM and PM peak hours.

With Related Projects

The City of Los Angeles analysis procedures require that consideration of traffic due to Related Projects to be considered prior to consideration of traffic due to the proposed project. Table 6 shows that the LOS at the study intersections are incrementally increased by the addition of traffic generated by the related projects listed in Table 3. The following eight study intersections are anticipated to operate at LOS E or F during either the AM or PM peak hours with the addition of traffic expected to be generated by the related projects:

3. Topanga Canyon Boulevard & SR-118 EB On-Off Ramps (LOS F - AM/PM Peak Hours)
4. Topanga Canyon Boulevard & Santa Susana Pass Road (LOS F - AM Peak Hour, LOS E - PM Peak Hour)
5. Topanga Canyon Boulevard & Chatsworth Street (LOS E - AM Peak Hour, LOS F - PM Peak Hour)
6. Topanga Canyon Boulevard & Devonshire Street (LOS F - PM Peak Hour)
10. De Soto Avenue & SR-118 WB On/Off Ramps (LOS F - AM Peak Hour)
11. De Soto Avenue & SR-118 EB On/Off Ramps (LOS F - AM Peak Hour, LOS E - PM Peak Hour)
12. De Soto Avenue & Chatsworth Street (LOS F - AM/PM Peak Hours)
13. De Soto Avenue & Devonshire Street (LOS E - AM Peak Hour, LOS F - PM Peak Hour)



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12
FUTURE PRE-PROJECT TRAFFIC VOLUMES
AM PEAK HOUR
CHATSWORTH RIDGE ESTATES

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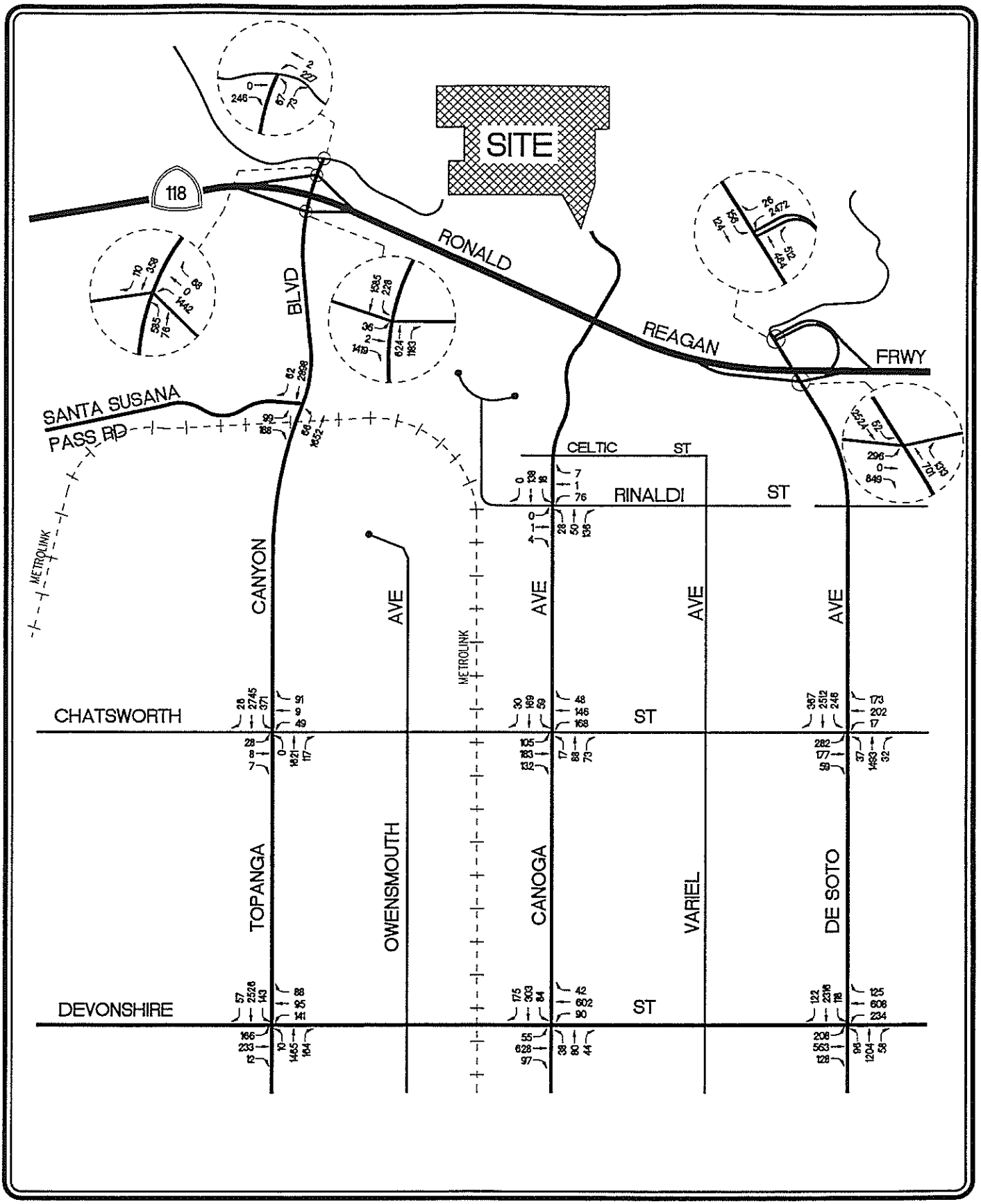

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14
FUTURE WITH PROJECT TRAFFIC VOLUMES
AM PEAK HOUR
CHATSWORTH RIDGE ESTATES

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It should be noted that all three study intersections located along Canoga Avenue (at Rinaldi Street, at Chatsworth Street, and at Devonshire Street) are projected to continue operating at very good levels of service (LOS A during the AM peak hour and LOS A/LOS B during the PM peak hour), even after the addition of traffic generated by the proposed project.

PROJECT MITIGATION

The traffic analyses in the previous sections determined that development of the proposed Chatsworth Ridge Estates project would generate significant impacts at three intersections. The recommended traffic mitigation program developed for this project includes physical roadway improvements and funding of traffic signals improvements. The following traffic mitigation measures are proposed:

Topanga Canyon Boulevard & SR-118 Freeway WB On/Off Ramps

As previously discussed, the intersections of Topanga Canyon Boulevard at Poema Place/Mayan Drive and Topanga Canyon Boulevard at SR-118 WB On/Off Ramps are closely spaced intersections (i.e., less than 50 feet apart). During the morning and afternoon commute hours, motorists on Poema Place/Mayan Drive accessing Topanga Canyon Boulevard experience long delays due to a lack of traffic signal control at this location. During peak periods, vehicles on the southbound Topanga Canyon Boulevard approach currently queue back onto Poema Place and onto Mayan Drive, and occasionally block vehicles that have the assigned right-of-way through the intersection. Without implementation of the mitigation measures discussed below, this condition would worsen with the buildout of the proposed project and the two proposed related projects located off of Poema Place west of Topanga Canyon Boulevard.

In order to reduce the queuing on Poema Place/Mayan Drive and improve the overall operations at the Topanga Canyon Boulevard terminus area, it is recommended that a traffic signal be installed at the intersection of Topanga Canyon Boulevard and Poema Place/Mayan Drive. The proposed traffic signal will be interconnected and operated in conjunction with the existing traffic signal at

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- Widen and restripe the eastbound Poema Place approach to provide a second right-turn lane. This would result in two right-turn lanes (the north right turn lane would also permit through traffic onto Mayan Drive), which will allow significantly more cars to turn southbound through the intersection during each green light phase.

A concept plan of the intersection improvements is provided in Appendix C. The effectiveness of this mitigation measure was assessed through completion of the intersection capacity analyses which assume implementation of the suggested mitigation measure (i.e., new traffic signal, signals modification/coordination, intersection widening and restriping). As shown in Table 5, with the proposed mitigation measures, the significant impact is expected to be fully mitigated.

In addition to the analysis summarize in Table 5, which demonstrates that the recommended traffic improvements will mitigate the project-related traffic impacts to levels of insignificance, additional performance measures were determined to measure the effectiveness of the mitigation for local residents who currently travel through the Topanga Canyon Boulevard terminus area during peak hours. Table 7 provides a summary of vehicle queue and delay values for three critical movements at the Topanga Canyon Boulevard intersection that control the flow of traffic to and from the existing residential areas located north of the freeway: the eastbound Poema Place approach, the westbound Mayan Drive approach (which will be A Street in the future condition with the proposed project), and the SR 118 westbound off-ramp. Table 7 also provides the calculated Levels of Service for these individual approaches, which differs from the service levels reported in Tables 5 and 6 which report Levels of Service for the entire intersection (i.e., the average Level of Service of all movements at the intersection). The vehicle queue and delay was calculated for existing conditions, future pre-project conditions, and future with project conditions (i.e., future conditions with project-related traffic and implementation of the recommended traffic improvements). The vehicle queue and delay values in Table 7 were calculated using the Synchro Version 5.0 software package, which is based on the *2000 Highway Capacity Manual* published by the Transportation Research Board.

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As shown in Table 7, motorists exiting the existing residential areas north of the freeway on Poema Place and Mayan Drive experience LOS E conditions during the AM peak hour, with calculated average delays of over 75 seconds per vehicle. In the future pre-project condition, average delays are expected to worsen substantially during the AM peak hour (approximately 194 seconds for Poema Place and 105 seconds for Mayan Drive), resulting in LOS F conditions.

For the SR 118 westbound off-ramp, motorists currently returning home during the PM peak hour experience LOS E conditions with an average delay of 76 seconds per vehicle. In the future pre-project condition, average delays will also worsen during the PM peak hour to approximately 144 seconds, resulting in LOS F conditions.

Table 7 shows that implementation of the proposed project substantially improves the delay and service levels on the key approaches. That is, while the proposed project will result in additional trips at the intersection, construction of the recommended roadway and traffic signal improvements will not only accommodate project-related traffic, but also mitigate a portion of the current and future traffic congestion that is not related to or caused by the project. For motorists exiting the residential areas north of the freeway during the AM peak hour, LOS A conditions are calculated for Poema Place, and LOS D conditions are calculated for the future A Street during the AM peak hour. Average delay values are calculated to be substantially improved as compared to current and future pre-project conditions. For residents returning home in the PM peak hour, the SR 118 westbound off-ramp is calculated to operate at LOS D with average delay values also substantially improved as compared to existing and future pre-project conditions.

To summarize, the recommended traffic mitigation measures at the Topanga Canyon Boulevard terminus area provide significant improvements to traffic flow based on the following:

- The incorporation of the Poema Place and Mayan Drive/A Street approaches within the overall traffic signal control of the intersection substantially improves the efficiency (and safety) of traffic movements to and from these streets.

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According to Section D.9.1 (Appendix D page D-6) of the 1997 CMP manual, the criteria for determining a significant impact are as follows:

> "For the purpose of a CMP TIA, a significant project impact occurs when the proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C>=0.02), causing or worsening LOS F (V/C>1.00). The lead agency may apply more stringent criteria if desired."

The CMP significant impact criteria apply for analysis of both intersection and freeway monitoring locations.

CMP Intersections

According to the CMP, the following are CMP monitoring stations located in the project vicinity:

- Topanga Canyon Boulevard & SR-118 Westbound On/Off Ramps
- Topanga Canyon Boulevard & Devonshire Street

The intersection of Topanga Canyon Boulevard and SR-118 Westbound On/Off Ramps was evaluated using the ICU method and the intersection of Topanga Canyon Boulevard and Devonshire Street was evaluated using the CMA method. Both methods determine the V/C ratio on a critical lane basis. The overall intersection V/C ratio is subsequently assigned an LOS value to describe intersection operations. The LOS values vary from LOS A (free flow) to LOS F (jammed condition). Appendix B provides a description of both the ICU and CMA methods and their corresponding LOS.

Levels of service were determined at the CMP intersections for the conditions listed above in the Traffic Impact Analysis Scenarios section. The ICU and CMA data worksheets contained in Appendix B were also utilized for this analysis. A summary of the V/C ratios and LOS values for the CMP intersections during the AM and PM peak hours is presented in Tables 5 and 6.

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Based on the guidelines set forth in Appendix D of the CMP (Guidelines for CMP Transportation Impact Analysis), a factor of 1.4 is used to convert vehicle trips to persons trips. Furthermore, the total person trips were multiplied by 3.5 percent (for each time period), since the criteria for CMP transit centers and transit corridors were not met. The converted transit person trips were calculated as follows:

Daily Transit Person Trips = 4,874 x 1.4 x 3.5% = 239 Person Trips
AM Peak Hour Transit Person Trips = 387 x 1.4 x 3.5% = 19 Person Trips
PM Peak Hour Transit Person Trips = 489 x 1.4 x 3.5% = 24 Person Trips

As a result, the existing transit service demand could be increased by up to 19 and 24 persons during the AM and PM peak hours, respectively, due to development of the proposed residential project. In addition, a total of 239 daily persons trips on the public transit are forecasted.

Based on the number and frequency of transit services provided in the project vicinity (discussed in a previous section), the additional bus ridership due to the project is not expected to have a significant impact on the public transit system.

NEIGHBORHOOD PROTECTION PLAN

Based on discussion with City staff, the City of Los Angeles is planning to implement a neighborhood protection plan to an area located approximately 1.5 miles south of the proposed project site. This area is bounded by Chatsworth Street to the north, Devonshire Street to the south, Canoga Avenue to the east, and Topanga Canyon Boulevard to the west. The purpose of this program is to discourage cut-through traffic from using Owensmouth Avenue by restricting left-turn movements at the Owensmouth Avenue intersections at Chatsworth Street and at Devonshire Street.

Based on the neighborhood protection measures proposed for Owensmouth Avenue, this traffic analysis has been prepared based on the assumption that project related traffic will not utilize Owensmouth Avenue between Chatsworth Street and Devonshire Street. Thus, no project related impacts would result on Owensmouth Avenue south of Chatsworth Street.

LINSCOTT LAW & GREENSPAN ENGINEERS

6. Topanga Canyon Boulevard & Devonshire Street
13. De Soto Avenue & Devonshire Street

Also, additional mitigation measures beyond those discussed under the Project Mitigation section will be required for two of the three impacted intersections to offset the residual impact caused by the additional number of residential units under this alternative.

The Existing Zoning Alternative

Under this alternative, the existing 2,443 Record of Survey lots would be merged into 634 lots with Certificates of Compliance. Each merged lot would be a minimum of 6,000 square feet in size, thereby making it consistent with existing, underlying R1-6000 zoning for all of the property. From a traffic standpoint, the additional number of residential dwelling units will result in significant project impacts at other study intersections. In addition to the three significant impacts identified previously, the following three study intersections will likely be impacted under this alternative:

4. Topanga Canyon Boulevard & Santa Susana Pass Road
6. Topanga Canyon Boulevard & Devonshire Street
13. De Soto Avenue & Devonshire Street

Also, additional mitigation measures beyond those discussed under the Project Mitigation section will be required for two of the three impacted intersections to offset the residual impact caused by the additional number of residential units under this alternative.

The Reduced Density Alternative

Under this alternative, some of the lot size will be increased from their minimum to reduce the visual impact of the project from the adjacent hiking trails. Under this alternative, some residential lots along Devil's Canyon would be eliminated. The number of residential dwelling units under this alternative will be reduced to a maximum of up to 517 units. From a traffic standpoint, the same number of impacted intersections previously identified for the proposed project would result under

APPENDIX A

Manual Traffic Counts

<<ACCUTEK>>

<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270101
Start Date: 01/05/00
File I.D. : 270001
Page : 1

Movement 1

	TOPANGA CYN. BLVD. Southbound					POEMA PL. Westbound					TOPANGA CYN. BLVD. Northbound					MAYAN DR. Eastbound							
Start Time	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=	
7:00am	0	0	0	0	0	0	0	5	0	5	4	0	7	0	11	20	0	0	0	20	36	0	36
7:15	0	0	0	0	0	0	0	7	0	7	1	0	6	0	7	32	0	0	0	32	46	0	46
7:30	0	0	0	0	0	0	0	12	0	12	4	0	10	0	14	28	0	0	0	28	54	0	54
7:45	0	0	0	0	0	0	0	10	0	10	3	0	14	0	17	42	0	0	0	42	69	0	69
Hour Total	0	0	0	0	0	0	0	34	0	34	12	0	37	0	49	122	0	0	0	122	205	0	205
8:00am	0	0	0	0	0	0	2	9	0	11	2	0	9	0	11	35	0	0	0	35	57	0	57
8:15	0	0	0	0	0	0	0	9	0	9	4	0	6	0	10	22	0	0	0	22	41	0	41
8:30	0	0	0	0	0	0	2	12	0	14	7	0	9	0	16	19	0	0	0	19	49	0	49
8:45	0	0	0	0	0	0	1	7	0	8	3	0	13	0	16	16	0	0	0	16	40	0	40
Hour Total	0	0	0	0	0	0	5	37	0	42	16	0	37	0	53	92	0	0	0	92	187	0	187
9:00am	0	0	0	0	0	0	0	4	0	4	3	0	17	0	20	26	0	0	0	26	50	0	50
9:15	0	0	0	0	0	0	0	10	0	10	7	0	18	0	25	26	0	0	0	26	61	0	61
9:30	0	0	0	0	0	0	0	8	0	8	2	0	6	0	8	15	0	0	0	15	31	0	31
9:45	0	0	0	0	0	0	1	7	0	8	2	0	8	0	10	20	0	0	0	20	38	0	38
Hour Total	0	0	0	0	0	0	1	29	0	30	14	0	49	0	63	87	0	0	0	87	180	0	180
*** Break ***																							
3:00pm	0	0	0	0	0	0	0	6	0	6	7	0	14	0	21	15	1	0	0	16	43	0	43
3:15	0	0	0	0	0	0	1	4	0	5	5	0	18	0	23	18	2	0	0	20	48	0	48
3:30	0	0	0	0	0	0	0	3	0	3	8	0	28	0	36	20	0	0	0	20	59	0	59
3:45	0	0	0	0	0	0	1	6	0	7	10	0	17	0	27	13	0	0	0	13	47	0	47
Hour Total	0	0	0	0	0	0	2	19	0	21	30	0	77	0	107	66	3	0	0	69	197	0	197
4:00pm	0	0	0	0	0	0	0	7	0	7	9	0	19	0	28	17	0	0	0	17	52	0	52
4:15	0	0	0	0	0	0	0	6	0	6	6	0	25	0	31	18	1	0	0	19	56	0	56
4:30	0	0	0	0	0	0	0	5	0	5	8	0	23	0	31	20	0	0	0	20	56	0	56
4:45	0	0	0	0	0	0	0	7	0	7	10	0	22	0	32	22	0	0	0	22	61	0	61
Hour Total	0	0	0	0	0	0	0	25	0	25	33	0	89	0	122	77	1	0	0	78	225	0	225
5:00pm	0	0	0	0	0	0	1	5	0	6	10	0	30	0	40	18	1	0	0	19	65	0	65
5:15	0	0	0	0	0	0	3	6	0	9	9	0	35	0	44	20	0	0	0	20	73	0	73
5:30	0	0	0	0	0	0	0	4	0	4	6	0	34	0	40	11	1	0	0	12	56	0	56
5:45	0	0	0	0	0	0	0	9	0	9	7	0	32	0	39	19	0	0	0	19	67	0	67
Hour Total	0	0	0	0	0	0	4	24	0	28	32	0	131	0	163	68	2	0	0	70	261	0	261
Grand	0	0	0	0	0	0	12	168	0	180	137	0	420	0	557	512	6	0	0	518	1255	0	1255
% of Total	0.0	0.0	0.0	0.0%		0.0	1.0	13.4	0.0%		10.9	0.0	33.5	0.0%		40.8	.5	0.0	0.0%			0.0%	100.0%
Apprch %										14.3%					44.4%					41.3%			
% of Apprc	0.0	0.0	0.0	0.0%		0.0	6.7	93.3	0.0%		24.6	0.0	75.4	0.0%		98.8	1.2	0.0	0.0%				

