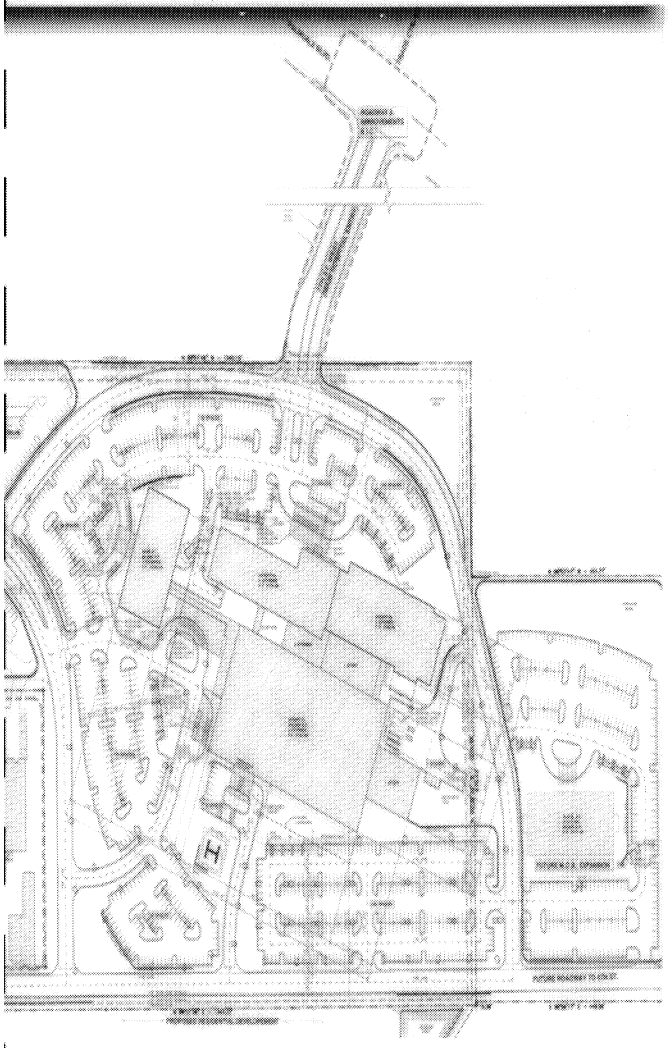
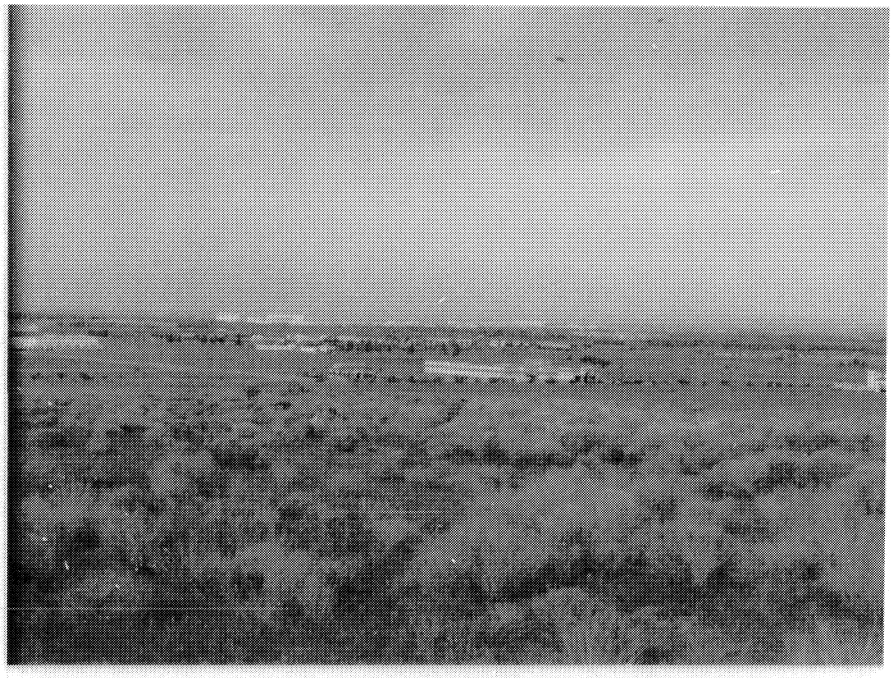
City of Palmdale
Planning Department