<<ACCUTEK>>

<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270102
Start Date: 01/05/00
File I.D. : 270002
Page : 1

Movement 1

	TOPANGA CANYON BLVD. Southbound					SR-118 WB RAMP Westbound					TOPANGA CANYON BLVD. Northbound					SR-118 WB RAMP Eastbound							
Start Time	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=	
7:00am	5	22	0	0	27	7	0	272	0	279	0	3	93	0	96	0	0	0	0	0	402	0	402
7:15	7	32	0	0	39	4	0	331	0	335	0	4	134	0	138	0	0	0	0	0	512	0	512
7:30	4	34	0	0	38	6	0	326	0	332	0	6	131	0	137	0	0	0	0	0	507	0	507
7:45	13	36	0	0	49	6	0	331	0	337	0	15	138	0	153	0	0	0	0	0	539	0	539
Hour Total	29	124	0	0	153	23	0	1260	0	1283	0	28	496	0	524	0	0	0	0	0	1960	0	1960
8:00am	6	39	0	0	45	5	0	288	0	293	0	7	102	0	109	0	0	0	0	0	447	0	447
8:15	6	27	0	0	33	4	1	264	0	269	0	4	91	0	95	0	0	0	0	0	397	0	397
8:30	12	16	0	0	28	4	0	116	0	120	0	14	85	0	99	0	0	0	0	0	247	0	247
8:45	8	15	0	0	23	4	0	113	0	117	0	11	104	0	115	0	0	0	0	0	255	0	255
Hour Total	32	97	0	0	129	17	1	781	0	799	0	36	382	0	418	0	0	0	0	0	1346	0	1346
9:00am	21	5	0	0	26	4	1	103	0	108	0	17	73	0	90	0	0	0	0	0	224	0	224
9:15	16	22	0	0	38	9	0	116	0	125	0	16	110	0	126	0	0	0	0	0	289	0	289
9:30	7	13	0	0	20	5	1	146	0	152	0	4	76	0	80	0	0	0	0	0	252	0	252
9:45	8	18	0	0	26	3	0	170	0	173	0	5	72	0	77	0	0	0	0	0	276	0	276
Hour Total	52	58	0	0	110	21	2	535	0	558	0	42	331	0	373	0	0	0	0	0	1041	0	1041
*** Break ***																							
3:00pm	4	19	0	0	23	12	0	153	0	165	0	10	152	0	162	0	0	0	0	0	350	0	350
3:15	3	17	0	0	20	11	1	185	0	197	0	12	178	0	190	0	0	0	0	0	407	0	407
3:30	3	19	0	0	22	24	0	201	0	225	0	10	207	0	217	0	0	0	0	0	464	0	464
3:45	2	17	0	0	19	13	0	176	0	189	0	14	237	0	251	0	0	0	0	0	459	0	459
Hour Total	12	72	0	0	84	60	1	715	0	776	0	46	774	0	820	0	0	0	0	0	1680	0	1680
4:00pm	5	21	0	0	26	16	0	198	0	214	0	14	234	0	248	0	0	0	0	0	488	0	488
4:15	5	18	0	0	23	16	0	206	0	222	0	17	278	0	295	0	0	0	0	0	540	0	540
4:30	3	24	0	0	27	15	0	219	0	234	0	13	277	0	290	0	0	0	0	0	551	0	551
4:45	3	22	0	0	25	20	1	226	0	247	0	12	296	0	308	0	0	0	0	0	580	0	580
Hour Total	16	85	0	0	101	67	1	849	0	917	0	56	1085	0	1141	0	0	0	0	0	2159	0	2159
5:00pm	3	19	0	0	22	18	0	235	0	253	0	21	306	0	327	0	0	0	0	0	602	0	602
5:15	3	24	0	0	27	21	0	242	0	263	0	23	321	0	344	0	0	0	0	0	634	0	634
5:30	3	10	0	0	13	17	1	224	0	242	0	25	323	0	348	0	0	0	0	0	603	0	603
5:45	3	25	0	0	28	19	0	228	0	247	0	18	328	0	346	0	0	0	0	0	621	0	621
Hour Total	12	78	0	0	90	75	1	929	0	1005	0	87	1278	0	1365	0	0	0	0	0	2460	0	2460
Grand	153	514	0	0	667	263	6	5069	0	5338	0	295	4346	0	4641	0	0	0	0	0	10646	0	10646
% of Total	1.4	4.8	0.0	0.0%		2.5	.1	47.6	0.0%		0.0	2.8	40.8	0.0%		0.0	0.0	0.0	0.0%			0.0%	100.0%
Apprch %					6.3%					50.1%					43.6%								
% of Apprc	22.9	77.1	0.0	0.0%		4.9	.1	95.0	0.0%		0.0	6.4	93.6	0.0%		0.0	0.0	0.0	0.0%				

<<ACCUTEK>>
<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270103
Start Date: 01/05/00
File I.D. : 270003
Page : 1

Movement 1

	TOPANGA CANYON BLVD. Southbound					SR-118 EB RAMP Westbound					TOPANG CANYON BLVD. Northbound					SR-118 EB RAMP Eastbound						
Start Time	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=
7:00am	0	280	12	0	292	0	0	0	0	0	214	101	0	0	315	317	1	1	0	319	926	0 926
7:15	0	345	15	0	360	0	0	0	0	0	251	126	0	0	377	329	0	2	0	331	1068	0 1068
7:30	0	350	16	0	366	0	0	0	0	0	268	131	0	0	399	309	0	2	0	311	1076	0 1076
7:45	0	338	24	0	362	0	0	0	0	0	245	154	0	0	399	283	0	5	0	288	1049	0 1049
Hour Total	0	1313	67	0	1380	0	0	0	0	0	978	512	0	0	1490	1238	1	10	0	1249	4119	0 4119
8:00am	0	320	20	0	340	0	0	0	0	0	244	114	0	0	358	277	2	2	0	281	979	0 979
8:15	0	266	23	0	289	0	0	0	0	0	189	92	0	0	281	204	3	2	0	209	779	0 779
8:30	0	118	14	0	132	0	0	0	0	0	190	99	0	0	289	206	11	5	0	222	643	0 643
8:45	0	116	13	0	129	0	0	0	0	0	146	105	0	0	251	173	12	3	0	188	568	0 568
Hour Total	0	820	70	0	890	0	0	0	0	0	769	410	0	0	1179	860	28	12	0	900	2969	0 2969
9:00am	0	97	14	0	111	0	0	0	0	0	137	101	0	0	238	164	37	2	0	203	552	0 552
9:15	0	109	28	0	137	0	0	0	0	0	116	114	0	0	230	155	21	6	0	182	549	0 549
9:30	0	145	20	0	165	0	0	0	0	0	187	75	0	0	262	147	7	3	0	157	584	0 584
9:45	0	166	22	0	188	0	0	0	0	0	138	82	0	0	220	120	12	0	0	132	540	0 540
Hour Total	0	517	84	0	601	0	0	0	0	0	578	372	0	0	950	586	77	11	0	674	2225	0 2225
*** Break ***																						
3:00pm	0	157	10	0	167	0	0	0	0	0	204	153	0	0	357	110	0	3	0	113	637	0 637
3:15	0	192	11	0	203	0	0	0	0	0	227	184	0	0	411	124	0	2	0	126	740	0 740
3:30	0	208	9	0	217	0	0	0	0	0	217	204	0	0	421	107	0	2	0	109	747	0 747
3:45	0	181	10	0	191	0	0	0	0	0	242	236	0	0	478	146	0	5	0	151	820	0 820
Hour Total	0	738	40	0	778	0	0	0	0	0	890	777	0	0	1667	487	0	12	0	499	2944	0 2944
4:00pm	0	210	9	0	219	0	0	0	0	0	219	248	0	0	467	111	0	6	0	117	803	0 803
4:15	0	210	12	0	222	0	0	0	0	0	239	274	0	0	513	126	0	9	0	135	870	0 870
4:30	0	227	16	0	243	0	0	0	0	0	283	271	0	0	554	121	0	10	0	131	928	0 928
4:45	0	232	9	0	241	0	0	0	0	0	245	315	0	0	560	154	0	3	0	157	958	0 958
Hour Total	0	879	46	0	925	0	0	0	0	0	986	1108	0	0	2094	512	0	28	0	540	3559	0 3559
5:00pm	0	246	16	0	262	0	0	0	0	0	267	328	0	0	595	117	0	6	0	123	980	0 980
5:15	0	247	13	0	260	0	0	0	0	0	280	329	0	0	609	197	0	11	0	208	1077	0 1077
5:30	0	228	12	0	240	0	0	0	0	0	219	346	0	0	565	181	0	10	0	191	996	0 996
5:45	0	238	16	0	254	0	0	0	0	0	260	339	0	0	599	183	0	4	0	187	1040	0 1040
Hour Total	0	959	57	0	1016	0	0	0	0	0	1026	1342	0	0	2368	678	0	31	0	709	4093	0 4093
Grand	0	5226	364	0	5590	0	0	0	0	0	5227	4521	0	0	9748	4361	106	104	0	4571	19909	0 19909
% of Total	0.0	26.2	1.8	0.0%		0.0	0.0	0.0	0.0%		26.3	22.7	0.0	0.0%		21.9	.5	.5	0.0%			0.0%100.0%
Apprch %					28.1%										49.0%					23.0%		
% of Apprc	0.0	93.5	6.5	0.0%		0.0	0.0	0.0	0.0%		53.6	46.4	0.0	0.0%		95.4	2.3	2.3	0.0%			

<<ACCUTEK>>
<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270104
Start Date: 01/05/00
File I.D. : 270004
Page : 1

Movement 1

Start Time	TOPANGA CANYON BLVD. Southbound					SANTA SUSANA PASS RD. Westbound					TOPANGA CANYON BLVD. Northbound					SANTA SUSANA PASS RD. Eastbound					Total-	Other=	
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl			
7:00am	7	581	0	0	588	0	0	0	0	0	0	307	11	0	318	25	0	15	0	40	946	0	946
7:15	6	655	0	0	661	0	0	0	0	0	0	355	5	0	360	36	0	10	0	46	1067	0	1067
7:30	7	625	0	0	632	0	0	0	0	0	0	380	6	0	386	51	0	13	0	64	1082	0	1082
7:45	11	632	0	0	643	0	0	0	0	0	0	384	15	0	399	39	0	18	0	57	1099	0	1099
Hour Total	31	2493	0	0	2524	0	0	0	0	0	0	1426	37	0	1463	151	0	56	0	207	4194	0	4194
8:00am	11	560	0	0	571	0	0	0	0	0	0	304	12	0	316	38	0	17	0	55	942	0	942
8:15	7	464	0	0	471	0	0	0	0	0	0	288	13	0	301	35	0	14	0	49	821	0	821
8:30	8	321	0	0	329	0	0	0	0	0	0	293	14	0	307	27	0	16	0	43	679	0	679
8:45	5	283	0	0	288	0	0	0	0	0	0	244	12	0	256	31	0	8	0	39	583	0	583
Hour Total	31	1628	0	0	1659	0	0	0	0	0	0	1129	51	0	1180	131	0	55	0	186	3025	0	3025
9:00am	7	224	0	0	231	0	0	0	0	0	0	253	12	0	265	35	0	11	0	46	542	0	542
9:15	5	263	0	0	268	0	0	0	0	0	0	199	13	0	212	24	0	14	0	38	518	0	518
9:30	7	277	0	0	284	0	0	0	0	0	0	230	11	0	241	21	0	13	0	34	559	0	559
9:45	4	285	0	0	289	0	0	0	0	0	0	211	7	0	218	21	0	11	0	32	539	0	539
Hour Total	23	1049	0	0	1072	0	0	0	0	0	0	893	43	0	936	101	0	49	0	150	2158	0	2158
*** Break ***																							
3:00pm	10	257	0	0	267	0	0	0	0	0	0	341	10	0	351	17	0	18	0	35	653	0	653
3:15	6	290	0	0	296	0	0	0	0	0	0	391	29	0	420	11	0	12	0	23	739	0	739
3:30	8	317	0	0	325	0	0	0	0	0	0	404	14	0	418	22	0	10	0	32	775	0	775
3:45	11	307	0	0	318	0	0	0	0	0	0	472	21	0	493	12	0	11	0	23	834	0	834
Hour Total	35	1171	0	0	1206	0	0	0	0	0	0	1608	74	0	1682	62	0	51	0	113	3001	0	3001
4:00pm	6	304	0	0	310	0	0	0	0	0	0	422	21	0	443	16	0	9	0	25	778	0	778
4:15	10	337	0	0	347	0	0	0	0	0	0	533	34	0	567	13	0	5	0	18	932	0	932
4:30	9	340	0	0	349	0	0	0	0	0	0	541	25	0	566	14	0	5	0	19	934	0	934
4:45	12	379	0	0	391	0	0	0	0	0	0	557	24	0	581	11	0	4	0	15	987	0	987
Hour Total	37	1360	0	0	1397	0	0	0	0	0	0	2053	104	0	2157	54	0	23	0	77	3631	0	3631
5:00pm	10	351	0	0	361	0	0	0	0	0	0	573	40	0	613	15	0	11	0	26	1000	0	1000
5:15	11	411	0	0	422	0	0	0	0	0	0	602	28	0	630	13	0	11	0	24	1076	0	1076
5:30	14	382	0	0	396	0	0	0	0	0	0	549	34	0	583	10	0	6	0	16	995	0	995
5:45	11	403	0	0	414	0	0	0	0	0	0	571	36	0	607	9	0	10	0	19	1040	0	1040
Hour Total	46	1547	0	0	1593	0	0	0	0	0	0	2295	138	0	2433	47	0	38	0	85	4111	0	4111
Grand	203	9248	0	0	9451	0	0	0	0	0	0	9404	447	0	9851	546	0	272	0	818	20120	0	20120
% of Total	1.0	46.0	0.0	0.0%		0.0	0.0	0.0	0.0%		0.0	46.7	2.2	0.0%		2.7	0.0	1.4	0.0%			0.0%	100.0%
Apprch %				47.0%										49.0%						4.1%			
% of Apprc	2.1	97.9	0.0	0.0%		0.0	0.0	0.0	0.0%		0.0	95.5	4.5	0.0%		66.7	0.0	33.3	0.0%				

<<ACCUTEK>>
<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270105
Start Date: 01/05/00
File I.D. : 270005
Page : 1

Movement 1

Start Time	TOPANGA CANYON BLVD. Southbound					CHATSWORTH ST. Westbound					TOPANGA CANYON BLVD. Northbound					CHATSWORTH ST. Eastbound						
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=
7:00am	3	554	33	0	590	12	3	2	0	17	7	277	1	0	285	0	3	2	0	5	897	0 897
7:15	7	643	50	0	700	16	2	5	0	23	6	348	0	0	354	1	2	6	0	9	1086	0 1086
7:30	7	591	76	0	674	16	1	3	0	20	10	366	0	0	376	1	2	7	0	10	1080	0 1080
7:45	6	585	88	0	679	20	3	7	0	30	33	364	0	0	397	4	1	5	0	10	1116	0 1116
Hour Total	23	2373	247	0	2643	64	9	17	0	90	56	1355	1	0	1412	6	8	20	0	34	4179	0 4179
8:00am	4	518	93	0	615	23	2	13	0	38	31	295	0	0	326	0	2	7	0	9	988	0 988
8:15	4	433	71	0	508	26	3	12	0	41	15	251	0	0	266	0	4	8	0	12	827	0 827
8:30	2	296	45	0	343	12	0	6	0	18	7	302	2	0	311	0	3	4	0	7	679	0 679
8:45	2	268	38	0	308	10	1	6	0	17	4	248	0	0	252	1	0	5	0	6	583	0 583
Hour Total	12	1515	247	0	1774	71	6	37	0	114	57	1096	2	0	1155	1	9	24	0	34	3077	0 3077
9:00am	4	223	26	0	253	10	3	7	0	20	8	238	0	0	246	5	1	3	0	9	528	0 528
9:15	2	257	23	0	282	14	0	2	0	16	10	188	1	0	199	0	2	3	0	5	502	0 502
9:30	5	249	35	0	289	14	2	2	0	18	6	219	1	0	226	2	1	3	0	6	539	0 539
9:45	3	253	41	0	297	14	2	5	0	21	5	203	0	0	208	4	1	3	0	8	534	0 534
Hour Total	14	982	125	0	1121	52	7	16	0	75	29	848	2	0	879	11	5	12	0	28	2103	0 2103
*** Break ***																						
3:00pm	3	247	31	0	281	41	3	8	0	52	14	311	2	0	327	2	1	4	0	7	667	0 667
3:15	9	271	35	0	315	62	1	9	0	72	8	327	5	0	340	1	2	4	0	7	734	0 734
3:30	10	291	27	0	328	50	1	6	0	57	10	385	1	0	396	1	3	3	0	7	788	0 788
3:45	6	308	29	0	343	51	2	5	0	58	11	435	1	0	447	4	2	2	0	8	856	0 856
Hour Total	28	1117	122	0	1267	204	7	28	0	239	43	1458	9	0	1510	8	8	13	0	29	3045	0 3045
4:00pm	3	305	22	0	330	50	1	4	0	55	8	409	2	0	419	1	1	1	0	3	807	0 807
4:15	4	327	16	0	347	65	5	5	0	75	10	492	3	0	505	0	4	5	0	9	936	0 936
4:30	2	342	18	0	362	46	1	7	0	54	6	494	1	0	501	1	4	2	0	7	924	0 924
4:45	5	358	16	0	379	61	6	6	0	73	7	515	0	0	522	2	3	3	0	8	982	0 982
Hour Total	14	1332	72	0	1418	222	13	22	0	257	31	1910	6	0	1947	4	12	11	0	27	3649	0 3649
5:00pm	6	349	13	0	368	72	3	4	0	79	12	532	3	0	547	2	2	4	0	8	1002	0 1002
5:15	7	397	18	0	422	70	1	4	0	75	6	534	2	0	542	3	1	8	0	12	1051	0 1051
5:30	11	394	11	0	416	53	5	3	0	61	7	543	2	0	552	1	2	2	0	5	1034	0 1034
5:45	8	389	15	0	412	59	2	6	0	67	5	516	1	0	522	2	5	7	0	14	1015	0 1015
Hour Total	32	1529	57	0	1618	254	11	17	0	282	30	2125	8	0	2163	8	10	21	0	39	4102	0 4102
Grand	123	8848	870	0	9841	867	53	137	0	1057	246	8792	28	0	9066	38	52	101	0	191	20155	0 20155
% of Total	.6	43.9	4.3	0.0%		4.3	.3	.7	0.0%		1.2	43.6	.1	0.0%		.2	.3	.5	0.0%			0.0%100.0%
Apprch %					48.8%					5.2%					45.0%					.9%		
% of Apprc	1.2	89.9	8.8	0.0%		82.0	5.0	13.0	0.0%		2.7	97.0	.3	0.0%		19.9	27.2	52.9	0.0%			

<<ACCUTEK>>
<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270106
Start Date: 01/05/00
File I.D. : 270006
Page : 1

Movement 1

Start Time	TOPANGA CANYON BLVD. Southbound					DEVONSHIRE ST. Westbound					TOPANGA CANYON BLVD. Northbound					DEVONSHIRE ST. Eastbound							
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=	
7:00am	4	519	23	0	546	11	13	22	0	46	20	229	2	0	251	4	28	38	0	70	913	0	913
7:15	6	566	25	0	597	16	26	32	0	74	21	312	1	0	334	4	45	33	0	82	1087	0	1087
7:30	12	530	22	0	564	14	17	26	0	57	23	311	5	0	339	3	48	41	0	92	1052	0	1052
7:45	14	551	28	0	593	21	22	34	0	77	33	323	2	0	358	2	70	41	0	113	1141	0	1141
Hour Total	36	2166	98	0	2300	62	78	114	0	254	97	1175	10	0	1282	13	191	153	0	357	4193	0	4193
8:00am	20	498	32	0	550	20	21	28	0	69	30	267	1	0	298	2	49	36	0	87	1004	0	1004
8:15	21	418	24	0	463	24	33	25	0	82	28	204	4	0	236	2	44	26	0	72	853	0	853
8:30	10	269	19	0	298	23	24	41	0	88	29	228	5	0	262	8	57	36	0	101	749	0	749
8:45	11	262	15	0	288	17	41	35	0	93	22	219	2	0	243	6	50	29	0	85	709	0	709
Hour Total	62	1447	90	0	1599	84	119	129	0	332	109	918	12	0	1039	18	200	127	0	345	3315	0	3315
9:00am	13	208	18	0	239	20	29	39	0	88	30	190	8	0	228	2	47	25	0	74	629	0	629
9:15	9	237	19	0	265	23	21	40	0	84	24	160	4	0	188	7	49	27	0	83	620	0	620
9:30	12	196	25	0	233	27	32	38	0	97	28	148	6	0	182	8	31	30	0	69	581	0	581
9:45	12	204	21	0	237	17	29	28	0	74	46	153	1	0	200	3	21	23	0	47	558	0	558
Hour Total	46	845	83	0	974	87	111	145	0	343	128	651	19	0	798	20	148	105	0	273	2388	0	2388
*** Break ***																							
3:00pm	29	213	11	0	253	28	56	37	0	121	31	258	9	0	298	6	48	28	0	82	754	0	754
3:15	24	216	21	0	261	24	69	38	0	131	33	287	9	0	329	5	56	27	0	88	809	0	809
3:30	23	236	20	0	279	27	64	37	0	128	28	361	8	0	397	5	42	20	0	67	871	0	871
3:45	27	281	35	0	343	25	59	41	0	125	24	367	7	0	398	4	56	36	0	96	962	0	962
Hour Total	103	946	87	0	1136	104	248	153	0	505	116	1273	33	0	1422	20	202	111	0	333	3396	0	3396
4:00pm	26	264	26	0	316	36	72	62	0	170	40	360	5	0	405	3	47	21	0	71	962	0	962
4:15	43	288	20	0	351	53	51	40	0	144	23	404	6	0	433	5	42	24	0	71	999	0	999
4:30	28	276	25	0	329	47	62	59	0	168	28	418	9	0	455	8	46	28	0	82	1034	0	1034
4:45	26	300	31	0	357	53	52	42	0	147	44	409	10	0	463	7	74	46	0	127	1094	0	1094
Hour Total	123	1128	102	0	1353	189	237	203	0	629	135	1591	30	0	1756	23	209	119	0	351	4089	0	4089
5:00pm	22	298	20	0	340	56	77	49	0	182	26	425	6	0	457	5	51	45	0	101	1080	0	1080
5:15	33	342	16	0	391	49	70	46	0	165	24	408	5	0	437	9	52	43	0	104	1097	0	1097
5:30	38	354	31	0	423	60	70	46	0	176	22	439	10	0	471	4	51	37	0	92	1162	0	1162
5:45	29	312	29	0	370	49	45	34	0	128	31	422	7	0	460	6	53	33	0	92	1050	0	1050
Hour Total	122	1306	96	0	1524	214	262	175	0	651	103	1694	28	0	1825	24	207	158	0	389	4389	0	4389
Grand	492	7838	556	0	8886	740	1055	919	0	2714	688	7302	132	0	8122	118	1157	773	0	2048	21770	0	21770
% of Total	2.3	36.0	2.6	0.0%		3.4	4.8	4.2	0.0%		3.2	33.5	.6	0.0%		.5	5.3	3.6	0.0%			0.0%	100.0%
Apprch %					40.8%					12.5%					37.3%					9.4%			
% of Apprc	5.5	88.2	6.3	0.0%		27.3	38.9	33.9	0.0%		8.5	89.9	1.6	0.0%		5.8	56.5	37.7	0.0%				

<<ACCUTEK>>

<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270107
Start Date: 01/04/00
File I.D. : 270007
Page : 1

Movement 1

Start Time	CANOGA AVE. Southbound					RINALDI ST. Westbound					CANOGA AVE. Northbound					RINALDI ST. Eastbound						
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=
7:00am	0	9	2	0	11	0	0	1	0	1	3	2	1	0	6	0	0	0	0	0	18	0 18
7:15	0	14	1	0	15	0	0	2	0	2	4	3	2	0	9	1	1	0	0	2	28	0 28
7:30	0	9	0	0	9	1	0	4	0	5	16	2	7	0	25	2	1	0	0	3	42	0 42
7:45	0	11	0	0	11	1	0	15	0	16	35	5	3	0	43	0	0	0	0	0	70	0 70
Hour Total	0	43	3	0	46	2	0	22	0	24	58	12	13	0	83	3	2	0	0	5	158	0 158
8:00am	0	10	3	0	13	0	0	33	0	33	38	6	11	0	55	1	0	0	0	1	102	0 102
8:15	0	8	0	0	8	0	1	17	0	18	35	3	4	0	42	1	0	0	0	1	69	0 69
8:30	0	5	1	0	6	1	1	2	0	4	5	2	0	0	7	0	0	1	0	1	18	0 18
8:45	0	10	3	0	13	0	0	3	0	3	6	4	1	0	11	0	0	0	0	0	27	0 27
Hour Total	0	33	7	0	40	1	2	55	0	58	84	15	16	0	115	2	0	1	0	3	216	0 216
9:00am	0	6	0	0	6	0	1	3	0	4	3	3	1	0	7	0	1	1	0	2	19	0 19
9:15	0	5	1	0	6	1	1	2	0	4	2	2	0	0	4	2	0	0	0	2	16	0 16
9:30	0	2	0	0	2	0	0	2	0	2	1	1	0	0	2	1	0	0	0	1	7	0 7
9:45	0	2	1	0	3	1	0	1	0	2	2	2	1	0	5	1	1	0	0	2	12	0 12
Hour Total	0	15	2	0	17	2	2	8	0	12	8	8	2	0	18	4	2	1	0	7	54	0 54
*** Break ***																						
3:00pm	0	8	1	0	9	0	1	13	0	14	14	8	0	0	22	3	1	0	0	4	49	0 49
3:15	0	10	2	0	12	0	0	10	0	10	18	12	1	0	31	2	2	0	0	4	57	0 57
3:30	1	7	1	0	9	0	1	18	0	19	16	9	1	0	26	3	0	0	0	3	57	0 57
3:45	0	7	0	0	7	1	0	26	0	27	15	11	0	0	26	1	0	0	0	1	61	0 61
Hour Total	1	32	4	0	37	1	2	67	0	70	63	40	2	0	105	9	3	0	0	12	224	0 224
4:00pm	1	4	1	0	6	0	0	12	0	12	11	9	0	0	20	5	1	1	0	7	45	0 45
4:15	0	8	0	0	8	1	1	11	0	13	6	11	1	0	18	1	0	0	0	1	40	0 40
4:30	0	16	0	0	16	0	0	13	0	13	4	13	0	0	17	2	0	0	0	2	48	0 48
4:45	0	6	2	0	8	0	0	10	0	10	2	8	0	0	10	1	0	0	0	1	29	0 29
Hour Total	1	34	3	0	38	1	1	46	0	48	23	41	1	0	65	9	1	1	0	11	162	0 162
5:00pm	0	12	0	0	12	1	1	5	0	7	2	9	1	0	12	0	0	1	0	1	32	0 32
5:15	0	9	2	0	11	0	0	4	0	4	4	15	1	0	20	1	1	0	0	2	37	0 37
5:30	0	5	0	0	5	0	0	2	0	2	4	12	2	0	18	1	0	0	0	1	26	0 26
5:45	1	9	1	0	11	0	0	5	0	5	2	19	0	0	21	1	0	0	0	1	38	0 38
Hour Total	1	35	3	0	39	1	1	16	0	18	12	55	4	0	71	3	1	1	0	5	133	0 133
Grand	3	192	22	0	217	8	8	214	0	230	248	171	38	0	457	30	9	4	0	43	947	0 947
% of Total	.3	20.3	2.3	0.0%		.8	.8	22.6	0.0%		26.2	18.1	4.0	0.0%		3.2	1.0	.4	0.0%			0.0%100.0%
Apprch %					22.9%					24.3%					48.3%					4.5%		
% of Apprc	1.4	88.5	10.1	0.0%		3.5	3.5	93.0	0.0%		54.3	37.4	8.3	0.0%		69.8	20.9	9.3	0.0%			

<<ACCUTEK>>

<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270108
Start Date: 01/04/00
File I.D. : 270008
Page : 1

Movement 1

Start Time	CANOGA AVENUE Southbound					CHATSWORTH ST. Westbound					CANOGA AVENUE Northbound					CHATSWORTH ST. Eastbound						
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=
7:00am	1	8	7	0	16	1	16	36	0	53	7	5	2	0	14	16	15	1	0	32	115	0 115
7:15	2	18	17	0	37	1	20	46	0	67	19	4	5	0	28	29	29	4	0	62	194	0 194
7:30	3	13	5	0	21	6	29	44	0	79	8	11	7	0	26	30	27	11	0	68	194	0 194
7:45	8	29	2	0	39	9	22	38	0	69	14	17	4	0	35	36	29	21	0	86	229	0 229
Hour Total	14	68	31	0	113	17	87	164	0	268	48	37	18	0	103	111	100	37	0	248	732	0 732
8:00am	7	37	8	0	52	9	27	22	0	58	13	18	0	0	31	29	38	32	0	99	240	0 240
8:15	9	22	4	0	35	8	31	39	0	78	12	17	4	0	33	25	22	31	0	78	224	0 224
8:30	7	19	2	0	28	3	16	34	0	53	10	12	3	0	25	13	24	5	0	42	148	0 148
8:45	5	18	3	0	26	4	12	27	0	43	9	7	3	0	19	8	23	3	0	34	122	0 122
Hour Total	28	96	17	0	141	24	86	122	0	232	44	54	10	0	108	75	107	71	0	253	734	0 734
9:00am	2	10	4	0	16	4	14	19	0	37	8	7	4	0	19	11	18	4	0	33	105	0 105
9:15	4	13	4	0	21	2	11	15	0	28	11	6	3	0	20	12	16	5	0	33	102	0 102
9:30	3	7	5	0	15	3	10	15	0	28	12	3	6	0	21	9	22	3	0	34	98	0 98
9:45	4	10	6	0	20	3	11	7	0	21	8	8	6	0	22	10	11	2	0	23	86	0 86
Hour Total	13	40	19	0	72	12	46	56	0	114	39	24	19	0	82	42	67	14	0	123	391	0 391
*** Break ***																						
3:00pm	10	14	2	0	26	9	26	23	0	58	20	15	13	0	48	7	40	11	0	58	190	0 190
3:15	8	21	5	0	34	13	23	23	0	59	19	17	11	0	47	8	46	23	0	77	217	0 217
3:30	6	19	11	0	36	6	33	18	0	57	31	15	22	0	68	9	31	12	0	52	213	0 213
3:45	17	19	4	0	40	7	27	19	0	53	22	17	14	0	53	9	21	7	0	37	183	0 183
Hour Total	41	73	22	0	136	35	109	83	0	227	92	64	60	0	216	33	138	53	0	224	803	0 803
4:00pm	9	13	3	0	25	10	34	27	0	71	26	17	16	0	59	11	25	8	0	44	199	0 199
4:15	7	16	5	0	28	14	29	23	0	66	23	19	23	0	65	11	22	6	0	39	198	0 198
4:30	11	18	8	0	37	7	32	26	0	65	36	16	15	0	67	11	19	2	0	32	201	0 201
4:45	6	17	7	0	30	10	29	24	0	63	28	10	16	0	54	10	27	3	0	40	187	0 187
Hour Total	33	64	23	0	120	41	124	100	0	265	113	62	70	0	245	43	93	19	0	155	785	0 785
5:00pm	9	11	4	0	24	5	39	17	0	61	31	10	31	0	72	6	37	2	0	45	202	0 202
5:15	5	14	4	0	23	7	36	30	0	73	38	21	29	0	88	7	24	3	0	34	218	0 218
5:30	2	9	4	0	15	7	30	18	0	55	22	14	29	0	65	9	32	8	0	49	184	0 184
5:45	5	9	5	0	19	4	26	20	0	50	21	23	14	0	58	10	26	3	0	39	166	0 166
Hour Total	21	43	17	0	81	23	131	85	0	239	112	68	103	0	283	32	119	16	0	167	770	0 770
Grand	150	384	129	0	663	152	583	610	0	1345	448	309	280	0	1037	336	624	210	0	1170	4215	0 4215
% of Total	3.6	9.1	3.1	0.0%		3.6	13.8	14.5	0.0%		10.6	7.3	6.6	0.0%		8.0	14.8	5.0	0.0%			0.0%100.0%
Apprch %					15.7%					31.9%					24.6%					27.8%		
% of Apprc	22.6	57.9	19.5	0.0%		11.3	43.3	45.4	0.0%		43.2	29.8	27.0	0.0%		28.7	53.3	17.9	0.0%			

<<ACCUTEK>>

<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270109
Start Date: 01/04/00
File I.D. : 270009
Page : 1

Movement 1

Start Time	CANOGA AVE. Southbound					DEVONSHIRE ST. Westbound					CANOGA AVE. Northbound					DEVONSHIRE ST. Eastbound							
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=	
7:00am	29	26	9	0	64	3	69	19	0	91	7	3	5	0	15	16	86	6	0	108	278	0	278
7:15	47	55	9	0	111	5	103	24	0	132	6	6	8	0	20	13	105	4	0	122	385	0	385
7:30	48	48	15	0	111	6	126	20	0	152	5	4	8	0	17	18	133	8	0	159	439	0	439
7:45	40	62	15	0	117	12	120	23	0	155	6	9	4	0	19	32	140	15	0	187	478	0	478
Hour Total	164	191	48	0	403	26	418	86	0	530	24	22	25	0	71	79	464	33	0	576	1580	0	1580
8:00am	32	65	26	0	123	10	143	17	0	170	18	15	10	0	43	23	128	7	0	158	494	0	494
8:15	34	51	12	0	97	7	145	22	0	174	11	12	12	0	35	10	119	18	0	147	453	0	453
8:30	31	41	11	0	83	6	120	21	0	147	13	10	11	0	34	22	143	8	0	173	437	0	437
8:45	28	24	21	0	73	17	114	29	0	160	22	9	10	0	41	19	137	10	0	166	440	0	440
Hour Total	125	181	70	0	376	40	522	89	0	651	64	46	43	0	153	74	527	43	0	644	1824	0	1824
9:00am	16	26	18	0	60	11	85	20	0	116	19	12	7	0	38	12	118	6	0	136	350	0	350
9:15	12	24	15	0	51	14	92	21	0	127	20	11	11	0	42	16	132	5	0	153	373	0	373
9:30	10	17	13	0	40	16	95	18	0	129	26	10	8	0	44	13	115	4	0	132	345	0	345
9:45	10	16	18	0	44	23	112	29	0	164	23	14	11	0	48	14	133	7	0	154	410	0	410
Hour Total	48	83	64	0	195	64	384	88	0	536	88	47	37	0	172	55	498	22	0	575	1478	0	1478
*** Break ***																							
3:00pm	23	23	22	0	68	24	147	18	0	189	30	36	14	0	80	9	170	14	0	193	530	0	530
3:15	14	23	21	0	58	20	155	17	0	192	26	24	16	0	66	12	194	21	0	227	543	0	543
3:30	20	21	22	0	63	24	171	21	0	216	60	38	22	0	120	10	207	21	0	238	637	0	637
3:45	16	16	14	0	46	21	157	17	0	195	44	29	22	0	95	26	189	15	0	230	566	0	566
Hour Total	73	83	79	0	235	89	630	73	0	792	160	127	74	0	361	57	760	71	0	888	2276	0	2276
4:00pm	19	23	20	0	62	24	175	18	0	217	44	41	33	0	118	21	165	15	0	201	598	0	598
4:15	20	24	22	0	66	26	176	22	0	224	40	40	18	0	98	16	189	17	0	222	610	0	610
4:30	18	27	28	0	73	24	193	13	0	230	67	52	30	0	149	21	206	15	0	242	694	0	694
4:45	13	27	29	0	69	28	178	22	0	228	62	40	26	0	128	28	207	21	0	256	681	0	681
Hour Total	70	101	99	0	270	102	722	75	0	899	213	173	107	0	493	86	767	68	0	921	2583	0	2583
5:00pm	14	18	23	0	55	24	176	19	0	219	57	64	37	0	158	10	214	21	0	245	677	0	677
5:15	21	28	24	0	73	35	179	15	0	229	43	60	28	0	131	13	225	27	0	265	698	0	698
5:30	15	17	19	0	51	33	181	12	0	226	49	56	22	0	127	11	198	22	0	231	635	0	635
5:45	10	17	23	0	50	30	197	18	0	245	47	27	16	0	90	11	190	28	0	229	614	0	614
Hour Total	60	80	89	0	229	122	733	64	0	919	196	207	103	0	506	45	827	98	0	970	2624	0	2624
Grand	540	719	449	0	1708	443	3409	475	0	4327	745	622	389	0	1756	396	3843	335	0	4574	12365	0	12365
% of Total	4.4	5.8	3.6	0.0%		3.6	27.6	3.8	0.0%		6.0	5.0	3.1	0.0%		3.2	31.1	2.7	0.0%			0.0%	100.0
Apprch %					13.8%					35.0%					14.2%					37.0%			
% of Apprc	31.6	42.1	26.3	0.0%		10.2	78.8	11.0	0.0%		42.4	35.4	22.2	0.0%		8.7	84.0	7.3	0.0%				