Final EIR No. 02-01

Palmdale Medical Center

Appendices

SCH # 2003081136

RBF CONSULTING

October 25, 2004

DRAFT ENVIRONMENTAL IMPACT REPORT NO. 02-01

APPENDICES

SCH # 2003081136

PALMDALE MEDICAL CENTER

- GENERAL PLAN AMENDMENT NO. 03-05
- ZONE CHANGE NO. 03-05
- PLANNED DEVELOPMENT 04-03
- CONDITIONAL USE PERMIT NO.03-09

Lead Agency:

City of Palmdale
Planning Department
38250 Sierra Highway
Palmdale, CA 93550
Contact: Mr. Richard Kite
(661) 267- 5200

Consultant:

RBF Consulting
3536 Concours, Suite 220
Ontario, CA 91764-5592
Contact: Mr. Kevin Thomas
(909) 581-0196

October 25, 2004

JN 10-102534.001

APPENDIX 10.1:
NOTICE OF PREPARATION/INITIAL STUDY

PALMDALE

UNIVERSAL HEALTH SERVICES, INCORPORATED
PALMDALE MEDICAL CENTER SCOPING MEETING AGENDA
THURSDAY, SEPTEMBER 11, 2003 – 1:30 P.M.
DEVELOPMENT SERVICES BUILDING MAIN CONFERENCE ROOM
38250 SIERRA HIGHWAY, PALMDALE, CALIFORNIA

1. INTRODUCTION AND PURPOSE

Richard Kite, Associate Planner, City of Palmdale

- Scoping meeting required under PRC Section 21083.9 for regionally significant projects.
- Scoping meeting is a forum for agencies to identify potential environmental impacts related to a project to be addressed in the environmental review process.
- Scoping meeting is not a public hearing; no period for discussion on merits of project and no minutes or recording of meeting will be made.

2. OVERVIEW OF PALMDALE MEDICAL CENTER

Richard Kite, Associate Planner

- Project proposes the development of a mixed-use medical facility to be constructed in phases.
- The first phase would consist of a general hospital with approximately 300,000 square feet and 170 beds expandable to a capacity of 250 beds; a 60,000 sf multi-story medical office building (MOB); a large surface parking lot; driveways; infrastructure improvements and landscaping.
- Future phases would consist of a second 60,000 sf multiple story MOB, expansion of the hospital building, and an 80 unit senior housing/assisted living facility on 3 acres at the southwest corner of the site.

3. OVERVIEW OF ENVIRONMENTAL REVIEW PROCESS

Kevin Thomas, Environmental Services Manager, RBF Consulting

4. AGENCY AND PUBLIC INPUT/DISCUSSION PERIOD

Notice of Preparation

To: State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

From: City of Palmdale
38250 N. Sierra Hwy.
Palmdale, CA 93550

Subject: Notice of Preparation of a Draft Environmental Impact Report

The City of Palmdale will be the Lead Agency and will prepare an Environmental Impact Report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials.

Due to the time limits mandated by State law, comments in response to this notice be accepted through the close of business on **September 23, 2003**.

Please send your response to Richard Kite, Associate Planner, at the address shown above. We will need the name of a contact person and phone number in your agency.

Project Title: Palmdale Medical Center

Project Applicant: Universal Health Services, Inc.

Date: 8·18·03

Signature: [signature]

Title: Director of Planning

Telephone: (661) 267-5200

Reference: California Administrative Code, Title 14, Section 15082(a), 15103, 15375

ATTACHMENT

Project Title: Palmdale Medical Center

Project Applicant: Universal Health Services, Inc.