<<ACCUTEK>>
<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270110
Start Date: 01/04/00
File I.D. : 270010
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Movement 1

	DE SOTO AVE. Southbound					118 WB RAMP Westbound					DE SOTO AVE. Northbound					118 WB RAMP Eastbound							
Start Time	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=	
7:00am	0	0	1	0	1	1	0	427	0	428	80	3	0	0	83	0	0	0	0	0	512	0	512
7:15	0	1	0	0	1	3	0	511	0	514	101	1	0	0	102	0	0	0	0	0	617	0	617
7:30	0	1	0	0	1	2	0	536	0	538	142	3	0	0	145	0	0	0	0	0	684	0	684
7:45	0	2	0	0	2	3	0	544	0	547	125	2	0	0	127	0	0	0	0	0	676	0	676
Hour Total	0	4	1	0	5	9	0	2018	0	2027	448	9	0	0	457	0	0	0	0	0	2489	0	2489
8:00am	0	2	0	0	2	1	0	521	0	522	95	5	0	0	100	0	0	0	0	0	624	0	624
8:15	0	1	1	0	2	0	0	463	0	463	87	2	0	0	89	0	0	0	0	0	554	0	554
8:30	0	1	1	0	2	1	0	363	0	364	62	4	0	0	66	0	0	0	0	0	432	0	432
8:45	0	1	0	0	1	1	0	413	0	414	66	4	0	0	70	0	0	0	0	0	485	0	485
Hour Total	0	5	2	0	7	3	0	1760	0	1763	310	15	0	0	325	0	0	0	0	0	2095	0	2095
9:00am	0	2	0	0	2	2	0	336	0	338	58	2	0	0	60	0	0	0	0	0	400	0	400
9:15	0	4	0	0	4	4	0	316	0	320	57	3	0	0	60	0	0	0	0	0	384	0	384
9:30	0	2	0	0	2	2	0	338	0	340	57	2	0	0	59	0	0	0	0	0	401	0	401
9:45	0	7	1	0	8	1	0	259	0	260	54	1	0	0	55	0	0	0	0	0	323	0	323
Hour Total	0	15	1	0	16	9	0	1249	0	1258	226	8	0	0	234	0	0	0	0	0	1508	0	1508
*** Break ***																							
3:00pm	0	3	0	0	3	3	0	319	0	322	141	4	0	0	145	0	0	0	0	0	470	0	470
3:15	0	7	0	0	7	4	0	307	0	311	143	2	0	0	145	0	0	0	0	0	463	0	463
3:30	0	4	2	0	6	6	0	294	0	300	156	3	0	0	159	0	0	0	0	0	465	0	465
3:45	0	5	0	0	5	2	0	326	0	328	184	3	0	0	187	0	0	0	0	0	520	0	520
Hour Total	0	19	2	0	21	15	0	1246	0	1261	624	12	0	0	636	0	0	0	0	0	1918	0	1918
4:00pm	0	6	1	0	7	3	0	322	0	325	209	1	0	0	210	0	0	0	0	0	542	0	542
4:15	0	3	0	0	3	2	0	316	0	318	164	3	0	0	167	0	0	0	0	0	488	0	488
4:30	0	5	1	0	6	4	0	311	0	315	152	1	0	0	153	0	0	0	0	0	474	0	474
4:45	0	12	0	0	12	1	0	339	0	340	257	1	0	0	258	0	0	0	0	0	610	0	610
Hour Total	0	26	2	0	28	10	0	1288	0	1298	782	6	0	0	788	0	0	0	0	0	2114	0	2114
5:00pm	0	2	0	0	2	2	0	326	0	328	291	3	0	0	294	0	0	0	0	0	624	0	624
5:15	0	3	1	0	4	0	0	386	0	386	278	3	0	0	281	0	0	0	0	0	671	0	671
5:30	0	7	0	0	7	2	0	299	0	301	220	2	0	0	222	0	0	0	0	0	530	0	530
5:45	0	3	0	0	3	3	0	352	0	355	203	1	0	0	204	0	0	0	0	0	562	0	562
Hour Total	0	15	1	0	16	7	0	1363	0	1370	992	9	0	0	1001	0	0	0	0	0	2387	0	2387
Grand	0	84	9	0	93	53	0	8924	0	8977	3382	59	0	0	3441	0	0	0	0	0	12511	0	12511
% of Total	0.0	.7	.1	0.0%		.4	0.0	71.3	0.0%		27.0	.5	0.0	0.0%		0.0	0.0	0.0	0.0%			0.0%	100.0%
Apprch %					.7%					71.8%					27.5%								
% of Apprc	0.0	90.3	9.7	0.0%		.6	0.0	99.4	0.0%		98.3	1.7	0.0	0.0%		0.0	0.0	0.0	0.0%				

<<ACCUTEK>>
<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270111
Start Date: 01/04/00
File I.D. : 270011
Page : 1

Movement 1

Start Time	DE SOTO AVE. Southbound					SR-118 EB RAMP Westbound					DE SOTO AVE. Northbound					SR-118 EB RAMP Eastbound						
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=
7:00am	0	413	2	0	415	0	0	0	0	0	236	84	0	0	320	185	0	0	0	185	920	0 920
7:15	0	510	1	0	511	0	0	0	0	0	276	103	0	0	379	181	0	1	0	182	1072	0 1072
7:30	0	550	2	0	552	0	0	0	0	0	346	139	0	0	485	174	0	2	0	176	1213	0 1213
7:45	0	536	3	0	539	0	0	0	0	0	270	126	0	0	396	182	0	3	0	185	1120	0 1120
Hour Total	0	2009	8	0	2017	0	0	0	0	0	1128	452	0	0	1580	722	0	6	0	728	4325	0 4325
8:00am	0	495	2	0	497	0	0	0	0	0	270	96	0	0	366	174	0	0	0	174	1037	0 1037
8:15	0	469	4	0	473	0	0	0	0	0	268	90	0	0	358	141	0	2	0	143	974	0 974
8:30	0	371	1	0	372	0	0	0	0	0	300	67	0	0	367	137	0	1	0	138	877	0 877
8:45	0	411	2	0	413	0	0	0	0	0	255	65	0	0	320	123	0	0	0	123	856	0 856
Hour Total	0	1746	9	0	1755	0	0	0	0	0	1093	318	0	0	1411	575	0	3	0	578	3744	0 3744
9:00am	0	347	7	0	354	0	0	0	0	0	212	60	0	0	272	82	0	1	0	83	709	0 709
9:15	0	319	3	0	322	0	0	0	0	0	245	62	0	0	307	93	0	0	0	93	722	0 722
9:30	0	324	1	0	325	0	0	0	0	0	240	53	0	0	293	85	0	0	0	85	703	0 703
9:45	0	287	2	0	289	0	0	0	0	0	215	57	0	0	272	67	0	1	0	68	629	0 629
Hour Total	0	1277	13	0	1290	0	0	0	0	0	912	232	0	0	1144	327	0	2	0	329	2763	0 2763
*** Break ***																						
3:00pm	0	318	2	0	320	0	0	0	0	0	398	137	0	0	535	81	0	3	0	84	939	0 939
3:15	0	315	4	0	319	0	0	0	0	0	444	144	0	0	588	97	0	1	0	98	1005	0 1005
3:30	0	289	8	0	297	0	0	0	0	0	518	150	0	0	668	65	0	0	0	65	1030	0 1030
3:45	0	320	3	0	323	0	0	0	0	0	534	181	0	0	715	110	0	1	0	111	1149	0 1149
Hour Total	0	1242	17	0	1259	0	0	0	0	0	1894	612	0	0	2506	353	0	5	0	358	4123	0 4123
4:00pm	0	332	2	0	334	0	0	0	0	0	509	216	0	0	725	108	0	0	0	108	1167	0 1167
4:15	0	306	4	0	310	0	0	0	0	0	513	158	0	0	671	115	0	0	0	115	1096	0 1096
4:30	0	324	2	0	326	0	0	0	0	0	521	159	0	0	680	125	0	0	0	125	1131	0 1131
4:45	0	334	3	0	337	0	0	0	0	0	604	251	0	0	855	130	0	0	0	130	1322	0 1322
Hour Total	0	1296	11	0	1307	0	0	0	0	0	2147	784	0	0	2931	478	0	0	0	478	4716	0 4716
5:00pm	0	330	5	0	335	0	0	0	0	0	580	288	0	0	868	121	0	0	0	121	1324	0 1324
5:15	0	362	6	0	368	0	0	0	0	0	523	282	0	0	805	170	0	1	0	171	1344	0 1344
5:30	0	313	4	0	317	0	0	0	0	0	554	216	0	0	770	159	0	1	0	160	1247	0 1247
5:45	0	325	6	0	331	0	0	0	0	0	463	196	0	0	659	138	0	0	0	138	1128	0 1128
Hour Total	0	1330	21	0	1351	0	0	0	0	0	2120	982	0	0	3102	588	0	2	0	590	5043	0 5043
Grand	0	8900	79	0	8979	0	0	0	0	0	9294	3380	0	0	12674	3043	0	18	0	3061	24714	0 24714
% of Total	0.0	36.0	.3	0.0%		0.0	0.0	0.0	0.0%		37.6	13.7	0.0	0.0%		12.3	0.0	.1	0.0%			0.0%100.0%
Apprch %				36.3%										51.3%					12.4%			
% of Apprc	0.0	99.1	.9	0.0%		0.0	0.0	0.0	0.0%		73.3	26.7	0.0	0.0%		99.4	0.0	.6	0.0%			

<<ACCUTEK>>

<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270112
Start Date: 01/04/00
File I.D. : 270012
Page : 1

Movement 1

Start Time	DE SOTO AVE. Southbound					CHATSWORTH ST. Westbound					DE SOTO AVE. Northbound					CHATSWORTH ST. Eastbound						
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=
7:00am	51	506	49	0	606	35	19	1	0	55	3	242	2	0	247	3	13	39	0	55	963	0 963
7:15	77	528	51	0	656	39	16	0	0	55	2	278	7	0	287	3	15	46	0	64	1062	0 1062
7:30	75	547	65	0	687	44	24	2	0	70	4	371	2	0	377	8	18	44	0	70	1204	0 1204
7:45	77	513	55	0	645	41	55	3	0	99	1	305	9	0	315	4	30	37	0	71	1130	0 1130
Hour Total	280	2094	220	0	2594	159	114	6	0	279	10	1196	20	0	1226	18	76	166	0	260	4359	0 4359
8:00am	74	521	45	0	640	42	51	4	0	97	2	268	6	0	276	9	57	58	0	124	1137	0 1137
8:15	79	526	58	0	663	29	39	2	0	70	1	287	9	0	297	12	28	49	0	89	1119	0 1119
8:30	56	429	31	0	516	36	14	6	0	56	4	276	8	0	288	13	16	27	0	56	916	0 916
8:45	65	437	34	0	536	21	16	2	0	39	2	236	5	0	243	5	10	28	0	43	861	0 861
Hour Total	274	1913	168	0	2355	128	120	14	0	262	9	1067	28	0	1104	39	111	162	0	312	4033	0 4033
9:00am	49	402	22	0	473	24	19	4	0	47	5	237	5	0	247	4	7	19	0	30	797	0 797
9:15	26	347	20	0	393	26	11	1	0	38	4	243	7	0	254	7	15	21	0	43	728	0 728
9:30	31	325	23	0	379	21	9	1	0	31	3	265	6	0	274	9	16	30	0	55	739	0 739
9:45	34	287	15	0	336	19	7	5	0	31	2	227	2	0	231	5	17	15	0	37	635	0 635
Hour Total	140	1361	80	0	1581	90	46	11	0	147	14	972	20	0	1006	25	55	85	0	165	2899	0 2899
*** Break ***																						
3:00pm	51	314	16	0	381	41	38	3	0	82	3	448	4	0	455	11	35	60	0	106	1024	0 1024
3:15	49	311	13	0	373	49	31	1	0	81	4	466	4	0	474	13	34	63	0	110	1038	0 1038
3:30	57	307	16	0	380	62	22	3	0	87	3	598	1	0	602	15	33	63	0	111	1180	0 1180
3:45	49	344	24	0	417	54	24	3	0	81	4	609	2	0	615	8	28	47	0	83	1196	0 1196
Hour Total	206	1276	69	0	1551	206	115	10	0	331	14	2121	11	0	2146	47	130	233	0	410	4438	0 4438
4:00pm	55	337	29	0	421	78	26	2	0	106	7	627	2	0	636	7	43	49	0	99	1262	0 1262
4:15	57	340	28	0	425	69	18	2	0	89	12	603	5	0	620	16	24	41	0	81	1215	0 1215
4:30	48	356	34	0	438	111	23	1	0	135	14	548	2	0	564	8	49	56	0	113	1250	0 1250
4:45	50	349	45	0	444	102	24	3	0	129	7	749	1	0	757	7	34	68	0	109	1439	0 1439
Hour Total	210	1382	136	0	1728	360	91	8	0	459	40	2527	10	0	2577	38	150	214	0	402	5166	0 5166
5:00pm	61	351	34	0	446	169	15	2	0	186	6	630	2	0	638	7	24	64	0	95	1365	0 1365
5:15	43	417	36	0	496	158	19	0	0	177	5	626	1	0	632	13	29	67	0	109	1414	0 1414
5:30	40	320	27	0	387	118	16	1	0	135	5	602	2	0	609	12	22	40	0	74	1205	0 1205
5:45	49	344	24	0	417	82	13	1	0	96	2	572	0	0	574	10	17	51	0	78	1165	0 1165
Hour Total	193	1432	121	0	1746	527	63	4	0	594	18	2430	5	0	2453	42	92	222	0	356	5149	0 5149
Grand	1303	9458	794	0	11555	1470	549	53	0	2072	105	10313	94	0	10512	209	614	1082	0	1905	26044	0 26044
% of Total	5.0	36.3	3.0	0.0%		5.6	2.1	.2	0.0%		.4	39.6	.4	0.0%		.8	2.4	4.2	0.0%			0.0%100.0
Apprch %					44.4%					8.0%					40.4%					7.3%		
% of Apprc	11.3	81.9	6.9	0.0%		70.9	26.5	2.6	0.0%		1.0	98.1	.9	0.0%		11.0	32.2	56.8	0.0%			

<<ACCUTEK>>

<<21114 TRIGGER LANE>>
<<DIAMOND BAR, CA. 91765>>
<<(909)595-6199 FAX (909)595-6022>>

Site Code : 00270113
Start Date: 01/04/00
File I.D. : 270013
Page : 1

Movement 1

Start Time	DE SOTO AVENUE Southbound					DEVONSHIRE ST. Westbound					DE SOTO AVENUE Northbound					DEVONSHIRE ST. Eastbound						
	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Rght	Thru	Left	Other	Totl	Total-	Other=
7:00am	20	496	26	0	542	22	67	29	0	118	18	204	11	0	233	29	73	38	0	140	1033	0 1033
7:15	27	466	34	0	527	24	98	42	0	164	10	210	11	0	231	24	76	41	0	141	1063	0 1063
7:30	29	508	23	0	560	32	116	59	0	207	17	289	10	0	316	26	112	58	0	196	1279	0 1279
7:45	28	463	25	0	516	28	128	62	0	218	13	214	28	0	255	34	112	45	0	191	1180	0 1180
Hour Total	104	1933	108	0	2145	106	409	192	0	707	58	917	60	0	1035	113	373	182	0	668	4555	0 4555
8:00am	32	455	32	0	519	30	153	53	0	236	11	213	21	0	245	24	125	45	0	194	1194	0 1194
8:15	22	479	26	0	527	23	142	38	0	203	11	225	26	0	262	26	110	41	0	177	1169	0 1169
8:30	31	437	22	0	490	26	113	34	0	173	15	243	24	0	282	41	125	41	0	207	1152	0 1152
8:45	25	371	24	0	420	19	120	32	0	171	9	216	31	0	256	31	120	42	0	193	1040	0 1040
Hour Total	110	1742	104	0	1956	98	528	157	0	783	46	897	102	0	1045	122	480	169	0	771	4555	0 4555
9:00am	47	339	18	0	404	18	96	27	0	141	14	194	18	0	226	21	109	34	0	164	935	0 935
9:15	28	294	14	0	336	16	104	35	0	155	15	205	17	0	237	29	121	39	0	189	917	0 917
9:30	35	287	20	0	342	20	95	26	0	141	17	223	30	0	270	29	98	35	0	162	915	0 915
9:45	35	236	29	0	300	21	117	23	0	161	24	194	34	0	252	28	116	39	0	183	896	0 896
Hour Total	145	1156	81	0	1382	75	412	111	0	598	70	816	99	0	985	107	444	147	0	698	3663	0 3663
*** Break ***																						
3:00pm	30	268	40	0	338	41	245	27	0	313	15	321	37	0	373	33	162	64	0	259	1283	0 1283
3:15	29	241	37	0	307	42	248	34	0	324	25	380	30	0	435	26	152	81	0	259	1325	0 1325
3:30	46	217	32	0	295	51	163	36	0	250	26	432	23	0	481	20	189	114	0	323	1349	0 1349
3:45	41	269	49	0	359	47	146	31	0	224	19	466	29	0	514	30	171	85	0	286	1383	0 1383
Hour Total	146	995	158	0	1299	181	802	128	0	1111	85	1599	119	0	1803	109	674	344	0	1127	5340	0 5340
4:00pm	40	263	33	0	336	47	151	31	0	229	24	478	35	0	537	33	156	89	0	278	1380	0 1380
4:15	49	279	39	0	367	40	162	36	0	238	19	505	39	0	563	29	158	91	0	278	1446	0 1446
4:30	40	273	49	0	362	37	201	17	0	255	17	479	37	0	533	31	174	102	0	307	1457	0 1457
4:45	44	270	57	0	371	42	212	33	0	287	15	547	43	0	605	27	204	107	0	338	1601	0 1601
Hour Total	173	1085	178	0	1436	166	726	117	0	1009	75	2009	154	0	2238	120	692	389	0	1201	5884	0 5884
5:00pm	43	282	44	0	369	36	133	31	0	200	18	506	33	0	557	36	230	126	0	392	1518	0 1518
5:15	51	327	65	0	443	43	153	30	0	226	16	459	36	0	511	27	235	136	0	398	1578	0 1578
5:30	43	283	46	0	372	35	149	26	0	210	17	463	40	0	520	33	216	113	0	362	1464	0 1464
5:45	50	264	53	0	367	36	167	37	0	240	27	435	37	0	499	26	165	79	0	270	1376	0 1376
Hour Total	187	1156	208	0	1551	150	602	124	0	876	78	1863	146	0	2087	122	846	454	0	1422	5936	0 5936
Grand	865	8067	837	0	9769	776	3479	829	0	5084	412	8101	680	0	9193	693	3509	1685	0	5887	29933	0 29933
% of Total	2.9	27.0	2.8	0.0%		2.6	11.6	2.8	0.0%		1.4	27.1	2.3	0.0%		2.3	11.7	5.6	0.0%			0.0%100.0
Apprch %					32.6%					17.0%					30.7%					19.7%		
% of Apprc	8.9	82.6	8.6	0.0%		15.3	68.4	16.3	0.0%		4.5	88.1	7.4	0.0%		11.8	59.6	28.6	0.0%			

APPENDIX B

Levels of Service Explanation
and
ICU / CMA Data Worksheets - AM and PM Peak Hours

INTERSECTION CAPACITY UTILIZATION (ICU) DESCRIPTION

Level of Service is a term used to describe prevailing conditions and their effect on traffic. Broadly interpreted, the Levels of Service concept denotes any one of a number of differing combinations of operating conditions which may occur as a roadway is accommodating various traffic volumes. Level of Service is a qualitative measure of the effect of such factors as travel speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

Six Levels of Service, A through F, have been defined in the 1965 *Highway Capacity Manual*, published by the Transportation Research Board. Level of Service A describes a condition of free flow, with low traffic volumes and relatively high speeds, while Level of Service F describes forced traffic flow at low speeds with jammed conditions and queues which cannot clear during the green phases.

The Intersection Capacity Utilization (ICU) method of intersection capacity analysis has been used in our studies. It directly relates traffic demand and available capacity for key intersection movements, regardless of present signal timing, The capacity per hour of green time for each approach is calculated based on the methods of the *Highway Capacity Manual*. The proportion of total signal time needed by each key movement is determined and compared to the total time available (100 percent of the hour). The result of summing the requirements of the conflicting key movements plus an allowance for clearance times is expressed as a decimal fraction. Conflicting key traffic movements are those opposing movements whose combined green time requirements are greatest.

The resulting ICU represents the proportion of the total hour required to accommodate intersection demand volumes if the key conflicting traffic movements are operating at capacity. Other movements may be operating near capacity, or may be operating at significantly better levels. The ICU may be translated to a Level of Service as tabulated below.

The Levels of Service (abbreviated from the *Highway Capacity Manual*) are listed here with their corresponding ICU and Load Factor equivalents. Load Factor is that proportion of the signal cycles during the peak hour which are fully loaded; i.e. when all of the vehicles waiting at the beginning of green are not able to clear on that green phase.

Intersection Capacity Utilization Characteristics

Level of Service	Load Factor	Equivalent ICU
A	0.0	0.00 - 0.60
B	0.0 - 0.1	0.61 - 0.70
C	0.1 - 0.3	0.71 - 0.80
D	0.3 - 0.7	0.81 - 0.90
E	0.7 - 1.0	0.91 - 1.00
F	Not Applicable	Not Applicable

SERVICE LEVEL A
There are no loaded cycles and few are even close to loaded at this service level. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

SERVICE LEVEL B
This level represents stable operation where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.

SERVICE LEVEL C
At this level stable operation continues. Loading is still intermittent but more frequent than at Level B. Occasionally drivers may have to wait through more than one red signal indication and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.

SERVICE LEVEL D
This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak hour, but enough cycles with lower demand occur to permit periodic clearance of queues, thus preventing excessive backups. Drivers frequently have to wait through more than one red signal. This level is the lower limit of acceptable operation to most drivers.

SERVICE LEVEL E
This represents near capacity and capacity operation. At capacity (ICU = 1.0) it represents the most vehicles that the particular intersection can accommodate. However, full utilization of every signal cycle is seldom attained no matter how great the demand. At this level all drivers wait through more than one red signal, and frequently through several.

SERVICE LEVEL F
Jammed conditions. Traffic backed up from a downstream location on one of the street restricts or prevents movement of traffic through the intersection under consideration.

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INTERSECTION CAPACITY UTILIZATION

N-S St: Topanga Canyon Boulevard/Mayan Drive
E-W St: SR-118 WB On/Off Ramps/Poema Place
Project: Chatsworth Ridge Estates/ 1-982714-2
File: ICU21

Topanga Canyon Boulevard/Mayan Drive @ SR-118 WB On/Off Ramps/Poema Place
Peak hr: - AM
Annual Growth: 2.00%

Date: 03/21/2001
Date of Count: 2000
Projection Year: 2005

	2000 EXIST. TRAFFIC			2005 W/AMBIENT GROWTH			2005 W/PROJECT SITE TRAFFIC				2005 W/PROJECT MITIGATION				2005 W/RELATED PROJECTS			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2, 5	V/C	Added	Total	2, 5	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	505	2880	0.175 *	51	556	0.193 *	0	556	2880	0.193 *	0	556	2880	0.193 *	29	585	2880	0.203 *
Nb Thru	32	1600	0.020	3	35	0.022	26	61	1600	0.038	0	61	1600	0.038	15	76	1600	0.048
Nb Right	0	0	-	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Sb Left	38	0	0.000	4	42	0.000	180	222	0	0.000	0	222	0	0.000	5	227	0	0.000
Sb Thru 3	2	1600	0.025 *	0	2	0.028 *	0	2	1600	0.140 *	0	2	2880	0.078 *	0	2	2880	0.080 *
Sb Right	0	0	-	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Eb Left	0	0	0.000	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0.000
Eb Thru 4	0	1600	0.086 *	0	0	0.094 *	0	0	1600	0.094 *	0	0	2880	0.052 *	0	0	2880	0.085 *
Eb Right	137	0	-	14	151	-	0	151	0	-	0	151	0	-	95	246	0	-
Wb Left	1276	0	0.000	128	1404	0.000	0	1404	0	0.000	0	1404	0	0.000	39	1443	0	0.000
Wb Thru	0	2880	0.450 *	0	0	0.495 *	0	0	2880	0.507 *	0	0	2880	0.487 *	0	0	2880	0.501 *
Wb Right	21	0	-	2	23	-	34	57	0	-	0	57	1600	0.036	11	68	1600	0.043
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.836			0.910				1.034				0.910				0.969
LOS			D			E				F				E				E

03:52 PM

* Key conflicting movement as a part of ICU
1 Counts conducted by: Accutek
2 Capacity expressed in veh/hour of green
3 Southbound movement considers the westbound movement and volumes from Mayan Drive.
4 Eastbound movement considers the eastbound movement and volumes from Poema Place.
5 Project mitigation measures include: (i) widening of the westbound SR-118 off-ramp to provide one left-turn lane, one through/left-turn lane, and one right-turn only lane; (ii) widening of Mayan Drive to provide one left-turn lane and one through/left-turn lane; and (iii) widening of Poema Place to provide one through/right-turn lane and one right-turn only lane.

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CRITICAL MOVEMENT ANALYSIS

N-S St: Topanga Canyon Boulevard
E-W St: SR-118 EB On/Off Ramps
Project: Chalsworth Ridge Estates/ 1-982714-2
File Name: CMA3
Counts by: Accutek

Topanga Canyon Boulevard @ SR-118 EB On/Off Ramps
Peak Hour: AM
Annual Growth: 2.0%

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	525	1	525	53	578	1	578	39	617	1	617	7	624	1	624	0	624	1	624
Comb. T-R		1	1008			1	1109			1	1183			1	1183			1	1183
NB Right	1008	0	-	101	1109	0	-	75	1183	0	-	0	1183	0	-	0	1183	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	75	1	75	8	83	1	83	43	126	1	126	102	228	1	228	0	228	1	228
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	1353	2	677	135	1488	2	744	77	1565	2	783	20	1585	2	793	0	1585	2	793
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	11	0	-	1	12	0	-	5	17	0	-	19	36	0	-	0	36	0	-
Comb. L-T		1	13			1	14			1	19			1	36			1	36
EB Thru	2	0	-	0	2	0	-	0	2	0	-	0	2	0	-	0	2	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	1198	2	659	120	1318	2	725	101	1419	2	780	0	1419	2	780	0	1419	2	780
Comb. L-T-R -		0				0				0				0				0	
WB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1083			N-S:	1191			N-S:	1309			N-S:	1411			N-S:	1411
		E-W:	659			E-W:	725			E-W:	780			E-W:	780			E-W:	780
		SUM:	1742			SUM:	1916			SUM:	2089			SUM:	2191			SUM:	2191
No. of Phases:			3				3				3				3				3
Volume / Capacity:			1.222				1.345				1.466				1.538			*	1.468
Level of Service:			F				F				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.
** V/C ratio reduced by 0.07 to reflect contribution to the City's ATSAC system.*

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N-S St: Topanga Canyon Boulevard
E-W St: Santa Susana Pass Road
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA4
Counts by: Accutek

CRITICAL MOVEMENT ANALYSIS

Topanga Canyon Boulevard @ Santa Susana Pass Road
Peak Hour: AM
Annual Growth: 2.0%

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

Movement	2000 EXIST. TRAFFIC Volume	No. of Lanes	Lane Volume	2005 W/ AMBIENT GROWTH Added Volume	Total Volume	No. of Lanes	Lane Volume	2005 WITH RELATED PROJECTS Added Volume	Total Volume	No. of Lanes	Lane Volume	2005 WITH PROJECT Added Volume	Total Volume	No. of Lanes	Lane Volume	2005 W/PROJECT MITIGATION Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	37	1	37	4	41	1	41	25	66	1	66	0	66	1	66	0	66	1	66
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	1426	2	713	143	1569	2	784	77	1645	2	823	7	1652	2	826	0	1652	2	826
Comb. T-R		0	-			0	-			0	-			0	-			0	-
NB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	2493	2	1247	249	2742	2	1371	136	2878	2	1439	20	2898	2	1449	0	2898	2	1449
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	31	1	31	3	34	1	34	28	62	1	62	0	62	1	62	0	62	1	62
Comb. L-T-R -		0				0				0				0				0	
EB Left	56	1	56	6	62	1	62	37	99	1	99	0	99	1	99	0	99	1	99
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	151	1	151	15	166	1	166	22	188	1	188	0	188	1	188	0	188	1	188
Comb. L-T-R -		0				0				0				0				0	
WB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1284			N-S:	1412			N-S:	1505			N-S:	1515			N-S:	1515
		E-W:	133			E-W:	146			E-W:	155			E-W:	155			E-W:	155
		SUM:	1416			SUM:	1558			SUM:	1660			SUM:	1670			SUM:	1670
No. of Phases:			3				3				3				3				3
Volume / Capacity:			0.994				1.093				1.165				1.172				1.172
Level of Service:			E				F				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

Topanga Canyon Boulevard @ Chatsworth Street
Peak Hour: AM
Annual Growth: 2.0%

N-S St: Topanga Canyon Boulevard
E-W St: Chatsworth Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA5
Counts by: Accutek

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	0	1	-	0	0	1	-	0	0	1	-	0	0	1	-	0	0	1	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	1373	1	727	137	1510	1	799	104	1614	1	865	7	1621	1	869	0	1621	1	869
Comb. T-R		1	727			1	799			1	865			1	869			1	869
NB Right	80	0	-	8	88	0	-	29	117	0	-	0	117	0	-	0	117	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	307	1	307	31	338	1	338	34	371	1	371	0	371	1	371	0	371	1	371
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	2337	1	1181	234	2571	1	1299	154	2725	1	1375	20	2745	1	1385	0	2745	1	1385
Comb. T-R		1	1181			1	1299			1	1375			1	1385			1	1385
SB Right	24	0	-	2	26	0	-	0	26	0	-	0	26	0	-	0	26	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	25	0	-	3	28	0	-	0	28	0	-	0	28	0	-	0	28	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	7	0	38	1	8	0	42	0	8	0	42	0	8	0	42	0	8	0	42
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	6	0	-	1	7	0	-	0	7	0	-	0	7	0	-	0	7	0	-
Comb. L-T-R -		1				1				1				1				1	
WB Left	28	1	28	3	31	1	31	18	49	1	49	0	49	1	49	0	49	1	49
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	8	0	-	1	9	0	-	0	9	0	-	0	9	0	-	0	9	0	-
Comb. T-R		1	31			1	34			1	36			1	36			1	36
WB Right	75	1	53	8	83	1	58	9	91	1	64	0	91	1	64	0	91	1	64
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1181		N-S:		1299		N-S:		1375		N-S:		1385		N-S:		1385
		E-W:	56		E-W:		61		E-W:		64		E-W:		64		E-W:		64
		SUM:	1236		SUM:		1360		SUM:		1439		SUM:		1449		SUM:		1449
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.824				0.906				0.959				0.966				0.966
Level of Service:			D				E				E				E				E

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

Topanga Canyon Boulevard @ Devonshire Street
Peak Hour: AM
Annual Growth: 2.0%

N-S St: Topanga Canyon Boulevard
E-W St: Devonshire Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA6
Counts by: Acculek

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	9	1	9	1	10	1	10	0	10	1	10	0	10	1	10	0	10	1	10
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	1213	1	660	121	1334	1	726	125	1460	1	812	5	1465	1	814	0	1465	1	814
Comb. T-R		1	660			1	726			1	812			1	814			1	814
NB Right	107	0	-	11	118	0	-	46	164	0	-	0	164	0	-	0	164	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	107	1	107	11	118	1	118	19	137	1	137	6	143	1	143	0	143	1	143
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	2145	2	732	215	2360	2	806	152	2511	2	856	15	2526	2	861	0	2526	2	861
Comb. T-R		1	732			1	806			1	856			1	861			1	861
SB Right	52	0	-	5	57	0	-	0	57	0	-	0	57	0	-	0	57	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	151	1	151	15	166	1	166	0	166	1	166	0	166	1	166	0	166	1	166
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	212	1	112	21	233	1	123	0	233	1	123	0	233	1	123	0	233	1	123
Comb. T-R		1	112			1	123			1	123			1	123			1	123
EB Right	11	0	-	1	12	0	-	0	12	0	-	0	12	0	-	0	12	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	120	2	66	12	132	2	73	9	141	2	78	0	141	2	78	0	141	2	78
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	86	1	86	9	95	1	95	0	95	1	95	0	95	1	95	0	95	1	95
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	71	1	71	7	78	1	78	8	86	1	86	2	88	1	88	0	88	1	88
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	767		N-S:		844		N-S:		948		N-S:		957		N-S:		957
		E-W:	237		E-W:		261		E-W:		261		E-W:		261		E-W:		261
		SUM:	1004		SUM:		1104		SUM:		1209		SUM:		1218		SUM:		1218
No. of Phases:			4				4				4				4				4
Volume / Capacity:			0.730				0.803				0.879				0.886				0.886
Level of Service:			C				D				D				D				D

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

Canoga Avenue @ Rinaldi Street
Peak Hour: AM
Annual Growth: 2.0%

N-S St: Canoga Avenue
E-W St: Rinaldi Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA7
Counts by: Accutek

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	25	1	25	3	28	1	28	0	28	1	28	0	28	1	28	0	28	1	28
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	16	1	16	2	18	1	18	0	18	1	18	32	50	1	50	0	50	1	50
Comb. T-R		0	-			0	-			0	-			0	-			0	-
NB Right	124	1	124	12	136	1	136	0	136	1	136	0	136	1	136	0	136	1	136
Comb. L-T-R -		0				0				0				0				0	
SB Left	3	1	3	0	3	1	3	0	3	1	3	15	18	1	18	0	18	1	18
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	38	1	38	4	42	1	42	0	42	1	42	96	138	1	138	0	138	1	138
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Comb. L-T-R -		0				0				0				0				0	
EB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	1	0	5	0	1	0	6	0	1	0	6	0	1	0	6	0	1	0	6
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	4	0	-	0	4	0	-	0	4	0	-	0	4	0	-	0	4	0	-
Comb. L-T-R -		1				1				1				1				1	
WB Left	69	1	69	7	76	1	76	0	76	1	76	0	76	1	76	0	76	1	76
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	1	0	-	0	1	0	-	0	1	0	-	0	1	0	-	0	1	0	-
Comb. T-R		1	3			1	3			1	3			1	8			1	8
WB Right	2	0	-	0	2	0	-	0	2	0	-	5	7	0	-	0	7	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	93			N-S:	102			N-S:	102			N-S:	165			N-S:	165
		E-W:	74			E-W:	81			E-W:	81			E-W:	81			E-W:	81
		SUM:	167			SUM:	183			SUM:	183			SUM:	247			SUM:	247
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.111				0.122				0.122				0.164				0.164
Level of Service:			A				A				A				A				A

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

Canoga Avenue @ Chatsworth Street
Peak Hour: AM
Annual Growth: 2.0%

N-S St: Canoga Avenue
E-W St: Chatsworth Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA8
Counts by: Accutek

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	15	0	-	2	17	0	-	0	17	0	-	0	17	0	-	0	17	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	63	0	125	6	69	0	138	0	69	0	159	19	88	0	178	0	88	0	178
Comb. T-R		0	-			0	-			0	-			0	-			0	-
NB Right	47	0	-	5	52	0	-	21	73	0	-	0	73	0	-	0	73	0	-
Comb. L-T-R -		1				1				1				1				1	
SB Left	19	0	-	2	21	0	-	0	21	0	-	38	59	0	-	0	59	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	101	0	147	10	111	0	162	0	111	0	162	58	169	0	258	0	169	0	258
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	27	0	-	3	30	0	-	0	30	0	-	0	30	0	-	0	30	0	-
Comb. L-T-R -		1				1				1				1				1	
EB Left	95	0	-	10	105	0	-	0	105	0	-	0	105	0	-	0	105	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	116	0	331	12	128	0	364	55	183	0	419	0	183	0	419	0	183	0	419
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	120	0	-	12	132	0	-	0	132	0	-	0	132	0	-	0	132	0	-
Comb. L-T-R -		1				1				1				1				1	
WB Left	143	1	143	14	157	1	157	11	168	1	168	0	168	1	168	0	168	1	168
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	109	1	109	11	120	1	120	27	146	1	146	0	146	1	146	0	146	1	146
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	32	1	32	3	35	1	35	0	35	1	35	13	48	1	48	0	48	1	48
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	143			N-S:	157			N-S:	163			N-S:	220			N-S:	220
		E-W:	379			E-W:	417			E-W:	483			E-W:	483			E-W:	483
		SUM:	522			SUM:	574			SUM:	646			SUM:	703			SUM:	703
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.348				0.383				0.431				0.469				0.469
Level of Service:			A				A				A				A				A

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

Canoga Avenue @ Devonshire Street
Peak Hour: AM
Annual Growth: 2.0%

N-S St: Canoga Avenue
E-W St: Devonshire Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA9
Counts by: Acculek