Projection Location: The proposed project site is situated at the northeast corner of the alignment of Avenue Q-7 and Tierra Subida Avenue, within the southwestern portion of the City of Palmdale. The subject site is located approximately one-half mile west of the SR-14 freeway.

Project Description: The project proposes the development of a mixed-use medical facility that would be constructed in phases. The first phase would consist of the construction of the following: a general hospital that would be approximately 300,000 square feet and would contain approximately 170 beds with an expansion capacity to 250 beds; a multiple story medical office building (MOB) that would be approximately 60,000 square feet; a large surface parking lot; driveways; and landscaping. Future phases would consist of the construction of a second multiple story MOB that would be approximately 60,000 square feet, expansions of the hospital building, and the construction of an affordable senior housing/assisted living residential facility that would consist of approximately 80 dwelling units and would be located at the southwest corner of the proposed project site on approximately 3 acres.

The proposed general hospital would consist of a critical care unit, laboratory, pharmacy, surgical suites, newborn nurseries, obstetrical facilities, emergency services, imaging suites, dietary services, and administration/public areas. A helispot would be provided for transport of patients to and from the facility. Additional site improvements would include parking areas, internal roadways, landscaping, and utilities/infrastructure. Access would be provided via entry points along Palmdale Boulevard (primary access), Tierra Subida Avenue (secondary access) and a third entrance located at the south end of the site (to be used by the Senior Housing facility and the Hospital).

The proposed project will require a General Plan Amendment and Zone Change, as well as a Planned Development (PD) comprehensive land use entitlement and Conditional Use Permit (CUP). Right-of-way (ROW) acquisition along Tierra

Subida Avenue and 7th Street West will be necessary in order to perform street widening and provide site access.

Environmental: After the preparation of an Initial Study, the following probable environmental effects of the project have been identified as topics for analysis in the EIR: earth, air quality, water quality, plant life, animal life, noise, light and glare, transportation/circulation, public services, energy, utilities, human health, aesthetics and cultural resources. Based on the scope of the proposed development and the information and conclusions contained in the City's General Plan EIR and other available sources of information, the project is not anticipated to result in other potentially significant or significant impacts.

CITY OF PALMDALE
PLANNING DEPARTMENT

INITIAL STUDY
QUESTIONNAIRE

APPLICATION NO:	Conditional Use Permit (CUP) 03-09, General Plan Amendment (GPA) 03-05, Zone Change (ZC) 03-05
NAME OF APPLICANT:	Universal Health Services, Inc.
LOCATION OF PROJECT:	The proposed project site is situated at the northeast corner of the alignment of Avenue Q-7 and Tierra Subida Avenue, within the southwestern portion of the City of Palmdale. The subject site is located approximately one-half mile west of the SR-14 freeway.
EXISTING GENERAL PLAN LAND USE DESIGNATION:	RC (Regional Commercial)
PROPOSED GENERAL PLAN LAND USE DESIGNATION:	OC (Office Commercial)
EXISTING ZONING:	C-4 (Commercial Center)
PROPOSED ZONING:	C-2 (Office Commercial), MX (Mixed Use Overlay)
PRESENT LAND USE:	Vacant
LOCATION MAP:	Refer to Exhibit 1 - *Regional Vicinity Map* and Exhibit 2 - *Site Vicinity Map*, attached.

I. APPLICABILITY OF THE INITIAL STUDY

A. Is the proposed action a "project" as defined by CEQA?
☑ Yes ☐ No

1. If the project qualifies for one of the Categorical Exemptions listed in Section 6.C. of the City's CEQA Guidelines, is there a reasonable possibility that the activity would have a significant effect due to special circumstances? ☐ Yes ☐ No ☑ N/A

II. INITIAL STUDY REVIEW

A. Does the project require a 30-day State Clearinghouse review?
☑ Yes ☐ No

1. The lead agency is a state agency.

2. There is a State "responsible agency" (any public agency which has discretionary approval over the project).

3. There is a State "trustee agency", (California Department of Fish and Game, State Department of Parks and Recreation, University of California, and State Lands Commission).