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	34	1	34	3	37	1	37	1	38	1	38	0	38	1	38	0	38	1	38
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	40	1	40	4	44	1	44	21	65	1	55	15	80	1	62	0	80	1	62
Comb. T-R		1	40			1	44			1	55			1	62			1	62
NB Right	40	0	-	4	44	0	-	0	44	0	-	0	44	0	-	0	44	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	68	1	68	7	75	1	75	0	75	1	75	9	84	1	84	0	84	1	84
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	226	1	226	23	249	1	249	11	259	1	259	44	303	1	303	0	303	1	303
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	154	1	154	15	169	1	169	0	169	1	169	6	175	1	175	0	175	1	175
Comb. L-T-R -		0				0				0				0				0	
EB Left	48	1	48	5	53	1	53	0	53	1	53	2	55	1	55	0	55	1	55
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	520	1	302	52	572	1	332	56	628	1	363	0	628	1	363	0	628	1	363
Comb. T-R		1	302			1	332			1	363			1	363			1	363
EB Right	83	0	-	8	91	0	-	6	97	0	-	0	97	0	-	0	97	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	82	1	82	8	90	1	90	0	90	1	90	0	90	1	90	0	90	1	90
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	534	1	285	53	587	1	313	14	602	1	320	0	602	1	322	0	602	1	322
Comb. T-R		1	285			1	313			1	320			1	322			1	322
WB Right	35	0	-	4	39	0	-	0	39	0	-	3	42	0	-	0	42	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	260			N-S:	286			N-S:	298			N-S:	342			N-S:	342
		E-W:	384			E-W:	422			E-W:	453			E-W:	453			E-W:	453
		SUM:	644			SUM:	708			SUM:	751			SUM:	795			SUM:	795
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.429				0.472				0.501				0.530				0.530
Level of Service:			A				A				A				A				A

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

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CRITICAL MOVEMENT ANALYSIS

N-S St: De Soto Avenue
E-W St: SR-118 WB On/Off Ramps
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA10
Counts by: Accutek

De Soto Avenue @ SR-118 WB On/Off Ramps
Peak Hour: AM
Annual Growth: 2.0%

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	11	1	11	1	12	1	12	452	464	2	232	0	464	2	232	0	464	2	232
Comb. T-R		0	-			0	-			0	-			0	-			0	-
NB Right *	463	2	255	46	509	2	280	3	512	2	282	0	512	2	282	0	512	2	282
Comb. L-T-R -		0				0				0				0				0	
SB Left	0	0	-	0	0	0	-	156	156	2	86	0	156	2	86	0	156	2	86
Comb. L-T		1	3			1	3			0	-			0	-			0	-
SB Thru	6	1	3	1	7	1	3	118	124	1	124	0	124	1	124	0	124	1	124
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	2112	2	1162	211	2323	2	1278	139	2462	2	1354	10	2472	2	1360	0	2472	2	1360
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	9	1	9	1	10	1	10	16	26	1	26	0	26	1	26	0	26	1	26
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	11			N-S:	12			N-S:	318			N-S:	318			N-S:	318
		E-W:	1162			E-W:	1278			E-W:	1354			E-W:	1360			E-W:	1360
		SUM:	1173			SUM:	1290			SUM:	1672			SUM:	1677			SUM:	1677
No. of Phases:			2				2				3				3				3
Volume / Capacity:			0.782				0.860				1.173				1.177				1.177
Level of Service:			C				D				F				F				F

Assumptions:

Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.
** Northbound right turn movement is free under existing and with ambient growth conditions.*

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626.796.2322

CRITICAL MOVEMENT ANALYSIS

N-S St: De Solo Avenue
E-W St: SR-118 EB On/Off Ramps
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA11
Counts by: Accutek

De Solo Avenue @ SR-118 EB On/Off Ramps
Peak Hour: AM
Annual Growth: 2.0%

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	464	1	406	46	510	1	447	191	701	1	543	0	701	1	548	0	701	1	548
Comb. T-R		1	406			1	447			1	543			1	548			1	548
NB Right *	1162	1	813	116	1278	1	895	6	1284	1	899	29	1313	1	919	0	1313	1	919
Comb. L-T-R -		0				0				0				0				0	
SB Left	8	1	8	1	9	1	9	43	52	1	52	0	52	1	52	0	52	1	52
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	2091	2	1046	209	2300	2	1150	214	2514	2	1257	10	2524	2	1262	0	2524	2	1262
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	6	0	-	1	7	0	-	290	296	0	-	0	296	0	-	0	296	0	-
Comb. L-T		1	6			1	7			1	296			1	296			1	296
EB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
EB Right *	771	1	771	77	848	1	848	1	849	1	849	0	849	1	849	0	849	1	849
Comb. L-T-R -		0				0				0				0				0	
WB Left	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1046			N-S:	1150			N-S:	1257			N-S:	1262			N-S:	1262
		E-W:	6			E-W:	7			E-W:	296			E-W:	296			E-W:	296
		SUM:	1052			SUM:	1157			SUM:	1553			SUM:	1558			SUM:	1558
No. of Phases:			2				2				2				2				2
Volume / Capacity:			0.701				0.771				1.035				1.039				1.039
Level of Service:			C				C				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.
** Eastbound right turn movement is free.*

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CRITICAL MOVEMENT ANALYSIS

De Solo Avenue @ Chatsworth Street
Peak Hour: AM
Annual Growth: 2.0%

N-S St: De Solo Avenue
E-W St: Chatsworth Street
Project: Chatsworth Ridge Estates/ 1-982714-2
File Name: CMA12
Counts by: Acculek

Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	26	1	26	3	29	1	29	0	29	1	29	8	37	1	37	0	37	1	37
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	1231	2	413	123	1354	2	454	139	1493	2	508	0	1493	2	508	0	1493	2	508
Comb. T-R		1	413			1	454			1	508			1	508			1	508
NB Right	8	0	-	1	9	0	-	23	32	0	-	0	32	0	-	0	32	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	223	1	223	22	245	1	245	1	246	1	246	0	246	1	246	0	246	1	246
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	2107	2	1054	211	2318	2	1159	194	2512	2	1256	0	2512	2	1256	0	2512	2	1256
Comb. T-R		0	-			0	-			0	-			0	-			0	-
SB Right	305	1	305	31	336	1	336	21	357	1	357	10	367	1	367	0	367	1	367
Comb. L-T-R -		0				0				0				0				0	
EB Left	188	1	188	19	207	1	207	46	253	1	253	29	282	1	282	0	282	1	282
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	133	1	83	13	146	1	91	31	177	1	107	0	177	1	118	0	177	1	118
Comb. T-R		1	83			1	91			1	107			1	118			1	118
EB Right	33	0	-	3	36	0	-	0	36	0	-	23	59	0	-	0	59	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	11	1	11	1	12	1	12	5	17	1	17	0	17	1	17	0	17	1	17
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	169	1	169	17	186	1	186	16	202	1	202	0	202	1	202	0	202	1	202
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	156	1	156	16	172	1	172	2	173	1	173	0	173	1	173	0	173	1	173
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:		N-S:	1080			N-S:	1187			N-S:	1285			N-S:	1293			N-S:	1293
		E-W:	357			E-W:	393			E-W:	455			E-W:	484			E-W:	484
		SUM:	1437			SUM:	1580			SUM:	1740			SUM:	1777			SUM:	1777
No. of Phases:			3				3				3				3				3
Volume / Capacity:			1.008				1.109				1.221				1.247			*	1.177
Level of Service:			F				F				F				F				F

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 100% of overlapping left turn.
** V/C ratio reduced by 0.07 to reflect contribution to the City's ATSAC system.*

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CRITICAL MOVEMENT ANALYSIS

N-S St: De Soto Avenue
E-W St: Devonshire Street
Project: Chalsworth Ridge Estates/ 1-982714-2
File Name: CMA13
Counts by: Acculek

De Soto Avenue @ Devonshire Street
Peak Hour: AM
Annual Growth: 2.0%

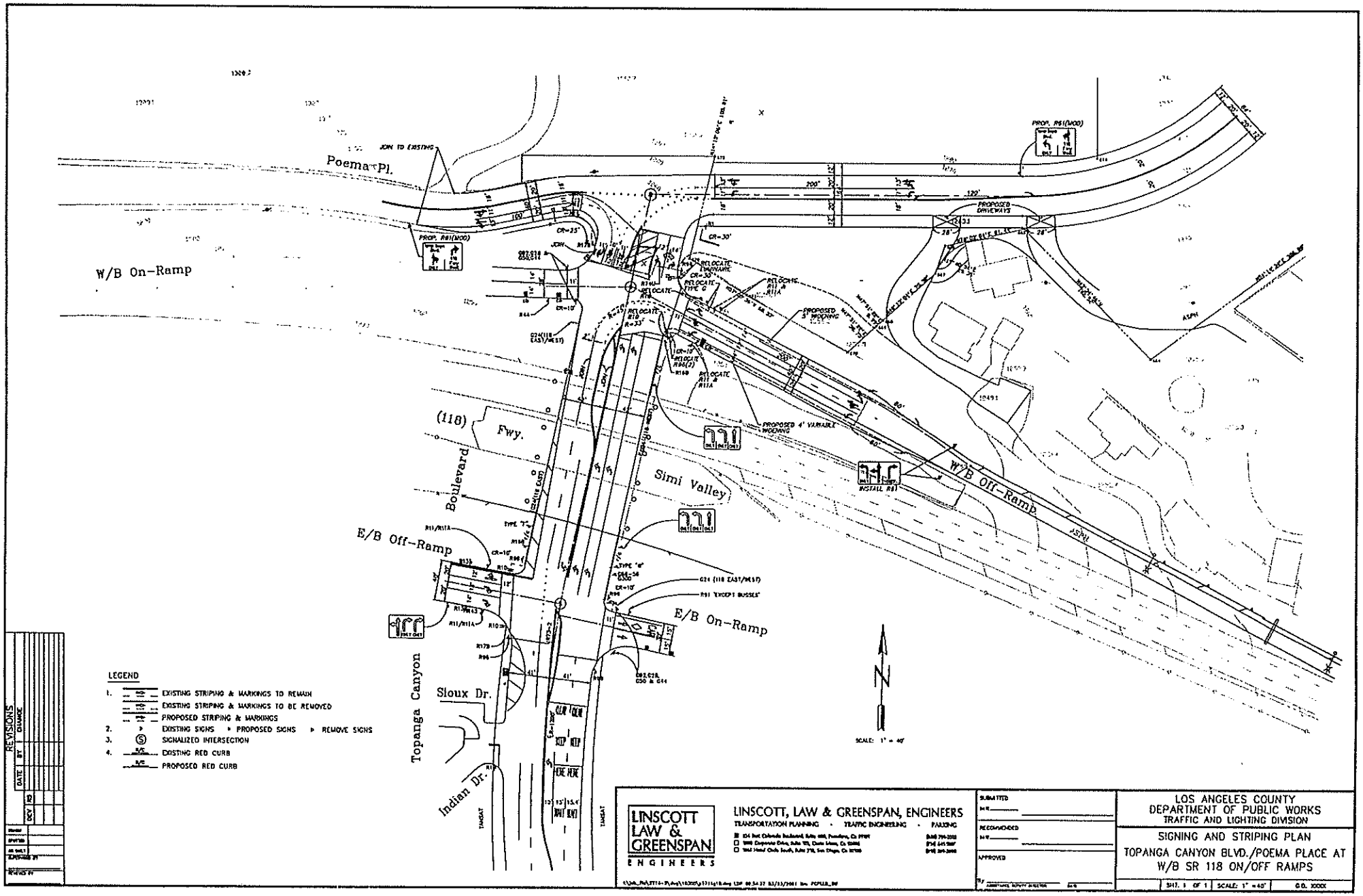
Date: 03/21/2001
Date of Count: 2000
Projection Year 2005

	2000 EXIST. TRAFFIC			2005 W/ AMBIENT GROWTH				2005 WITH RELATED PROJECTS				2005 WITH PROJECT				2005 W/PROJECT MITIGATION			
Movement	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NB Left	85	2	47	9	94	2	51	2	96	2	53	0	96	2	53	0	96	2	53
Comb. L-T		0	-			0	-			0	-			0	-			0	-
NB Thru	941	2	331	94	1035	2	364	161	1196	2	418	8	1204	2	421	0	1204	2	421
Comb. T-R		1	331			1	364			1	418			1	421			1	421
NB Right	52	0	-	5	57	0	-	0	58	0	-	0	58	0	-	0	58	0	-
Comb. L-T-R -		0				0				0				0				0	
SB Left	106	2	58	11	117	2	64	2	118	2	65	0	118	2	65	0	118	2	65
Comb. L-T		0	-			0	-			0	-			0	-			0	-
SB Thru	1905	2	672	191	2096	2	739	197	2293	2	805	23	2316	2	813	0	2316	2	813
Comb. T-R		1	672			1	739			1	805			1	813			1	813
SB Right	111	0	-	11	122	0	-	0	122	0	-	0	122	0	-	0	122	0	-
Comb. L-T-R -		0				0				0				0				0	
EB Left	189	2	104	19	208	2	114	0	208	2	114	0	208	2	114	0	208	2	114
Comb. L-T		0	-			0	-			0	-			0	-			0	-
EB Thru	459	1	285	46	505	1	313	49	554	1	341	9	563	1	346	0	563	1	346
Comb. T-R		1	285			1	313			1	341			1	346			1	346
EB Right	110	0	-	11	121	0	-	7	128	0	-	0	128	0	-	0	128	0	-
Comb. L-T-R -		0				0				0				0				0	
WB Left	212	2	117	21	233	2	128	0	234	2	128	0	234	2	128	0	234	2	128
Comb. L-T		0	-			0	-			0	-			0	-			0	-
WB Thru	539	2	270	54	593	2	296	12	605	2	303	3	608	2	304	0	608	2	304
Comb. T-R		0	-			0	-			0	-			0	-			0	-
WB Right	113	1	113	11	124	1	124	0	125	1	125	0	125	1	125	0	125	1	125
Comb. L-T-R -		0				0				0				0				0	
Crit. Volumes:	N-S:		719	N-S:			791	N-S:			857	N-S:			865	N-S:			865
	E-W:		401	E-W:			441	E-W:			469	E-W:			474	E-W:			474
	SUM:		1120	SUM:			1232	SUM:			1327	SUM:			1339	SUM:			1339
No. of Phases:			4				4				4				4				4
Volume / Capacity:			0.814				0.896				0.965				0.974				0.974
Level of Service:			D				D				E				E				E

Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 70% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

APPENDIX C

Concept Mitigation Plan


Poema Pl.
W/B On-Ramp
(118) Fwy.
Boulevard
Simi Valley
E/B Off-Ramp
E/B On-Ramp
W/B Off-Ramp
Topanga Canyon
Sioux Dr.
Indian Dr.
PROPOSED DRIVEWAYS
PROPOSED 4' VARIABLE WIDENING
PROPOSED 5' WIDENING
INSTALL R81
SCALE: 1" = 40'
LEGEND
1. EXISTING STRIPING & MARKINGS TO REMAIN
EXISTING STRIPING & MARKINGS TO BE REMOVED
PROPOSED STRIPING & MARKINGS
2. EXISTING SIGNS • PROPOSED SIGNS • REMOVE SIGNS
3. SIGNALIZED INTERSECTION
4. EXISTING RED CURB
PROPOSED RED CURB
REVISIONS
DATE BY CHANGE
LINSCOTT LAW & GREENSPAN ENGINEERS
LINSCOTT, LAW & GREENSPAN, ENGINEERS
TRANSPORTATION PLANNING • TRAFFIC ENGINEERING • PARKING
SUBMITTED
RECOMMENDED
APPROVED
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
TRAFFIC AND LIGHTING DIVISION
SIGNING AND STRIPING PLAN
TOPANGA CANYON BLVD./POEMA PLACE AT
W/B SR 118 ON/OFF RAMPS
SHT. 1 OF 1
SCALE: 1" = 40'

APPENDIX N

WATER SYSTEM DESIGN REPORT

Water System Design Report for Tentative Tract No. 53138 Chatsworth Ridge

Las Virgenes Municipal Water District

Director of Facilities and Operations	John R. Mundy
Project Manager	David R. Lippman, PE

Boyle Engineering Corporation

Project Manager	Dan Ellison, P.E.
Project Engineer	David Rice, P.E.

DRAFT

VT-L02-098-14

February 2001

BOYLE

5851 Thille Street, Suite 201, Ventura, CA 93003

Las Virgenes Municipal Water District
Water System Design Report
for
Tentative Tract No. 53138
Chatsworth Ridge
Los Angeles County, California

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Las Virgenes Municipal Water District
Water System Design Report
for
Tentative Tract No. 53138
Chatsworth Ridge
Los Angeles County, California

Section 1 - Introduction

Tentative Tract No. 53138 is located on approximately 238 acres in the hills northeast of the Topanga Canyon Blvd. interchange with California Highway 118 (Simi Valley Freeway) in Los Angeles County, California. The development of 537 single-family residential lots is proposed for Tract No. 53138.

The purpose of this Water System Design Report is to investigate the feasibility of providing potable water service to Tentative Tract No. 53138, and to develop criteria for the facilities required to provide adequate service. Potable water demand for the proposed development is based on the "Potable Water System Master Plan for the Las Virgenes Municipal Water District," Boyle Engineering Corporation, (Ref. 1). Fire protection requirements are as determined by the Los Angeles County Fire Department.

The owner and developer of Tentative Tract No. 53138 is Presidio Chatsworth Partners, LLC, 495 Market St, Suite 2400, San Fransisco, CA, 94105.

The developer's engineer is B & E Engineers, 24 W. St. Joseph Street, Arcadia, California 91007-2854, (626) 446-4449.

Section 3 - Potable Water Demand

The potable water demand estimated for the proposed development is shown in **Table 1**. Demand will be generated by residential use and by irrigation of landscaped cut and fill areas. The average daily demand presented in Reference 1 for medium density residential use in this area of Los Angeles County is 100 gpd/person. This demand factor is based on historical usage. Existing medium density residential developments in the area include small residential lots with little landscaping. Consequently, the demand factor presented in Reference 1 is lower than demand factors for medium density residential use in other areas within the District. In order to project the potable water demand for the proposed development accurately, an average daily demand of 250 gpd/person was used. This demand factor is more typical of other new medium-density residential developments throughout the District.

Extensive grading is proposed as part of the development of Tract 53138. Approximately 39.9 acres of cut and fill slopes will be landscaped and irrigated. These slopes will be irrigated and maintained by a homeowner's association. Irrigation demand for cut and fill slopes was estimated based on an application rate of 3 feet of water per year.

Section 4 - Existing Potable Water System

Tentative Tract No. 53138 will be served from the District's nominal 1585-foot gradient Twin Lakes Subsystem. At present, the 1585-foot Twin Lakes Subsystem is isolated from the rest of the District. The MWDSC LV-3 turnout, located just below the Twin Lakes Pump Station, delivers water to the pump station at a maximum gradient of approximately 1265 feet.