4. The project is of Statewide or area wide significance including the following:

   a) A proposed local general plan, element, or amendment thereof for which an EIR was prepared.

III. PROJECT ASSESSMENT

A. Project Description: The project proposes the development of a mixed-use medical facility that would be constructed in phases. The first phase would consist of the following: a general hospital that would be approximately 300,000 square feet and would contain approximately 170 beds with an expansion capacity of up to 250 beds; a multiple story medical office building (MOB) that would be approximately 60,000 square feet; a large surface parking lot; driveways; and landscaping. Future phases would consist of a second multiple story MOB that would be approximately 60,000 square feet, expansion of the hospital building, an affordable senior housing/assisted living residential facility that would consist of approximately 80 dwelling units and be located at the southwest corner of the proposed project site on approximately 3 acres (please refer to Exhibit 3 – *Preliminary Site Plan*).

The proposed general hospital would consist of a critical care unit, laboratory, pharmacy, surgical suites, newborn nurseries, obstetrical facilities, emergency services, imaging suites, dietary services, and administration/public areas. A helispot would be provided to transport patients. Additional site improvements include parking areas, internal roadways, landscaping, and utilities/infrastructure.

Access would be provided via entry points along Palmdale Boulevard (primary access), Tierra Subida Avenue (secondary access) and a third entrance located at the south end of the site (to be used by the Senior Housing facility and the Hospital).

The proposed project would require a General Plan Amendment and Zone Change, as well as a Planned Development (PD) comprehensive land use entitlement and Conditional Use Permit (CUP). Right-of-way (ROW) acquisition along Tierra Subida Avenue and 7th Street West would be necessary in order to perform street widening and provide site access.

B. Description of the Project Site: The approximately 40-acre subject site is currently unimproved and vacant land. The single vegetation type, which is present throughout the proposed project site, consists of rabbitbrush scrub. It is primarily comprised of low-lying brush sub-shrub/ground cover plants, and annual wildflowers. The site slopes downward from the southwest to the northeast.

C. Surrounding Land Uses:

North: Land uses to the north of the subject site include vacant land, Palmdale Boulevard, and retail/commercial uses.

East: Uses to the east consist of vacant land, transient lodging, and retail/commercial facilities.

South: Land uses to the south are composed of vacant land and subdivided for residential development under Tentative Tract Map 53860.

West: To the west of the proposed project site are Tierra Subida Avenue and residential uses.

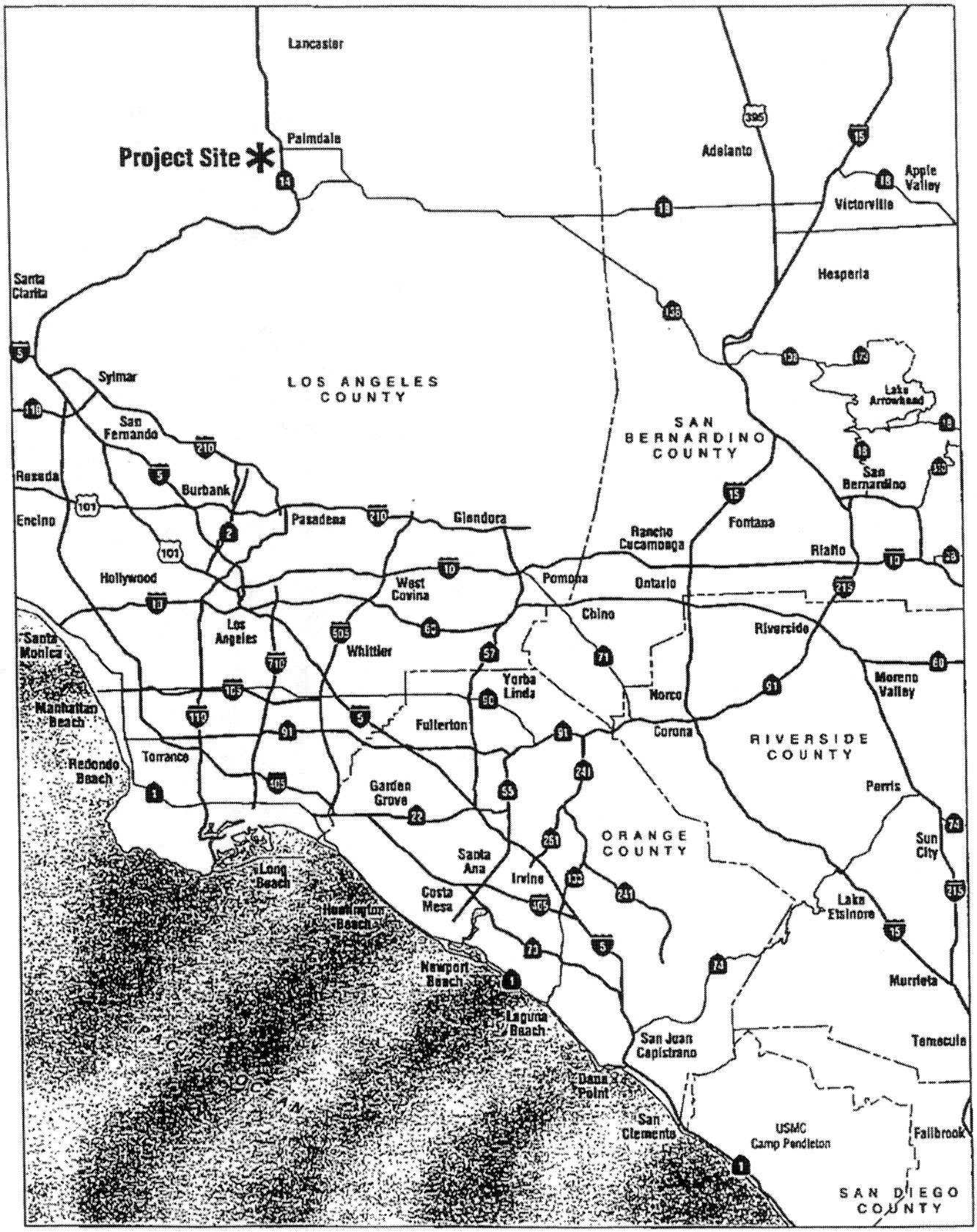
D. Is the proposed project consistent with:

	Yes	No	N/A
City of Palmdale General Plan	☐	☑	☐
Applicable Specific Plan	☐	☐	☑
City of Palmdale Zoning Ordinance	☐	☑	☐
Air Quality Management Plan	☑	☐	☐
Congestion Management Plan	☑	☐	☐
Regional Comprehensive Plan	☑	☐	☐

E. Have any of the following studies been submitted?

- ☑ Geology Report
- ☑ Hydrology Report
- ☑ Soil Report
- ☑ Traffic Study (draft)
- ☐ Noise Study
- ☑ Biological Study
- ☐ Native Vegetation Preservation Plan
- ☐ Solid Waste Generation Report
- ☐ Public Services/ Infrastructure Report
- ☑ Historical Report
- ☑ Archaeological Report
- ☑ Paleontological Study
- ☑ Line of Sight Exhibits
- ☑ Visual Analysis
- ☐ Slope Map
- ☐ Fiscal Impact Analysis
- ☐ Air Quality Report
- ☑ Hazardous Materials/ Waste

Studies may be reviewed by contacting the case planner at (661) 267-5200.