The Twin Lakes Pump Station includes 4 pumps with a total capacity of 2050 gpm. Currently three pumps operate. A fourth pump is provided for standby capacity. The pump station maintains the gradient in the Twin Lakes Tanks (HWL=1585 feet). The tanks have a combined capacity of 2.0 MG.

The existing pump station and tanks exceed the capacities required by the existing demand in the Twin Lakes Subsystem (see Reference 3). The total projected demand within the Twin Lakes Subsystem after the development of Tentative Tract No. 53138 is shown in **Table 2**. With the development of Tentative Tract No. 53138, the projected demand will require a storage capacity of 1.99 MG and a pumping capacity of 1972 gpm. These calculations are based on 18-hr. pumping as recommended in Reference 1. The existing pump station and tanks have the capacity to accommodate the new development, but the additional demand from this development will require nearly all of the current excess pumping and storage capacity. Any future development in the area will require additional storage and pumping facilities. Also, the meter at the LV-3 turnout currently limits flow to 1800 gpm. A new meter will be required at LV-3 as this development and other developments are built.

The current and previous Master Plans for the District have assumed that much of this area would need to be serviced from a new higher pressure zone, with new pumping and storage facilities. These Master Plans were based on general assumptions regarding pressure losses and available topographic maps that were not precise enough to draw a fine-line boundary for the existing Twin Lakes pressure zone. The more detailed analysis performed for this system design report indicates that new storage facilities are not needed for this tract. Demand at the higher lots within the development can be met by creating a small zone of higher pressure using a hydropneumatic pump station within the new development.

Creating a hydropneumatic pressure zone would increase pressures at the higher services, but would not relieve the pumping and storage requirements placed on the existing system by the new development.

Section 5 - Proposed Potable Water System

The proposed potable water system, necessary to serve Tentative Tract No. 53138 is shown on **Plate 2.** The Los Angeles County Fire Department has determined that the development will require 44 new fire hydrants, located throughout the development as shown on **Plate 2.** These hydrants shall conform to AWWA Standard C503 with 6"x 4"x 2-1/2" bronze heads. The minimum flow required is 1250 gpm for 2 hours. The proposed system will be capable of providing fire flow to all hydrants at pressures greater than the current required minimum residual pressure of 20 psi.

The California State Department of Health Services has proposed changes to Title 22 of the State Code which would require the minimum pressure at service connections to be 30 psi, except in times of emergency. Conversations with DHS officials indicate that most fires would not be considered emergencies (only fire storms). Definitely, the filling of a water truck would not be considered an emergency. The analysis that is summarized in **Table 3** indicates that this development would comply with the proposed code changes.

The proposed water system will deliver water to Tract 53138 directly from the existing Twin Lakes Tanks. This will require the construction of a 16-inch pipeline, connecting the proposed water system directly to the Twin Lakes Tanks, with no connections in between. The pipeline must be no higher than the bottom elevation of the larger Twin Lakes Tank (1555 feet).

According to the calculation shown in **Table 2,** during a day of peak use the water demanded from the tank will be as much as 914,020 gallons. This indicates that on a day of peak water demand, without any fires or emergencies, the water level in the tank will drop down to 1571.5 feet. According to the developer's grading plan, several lots are planned above 1470 feet. Even with oversized piping throughout the development, several homes could expect to have pressures lower than 43-psi at their service connections.

In order to provide these homes with minimum pressures of at least 43-psi at their service connections, as required in the District's potable water ordinance, it is recommended that a small pump station with a hydropneumatic tank be installed. The recommended location of the pump station is the lot at the corner of "C" street and "I" street, as shown on **Plate 2.** The pump station would include 2 pumps,

Pipes in the system were sized to transmit fire flows, without the pump station operating, to each hydrant with a minimum residual pressure well in excess of the 20-psi required by the Los Angeles County Fire Department. The pipes were also sized to transmit peak hour demands, with the pump station operating, while maintaining a pressure of at least 43-psi at each service connection.

There is a remote possibility of future development within the District's service boundary in the area north of Tract 53138. However, the terrain, elevation, and location of this property, along with environmental concerns, suggest that the likelihood of development is very remote. Access to the property through Tract 53138 would be unlikely because of steep slopes and rugged terrain. Because development is unlikely in this area, and would probably not be accessed through Tract 53138, the proposed facilities needed to serve Tract 53138 were not sized to serve this or any other future developments.

Hydraulic gradients and pressures expected at key locations within Tract 53138 during various demand conditions are shown in **Table 3**. Six units with service connections in the 1585-ft pressure zone are below an elevation of 1239 feet and will experience maximum pressures greater than 150-psi. These units are all located on the cul-de-sac at the south end of "B" street. Pressure reducing valves will need to be installed on the District's side of each of these meters, in order to assure that the meters are not damaged.

All units with service connections within the 1585-ft zone below an elevation of 1398 feet will experience maximum pressures greater than 80-psi. These units will require individual pressure regulators ahead of the building plumbing to limit pressures to not more than 80-psi, as required by the Uniform Plumbing Code. All units in the 1656-ft pressure zone below an elevation of 1471 feet will experience maximum pressures greater than 80-psi and will also require pressure regulators ahead of the building plumbing.

Section 6 - Recycled Water

There are currently no reclaimed water facilities adjacent to the proposed development. The development is located in the northeast corner of the District's service area, far from any of the District's reclaimed water facilities. The development will include 39.9 acres of irrigated cut and fill slopes, which would be available to receive reclaimed water for irrigation. However, a connection to the District's reclaimed water system would be impractical and so the cut-and-fill slopes will be irrigated with potable water as discussed in the previous sections.

Section 7 - Sewer System

Tentative Tract No. 53138 is not presently located within the Las Virgenes Municipal Water District's service area and has not been annexed to a Sanitation Improvement District. The District will need to create a new Sanitation Improvement District or extend the existing Sanitation Improvement District B to include the new development. Sanitation Improvement District B presently covers only those areas west of Topanga Canyon Blvd. The estimated average daily sewage that will be generated by Tract 53138 is shown in **Table 4**.

TABLE 4

Sewage Generation

Land Use	Units	Daily Generation Rate (gallons/unit)	Daily Total (gallons)
Residential	537	350	187,950

This development is located in an area that is not within reach of the District's sewerage collection facilities. The City of Los Angeles is under agreement with the Las Virgenes Municipal Water District to convey and treat sewage from developments in the area. Under this agreement, the District is required to pay the City of Los Angeles for conveyance, treatment and applicable charges related to new development. The district recovers these costs from sewer service and capital facilities charges to the new development.

The City also requires metering of flows into their sewer system above 0.3 cfs (193,880gallons/day). Because the estimated daily sewage generated by the development is nearly 0.3 cfs, the developer will be required to install a meter at the point of connection to the City of Los Angeles sewer system to ensure that this part of the agreement is met.

Section 8 - Construction Phasing and Acceptance

The public water facilities of Tentative Tract No. 53138 will be constructed in two phases. The first phase will include the construction of the southern half of the development, as seen in **Plate 2**. Homes built in the first phase of development will all be served from the existing Twin Lakes pressure zone. The second phase of the project will include the northern half of the development. The construction of the pump station and homes served by the higher pressure zone will be included in the second phase.

In accordance with standard policy, the District will consider final acceptance of the potable water systems when a previously defined, separately bonded phase of the project is completed. This will minimize administration problems and allow the developer the flexibility in planning and phasing the project without the responsibility of providing on-going water service to sold lots until the entire project is completed. Construction shall be considered complete for a phase when all facilities related to the potable water systems have been installed in accordance with the District's standards and the approved water system design report, and all meter boxes have been set to grade in concrete sidewalks.

The developer must comply with the Special Conditions for bonds, temporary risers and hose bibs, and repair of damage to accepted water system components set forth in the District's memorandum entitled, "Review of Policy - Acceptance of Tract Water Systems (July 14, 1989)."

Section 9 - Water Conservation

In accordance with District Water Ordinance 11-86-161, the following water conservation measures are required:

- Waste and leakage of water is not allowed.
- For residential development, all toilets installed shall use 1.6 gallons or less per flush, and all showerheads shall flow at 2.5 gallons per minute, or less, at 80 psi.

In addition, if a model home display is to be provided, one of the models must be landscaped with water efficient (Xeriscape) plant materials and irrigated with an appropriate water conserving irrigation system. Further, the Xeriscape model shall be designed to be drought tolerant; irrigation intensive plants are discouraged. Turf shall occupy no more than 30% of the landscaping. The model home display shall draw attention to the specific landscape materials and irrigation techniques utilized.

To obtain maximum benefit of the limited water resources of the State of California, Las Virgenes Municipal Water District has adopted landscape ordinances that require plant materials and irrigation systems to be water efficient. In accordance with District Ordinance No. 1-93-205, landscape and irrigation plans must be submitted to the District for review. The landscape and irrigation plans must be in conformance with District landscaping and irrigation specifications as contained in the Las Virgenes Municipal Water District Landscaping Guide.

Section 10 - Financial Impact On District

The new water system facilities required to serve Tentative Tract No. 53138 are for the benefit of the proposed development and provide no significant benefit to the existing District system. Therefore, no District financial participation in new water system facilities related to Tract 53138 is warranted under District Rules and Regulations. The developer is therefore responsible for funding all of the new in-tract potable waterlines and appurtenances

Section 11 - Environmental Review

The District is a "responsible agency" for the purpose of environmental review of this project under the California Environmental Qualtiy Act (CEQA). The lead agency for the environmental review of this project under the CEQA is the County of Los Angeles, Department of Regional Planning.

The County of Los Angeles Board of Supervisors at its meeting on _____ did certify the Final Environmental Report including addenda for Tract 53138. Minutes of that meeting and attached documents are included in Appendix "A" of this report.

Additional documentation, in compliance with CEQA, will be prepared for the pump station by the District, prior to its construction.

Section 12 - Conclusions And Recommendations

A. It is concluded that:

1. To provide adequate potable water service to the proposed development, the following facilities must be installed by the developer:

   a) The water mains and appurtenances shown on **Plate 2**, including a dedicated 16-inch pipeline connecting the Twin Lakes Tanks directly to the new development. This study does not address in detail the routing of this pipe.

   b) Forty-four new fire hydrants.

   c) A pump station, including 2 pumps capable of delivering 1350 gpm at 50 feet of head, and a 14,250 gallon hydropneumatic tank, as shown on **Plate 2**.

2. A new meter will be required at the LV-3 turnout to supply the increasing demands produced by this and other developments.

3. Six units within Tract 53138 served by the 1585-ft pressure zone that are below elevation 1239 feet will experience pressures in excess of 150-psi. For these units, pressure-reducing valves will be required on the District side of the meters.

4. All units served by the 1585-ft pressure zone below 1398 feet will experience pressures in excess of 80-psi. All units served by the 1656-ft pressure below 1471 feet will experience pressures in excess of 80-psi as well. Each of these service connections will require an individual pressure regulator ahead of building plumbing in accordance with the 80-psi limitation imposed by the Uniform Plumbing Code.

5. All potable water system improvements served by the 1585-ft pressure zone should be designed to accommodate hydraulic gradients not less than 1585 feet. All potable water system improvements served by the 1656-ft pressure zone should be designed to accommodate hydraulic gradients not less than 1656 feet.

3. The District require all above-ground District-owned facilities (i.e. meters larger than 2 inches, detector check installations, and backflow prevention devices) be installed above ground and screened from view in accordance with District standard plans.

4. The Board determine that no District financial participation in new off-site water system facilities related to of Tentative Tract No. 53138 is warranted.

5. The projects' Mitigated Negative Declaration (MND) prepared by the _____ and _____ Resolution No. _____ approving the project be accepted and utilized by the District, and the Secretary be directed to file a Notice of Determination which reflects the foregoing.

6. Additional documentation in compliance with CEQA be prepared for the pump station.

Section 13 - Limitations

Report Intent. This Water System Design Report is intended only to develop the hydraulic information necessary to design a water system. No effort has been made at this time to precisely locate existing or proposed facilities. Conflicts may develop as more information is discovered about both existing and proposed pipelines, street grades, etc. Corrections of conflicts related to this project will be the responsibility of the applicant.

Project Changes. This Water System Design Report is based upon maps of Tract 53138 prepared by B & E Engineers, County of Los Angeles Planning Commission Resolution _____, and upon information submitted by the developer of the subject property and his representatives. Accordingly, this design report may be subject to modification to reflect changes made by the applicant. This report may also be subject to modification to reflect additions or amendments to the District's Water Ordinance and the District's Design Standards prior to approval of the final design. Any revision in the above information or development map or deviation therefrom may invalidate the conclusions and recommendations. A supplemental or amended report must be prepared for the use of the District at the applicant's sole expense if the project or the data is changed.

Other Agency Approvals. This Water System Design Report has been prepared at the request of the developer of Tract 53138. Approval of this report does not indicate the District either supports or opposes the underlying project or any related project. District staff will answer questions concerning this report. However, the project proponent is solely responsible for securing necessary project approvals from state, regional, and local agencies with jurisdiction by law without the express or implied intervention or support of the District.

Project Delays. This Water System Design Report is based upon the assumption that the project will be implemented in due course. A supplement, amendment or complete report must be prepared for the use of the District at the proponent's sole expense if the project is unduly delayed.

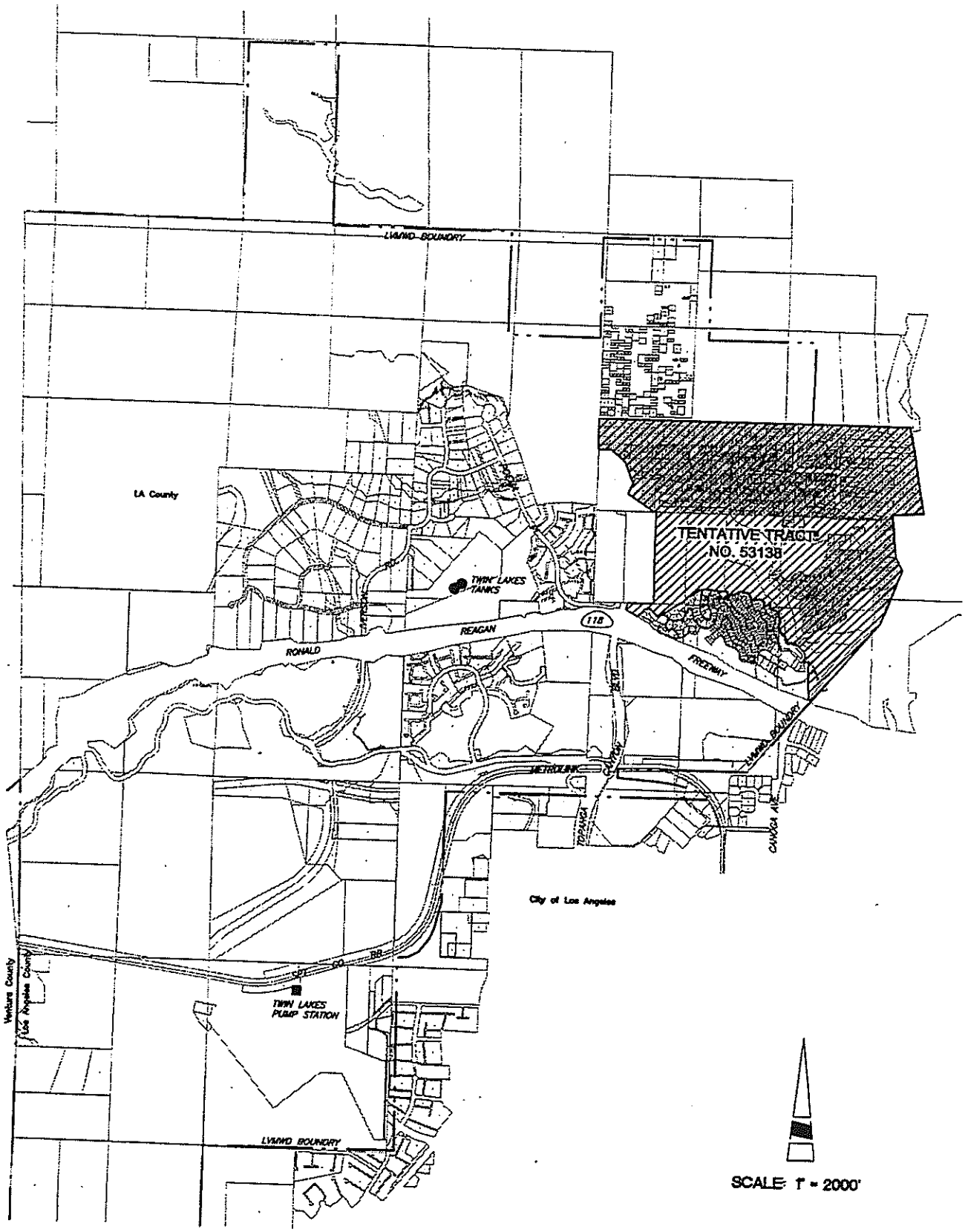
Warranty of Supply. The approval of this Water System Design Report does not constitute a commitment by the District to supply water or provide sanitation service to the project. The project will be assured of connection to the water and sanitation systems of the District only if the proponent also

References

1. "Potable Water System Master Plan for the Las Virgenes Municipal Water District," Boyle Engineering Corporation, December 1999.

2. "Recycled Water System Master Plan for Las Virgenes Municipal Water District - Triunfo Sanitation District Joint Venture," Boyle Engineering Corporation, April 1999 (LVMWD Report No. 2096.00).

3. "Design Memorandum for Twin Lakes Tank No. 2 and Modifications to Existing Twin Lakes Tank No. 1 and Twin Lakes Pump Station," Boyle Engineering Corporation, September 1998 (LVMWD Report No. 1652)

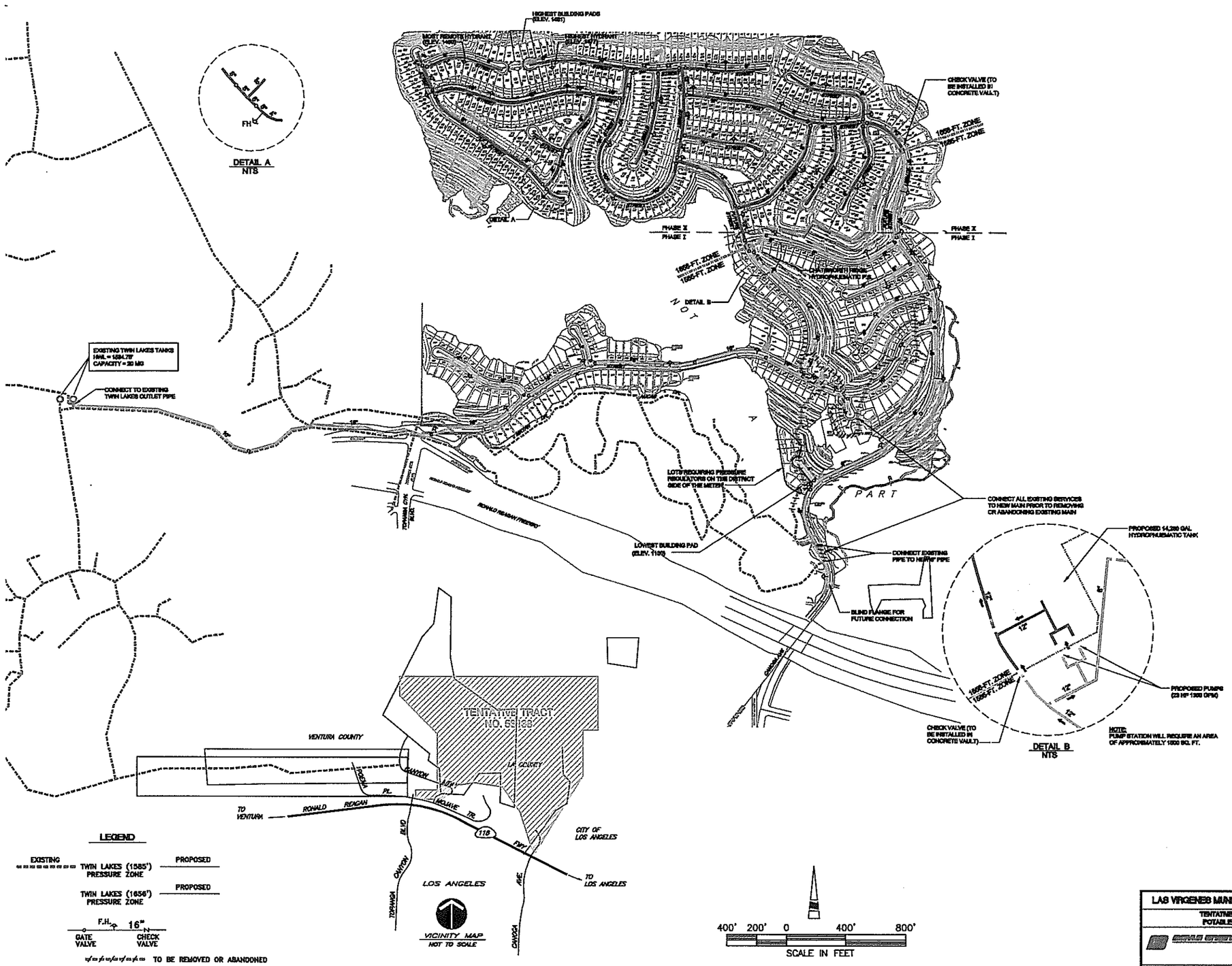


LOCATION MAP

LAS VIRGENES MUNICIPAL WATER DISTRICT

TENTATIVE TRACT NO. 53138
POTABLE WATER SYSTEM

BOYLE ENGINEERING CORPORATION
consulting engineers



LAS VIRGENES MUNICIPAL WATER DISTRICT

TENTATIVE TRACT NO. 53138
POTABLE WATER SYSTEM

VT-L02-033-14 JULY 2020 PLATE 2

APPENDIX O

SERVICE PROVIDERS REFERENCE DOCUMENTS

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL Company

February 2, 2001

Hans Girard & Associates
23480 Park Sorrento, Suite 211A
Calabasas, CA. 91302
ATTN: Hans Girard

Subject: Tract 53138, Chatsworth

Dear Hans

We have been requested to advise you that Southern California Edison Company stands ready to install electrical distribution facilities within the subject area in accordance with the then applicable tariff schedules which are the effective rates and rules of Southern California Edison Company on file with and approved by the California Public Utilities Commission and subject to the receipt of such permits or other authorizations from public agencies as may be required for such installation. Also, rules hereinafter referred to in this letter include such changes, modifications, and amendments which the Public Utilities Commission may from time to time direct in the exercise of its jurisdiction.

Should a shortage of energy and/or generating capacity ever occur, the utility will apportion its available supply of electricity among its customers as set forth in Rule No. 14, Shortage of Supply and Interruption of Delivery.

When requested by the developer or individual applicant, extension of facilities within or to reach the tract or parcel require advances under provisions set forth in Rule No. 15. An underground service lateral from the installed underground distribution system within the development to individual parcels will be in accordance with Rule No. 16.

Should an individual applicant require service to his parcel prior to the installation of an underground distribution system to and within the development, as may be installed at the expense of a developer, or within a development for which the developer has undertaken no obligation for the installation of an underground distribution system, an advance will be required from the individual as set forth in Rule No. 15.

Sincerely,

Alan T. Ito
Service Planner

2000 California Gas Report

PREPARED BY THE
CALIFORNIA GAS UTILITIES

EXECUTIVE SUMMARY

DEMAND OUTLOOK

California natural gas demand, including volumes bypassing utility systems, is expected to grow at an annual average rate of 0.5% from 2000 to 2020. This forecast is consistent with projections of population and employment growth rates.

Load growth of approximately 1% is expected for the Residential and Commercial and sectors, and more modest growth of 0.6% is estimated for the industrial sector.

Electric Generation (EG) demand is expected to decline due to more electric power generation outside of the state and efficiencies in the operation of gas fired generators. The NGV market continues to have the highest growth potential due to an optimistic assessment of the changing regulatory environment associated with anticipated clean air policies over the next two decades.

GAS STRATEGY

In January 1998, the Commission opened an Order Instituting Rulemaking (R.98-01-011) to assess the natural gas regulatory and market framework and to adopt market-oriented reforms. In July 1999, the Commission issued a decision identifying various promising options for changing the natural gas regulatory structure and opened a companion Order Instituting Investigation (I.99-07-003) to consider the costs and benefits of these promising options.

In Northern California, many of the promising options were already incorporated in PG&E's Gas Accord Settlement, implemented in March 1998. The remaining promising options were addressed in two settlements, which were filed with the Commission in October 1999 and January 2000, and approved by the Commission in decisions issued in January 2000 and May 2000.

In Southern California, various settlements were filed with the Commission between December 1999 and April 2000. These settlements were the subject of evidentiary hearings which concluded in June 2000. A Commission decision is expected by early 2001.

FOCUS ON EFFICIENCY AND ENVIRONMENTAL QUALITY

California utilities continue to focus on Customer Energy Efficiency (CEE) and other Demand-Side Management (DSM) programs in their utility electric and gas resource plans.

In addition, California utilities actively support Clean Air Act amendments that seek to improve air quality by reducing fuel oil use in electric generation power plants and by marketing natural gas vehicles.

The increasing awareness of natural gas as a clean, economical fuel continues to help position utilities to meet environmentally acceptable energy requirements of the future.

SUPPLY OUTLOOK/PIPELINE CAPACITY

California's existing gas supply portfolio is regionally diverse and includes supplies from California sources (onshore and offshore), Southwestern U.S. supply sources (the Permian, Anadarko, and San Juan Basins), the Rocky Mountains, and Canada. The map on the following page shows the locations of these supply sources and of the natural gas pipelines serving California.

Additional pipeline capacity and open access have contributed to long term supply availability and gas-on-gas competition. Interstate pipelines currently serving California include El Paso Natural Gas Company (El Paso), Kern River Transmission Company (Kern River), Mojave Pipeline Company (Mojave), PG&E Gas Transmission-Northwest (PG&E GT-NW), Transwestern Pipeline Company (Transwestern), and Tuscarora Pipeline.

INTRODUCTION

Southern California Gas Company (SoCalGas) is the principal distributor of natural gas in southern California, providing retail and wholesale customers with procurement, transportation, exchange and storage services. SoCalGas is a gas-only utility and, in addition to serving the residential, commercial, and industrial markets, provides gas for enhanced oil recovery and electric generation in southern California. San Diego Gas & Electric Company (SDG&E), Southwest Gas Corporation, and the City of Long Beach Gas and Electric Department are SoCalGas' three wholesale utility customers. Gas service at wholesale is expected to begin to the City of Vernon during the forecast period.

This report covers a 20-year forecast period, from 2000 through 2020; only the consecutive years 2000 through 2006 and the point years 2010, 2015 and 2020, however, are shown in the tabular data in the next sections. The forecast is subject to uncertainty, but represents SoCalGas' best estimates for the future, based upon the most current information available.

The Southern California section of the 2000 California Gas Report begins with a discussion of the economic conditions and regulatory issues facing the utilities, followed by a discussion of the factors affecting gas demand in various market sectors. The outlook on gas supply availability, which continues to be favorable, is presented next. SoCalGas' weighted average cost of gas (WACOG) price forecast is discussed followed by a review of the peak day demand forecast. Summary tables and figures underlying the forecast are provided.

CAPACITY, SOURCES, AND STORAGE

INTERSTATE PIPELINE CAPACITY

Southern California continues to operate in an environment of excess interstate pipeline capacity. Interstate pipeline delivery capability into southern California is over 4,000 MMcf/day, with approximately 3,230 MMcf/day available directly to SoCalGas customers (the remaining interstate capacity serves local distribution company bypass customers). These pipeline systems provide access to several large supply basins, located in: New Mexico (San Juan Basin), West Texas (Permian Basin), Rocky Mountains and Western Canada. The interstate pipeline systems, along with local California gas supplies, deliver gas to most southern California customers through SoCalGas.

The following interstate pipeline volumes and local production can be delivered to SoCalGas customers on a firm basis using intrastate transmission capacity:

Interstate and Local Volumes MMcf/day	
Current Firm Capacity [3]	
El Paso at Blythe	1,210
El Paso at Topock	540
Transwestern at Needles	750
Mojave at Hector Road [4]	50
PG&E, Kern/Mojave & OXY at Wheeler Ridge	680
Existing Firm Intrastate Capacity	3,230
California Production [5]	270
Total Firm Supply Access	**3,500**

Gas industry restructuring (GIR) proposals pending before the Commission for SoCalGas customers may unbundle local distribution company intrastate transmission capacity by creating tradable firm intrastate capacity rights.

[3] Firm Capacity with matching intrastate capacity only. Does not include interruptible or excess upstream capacity. An additional 700 MMcf/day is available directly to southern California customers from the Kern River and Mojave pipelines.

[4] Hector Road will become a formal receipt point as part of GIR.

[5] California production available to SoCalGas customers via Line 85 and the North Coastal system.

GAS SUPPLY SOURCES

Southern California receives gas supplies from several sedimentary basins in the western United States and Canada.

California Gas

Gas supply available to SoCalGas from California sources (state onshore plus state/federal offshore supplies) was about 300 MMcf/day in 1999. By late 2000, supplies from California sources are expected to increase due to additional deliveries from Elk Hills.

Southwestern U.S. Gas

Traditional Southwestern U.S. sources of natural gas, especially from the San Juan basin, will continue to supply most of southern California's natural gas demand. This gas is delivered via the El Paso Natural Gas Company and Transwestern Pipeline Company pipelines. The majority of San Juan basin gas is coalbed methane production, which has recently reached a plateau. Although the Unconventional Fuels Tax Credit (which expires in 2003) provides producers an incentive to produce as much gas as possible from wells drilled before 1993, coalbed methane drilling is still profitable in the San Juan Basin and parts of Utah and Wyoming. The San Juan Basin's conventionally produced gas supplies have increased since 1991 and are expected to help meet southern California's gas demand. Permian Basin gas will continue as the primary swing supply into California.

Rocky Mountain Gas

Rocky Mountain supply presents a viable alternative to traditional Southwestern U.S. gas sources for southern California. This gas is delivered to southern California primarily on the Kern River Gas Transmission Company's pipeline, although there is also access through the San Juan Basin. While the majority of Rocky Mountain gas is conventional gas supplies, substantial gas supplies also qualify for the Unconventional Fuels Tax Credit through year 2003 - mainly as tight formation gas and some as coal seam gas. In recent years, Rocky Mountain gas has increasingly flowed to Midwestern and Pacific Northwest markets.

GAS DEMAND (REQUIREMENTS)

OVERVIEW

SoCalGas expects continued growth in the residential market, along with associated service-oriented businesses in the commercial market. These markets, along with small industrial customers, comprise the core market. The remaining large customers make up the noncore market.

The following table compares the composition of SoCalGas' throughput for recorded year 1999 and forecast year 2020.

Composition of SoCalGas Throughput - Bcf
(Average Temperature Year)

	1999	2020	Change
Residential	278	311	12%
Core Non-residential	94	121	29%
Noncore C&I	164	164	0%
EOR-Steaming	9	7	-20%
Electric Generation	316	197	-38%
Wholesale	147	141	-4%
Other	19	19	0%
Total	1,025	960	-6%

NOTES:

"Core Non-residential" includes NGV throughput.
"Other" includes international (Mexicali) throughput and L&UAF+Company-Use gas.

Residential, core non-residential, and wholesale requirements are expected to increase as southern California's economy continues through a gradual economic expansion. Requirements for Enhanced Oil Recovery (EOR)-steaming operations, which have declined since the Kern/Mojave pipeline began offering direct service to California customers in 1992, are expected to continue to decline. The electric generation (EG) market is expected to decline dramatically as more electric power generation takes place outside SoCalGas' service territory. The decline in the wholesale demand is also explained by the electric power generation market impacts in SDG&E's service territory, more then offsetting and expected growth in other core and noncore wholesale markets.

MARKET SECTORS

Residential

Residential demand adjusted for temperature increased slightly to 253.4 Bcf in 1999 from 253.1 Bcf in 1998. Unadjusted residential demand was 277.6 Bcf in 1999, 10% more than temperature adjusted demand primarily because of colder than normal weather conditions in southern California.

Active residential meters averaged 4.73 million in 1999, an increase of 67,000 (or 1.4%) from the 1998 average. In 2000, SoCalGas expects an increase of more than 61,000 active meters. From 2000 through 2020, active residential meters are expected to grow at an average annual rate of 1.3%, reaching 6.18 million by 2020.

Residential demand is projected to grow from 253.1 Bcf in 2000 to 311.0 Bcf in 2020, an increase of 2.9 Bcf per year. SoCalGas' DSM programs are projected to save about 1 Bcf per year in the residential sector.

Commercial

On a temperature-adjusted basis, core commercial market demand in 1999 totaled 68.6 Bcf, up 2.4 Bcf from 1998. This increase is largely the result of continuing positive economic conditions in southern California. On average, core commercial market demand is forecast to increase about 1.1% per year, over the next 20 years, reaching 88.6 Bcf in 2020.

Noncore commercial demand in 1999 totaled 25.9 Bcf, a slight increase of 0.5 Bcf over 1998 usage. Noncore commercial demand is expected to grow at 0.4% per year, reaching 27.2 Bcf in 2020. This growth is primarily due to an expected increase in commercial employment.

Industrial

In 1999, temperature-adjusted core industrial demand was 19.1 Bcf, an increase of 0.8 Bcf over 1998 deliveries. However, retail core industrial market deliveries are projected to decline by approximately 0.2% per year over the forecast period, dropping to 17.8 Bcf in 2020. This decline results from a combination of a slightly lower industrial employment forecast, higher marginal gas rates and increases in gas equipment energy-efficiencies.

Retail industrial noncore deliveries are forecast to increase from 133.5 Bcf in 1999 to 138.0 Bcf in 2000, a net increase of 4.5 Bcf. Deliveries are forecast to further increase to 142.4 Bcf in 2002. The reason for this increase is the addition of new load in late 1999. After 2002, industrial noncore demand is forecast to decline gradually to 136.4 Bcf in 2020. This small decline is due to a combination of a declining industrial base and some customers switching to wholesale status.

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL™ Company

September 5, 2000

Carrie Gillis
HDR Urban Vision
707 Wilshire Blvd, Suite 5320
Los Angeles, CA 90017

RE: Chatsworth Ridge Planning Environmental Documentation-Request for Electric Power Service

Dear Ms. Gillis:

The subject project currently has an existing overhead 16KV primary power line that feeds into the project site. This line feeds an existing pole top substation that serves an existing residential subdivision to the south with 4KV primary voltage. The 16KV line also feeds various areas throughout the proposed subdivision. This 16KV mainline will have adequate capacity to serve this proposed 500 unit single family residential subdivision.

It appears that we will need to replace or remove much of the existing overhead facilities on the property and replace it with a new underground system.

The developer will be responsible to provide all necessary trenching, backfill, conduits, and substructures at their expense. All necessary relocation or overhead to underground conversion costs will be also entirely at the developers expense.

If you have any further questions or concerns, please feel free to contact me at (805)494-7065 or email me at itoay@sce.com.

Sincerely,

Alan Y. Ito
Service Planner

The Gas Company

August 31, 2000

Southern California
Gas Company
9400 Oakdale Avenue
Chatsworth, CA
91313-2400
Mailing Address
Box 2400
Chatsworth, CA
91313-2400

Carrie Gillis, E.S.
H D R / URBAN VISION
9449 Balboa Avenue
Suite 312
San Diego, CA 92123

Subject: **Agency Comment (Negative Declaration) for Environmental Impact Report for "Chatsworth Ridge", City of Los Angeles County of Los Angeles, California (SCG Atlas # LA 1615, 1585)**

This letter is not to be interpreted as a contractual commitment to serve this proposed project, but only as an information service. Its intent is to notify you that Southern California Gas Company has adequate supplies for the foreseeable future and facilities in the areas where this project is proposed. *A recent U.S. Department of Energy study reports that recoverable reserves and resources of natural gas in the lower 48 states total more than a 70-year supply at current production levels.* Gas service can be provided without significant impact on the environment, from a **6" medium pressure main in Topanga Canyon Blvd**.

This proposal is within the S C Gas Utility Service Territory. S C Gas has designed the distribution pipeline system to meet the demand of total buildout in this area. Gas facilities will be extended into each project at the time of requirement. The pipeline extensions do not impact existing customers. We do not anticipate any cumulitive infrastructure or gas provision inadequacies or short term construction related impacts. The gas mains and services are generally installed in joint trench with other dry utilities and, therefore, do not require any mitigation measures.

Encourage the energy engineer/architect to consult the Utility for an energy analysis regarding efficiency/conservation measures and up-to-date technology, manufacturing equipment, financial incentives, etc.

Service would be in accordance with our policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made. The availability of natural gas service, as set forth in this letter, is based on present conditions of gas supply and regulatory policies. As a public utility, Southern California Gas Company is under the jurisdiction of the California Public

Utilities Commission. We can also be affected by actions of federal regulatory agencies. Should these agencies take any action which affects gas supply or the condition under which service is available, gas service will be provided in accordance with the revised conditions.

When any portion of the project has final approval by the city or county engineer, please contact Mr. Ron Reed, New Business Project Manager, at **(818) 701-3476**. It may require up to 90 days to process the application for the installation of gas lines in a particular project.

Sincerely,

Jim Hammel
Technical Services, Northern Region
818-701-3324
FAX: 818-701-3380

c: R. Reed, NBPM, Canoga District
B. Huleis, Environmental Compliance
E. Weigman, Engineering/Master Plan
City Correspondence File

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