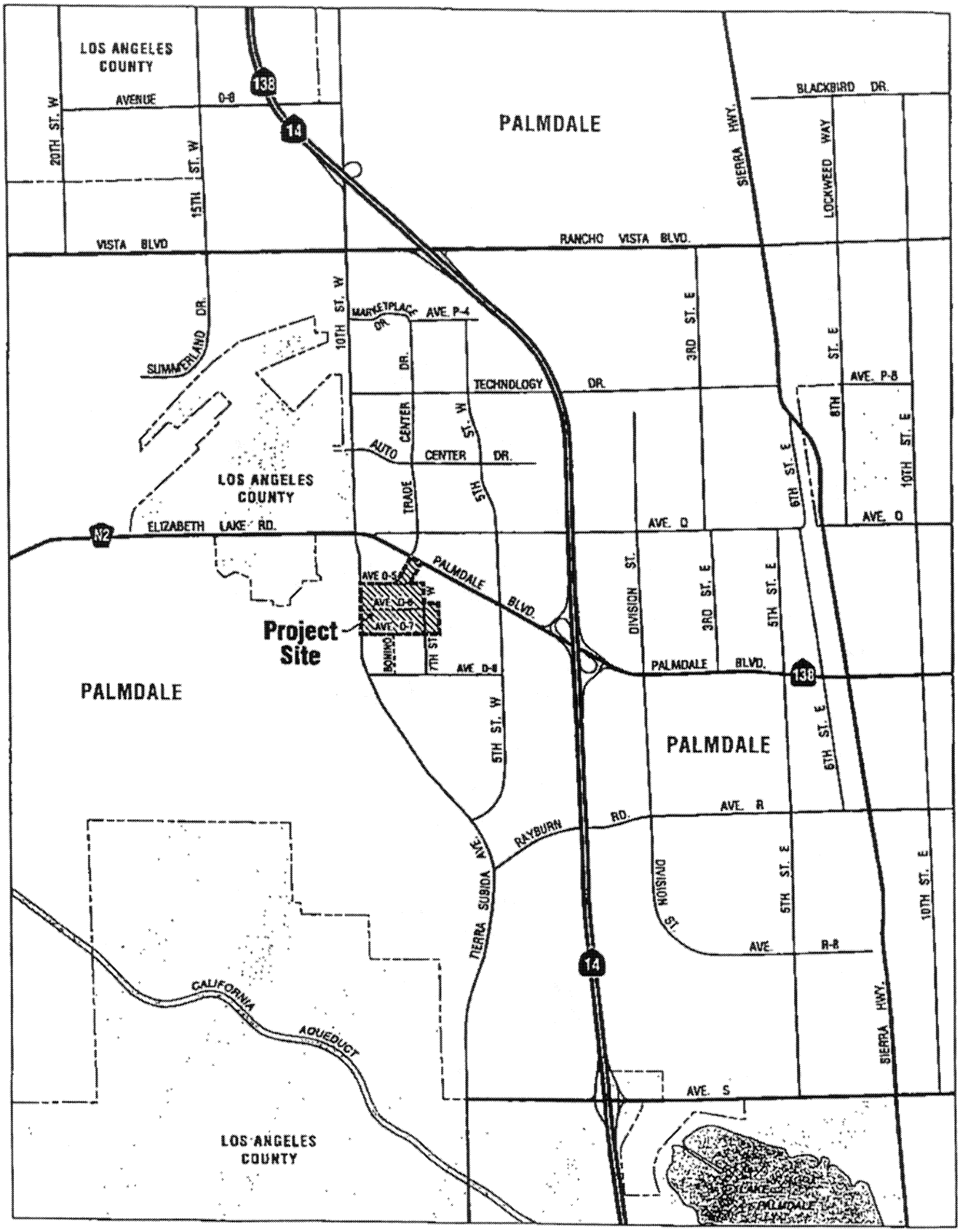
RBF CONSULTING

0 5 11 miles
APPROXIMATE

PALMDALE MEDICAL CENTER • NOTICE OF PREPARATION

Regional Vicinity

Exhibit 1



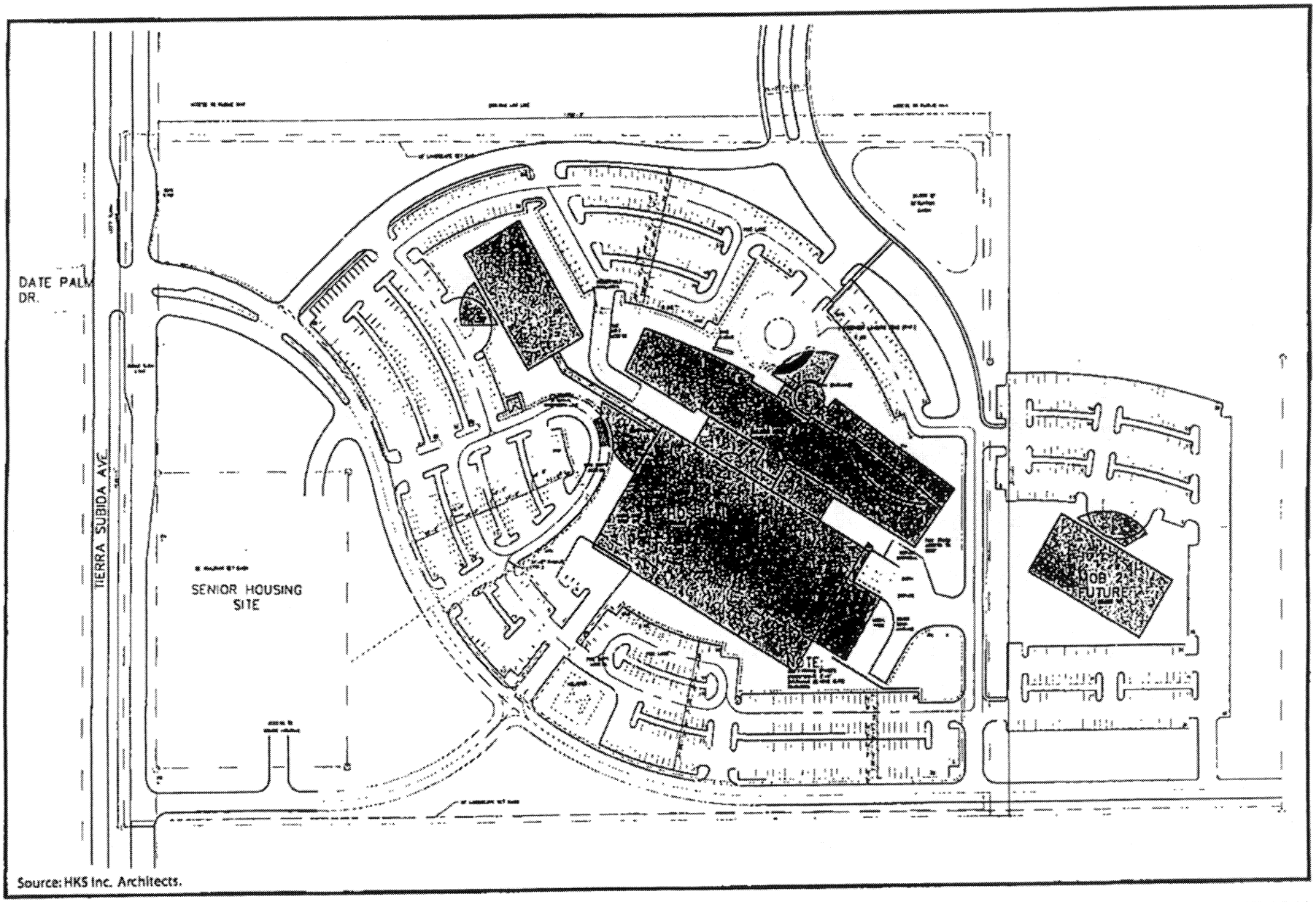
RBF CONSULTING

0 2400'
APPROXIMATE

PALMDALE MEDICAL CENTER • NOTICE OF PREPARATION

Site Vicinity

Exhibit 2



Source: HKS Inc. Architects.

RBF CONSULTING

PALMDALE MEDICAL CENTER • INITIAL STUDY

Preliminary Site Plan

Exhibit 3

IV. DETERMINATION

On the basis of this initial evaluation:

I find that the proposed project MAY have a significant effect on the environment, and ENVIRONMENTAL IMPACT REPORT is required.

This initial study was prepared by: RBF Consulting

8/15/03
Date

Richard Kite
Associate Planner

8-18-03
Date

Asoka Herath
Assistant Director of Planning

8-18-03
Date

Laurie Lile
Director of Planning

V. EARLIER ANALYSIS

Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, one or more effects have been adequately analyzed in an earlier EIR or (mitigated) negative declaration. In this case, a discussion should identify the following:

A. Earlier analyses used.

N/A

B. Impacts adequately addressed.

N/A

C. Mitigation Measures.

N/A

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

b. Is the site in a zone subject to seismic ground shaking, ground failure, or liquefaction?

☑ ☐ ☐ ☐

Substantiation for responses to A.2.a. and b.

The following responses are based on the geotechnical reports prepared for the proposed project by MACTEC Engineering and Consulting of Georgia, Inc. (MACTEC), *Report of Geotechnical Investigation Proposed Palmdale Medical Center*, dated April 28, 2003 and *Report of Geotechnical Investigation Proposed Medical Office Buildings*, dated May 6, 2003.

The proposed project site is not within a currently established Alquist-Priolo Earthquake Fault Zone for surface fault rupture hazards. However, several active and potentially active faults are located in the vicinity of the proposed project. The proposed project site could be subjected to strong ground shaking in the event of an earthquake, a hazard common to all of Southern California. Seismically induced settlement is estimated to range from approximately ½ inch to 1 inch across the proposed site with a maximum differential settlement of less than 1 inch in 300 feet. The proposed project site is not within an area identified as having a potential for liquefaction. Potential impacts to humans would be addressed in further detail with appropriate mitigation measures recommended in the EIR due to the project's proposed sensitive uses, the identification of active and potentially active faults in the project vicinity, the likelihood that the project site could experience strong ground shaking in the event of an earthquake, and the potential for seismically induced settlement at the project site.

3. Slopes

Based on the U.S.G.S. Topographic Map, the slope map submitted for the project, the geotechnical report for the project, and/or a site inspection:

a. Does the project site contain slopes of 10% or greater?

☐ ☐ ☐ ☑

b. Is any significant modification of major landforms proposed?

☐ ☐ ☑ ☐

c. Is the project in an area of landslide risk, or are landslides present on the project site?

☐ ☐ ☑ ☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Will project grading create slopes, on- or off-site, that could be subject to landslides, mud slides, or erosion?	☐	☐	☑	☐

Substantiation for responses to A.3.a, b, c, and d.

According to the April 28, 2003 and May 6, 2003, MACTEC geotechnical reports prepared for the proposed project, the generally flat slope of the site would preclude the potential for landslides. The proposed project site is within an area having a slope gradient of less than 10% and not within an area identified as having a potential for slope instability. The proposed project site is not within the path of any known or potential landslides, nor are there any known landslides near the proposed project site. Additionally, the proposed project site is not located within an area identified as having a potential for seismic slope instability. No major modifications of landforms is proposed, nor would the proposed project grading create slopes, on- or off-site that could be subjected to landslides, mudslides, or erosion. The risk of landslides is considered low to unlikely. Therefore, less than significant impacts related to landslides would occur as a result of implementation of the proposed project.

4. Quarry Zone

Based on a site inspection, the City's General Plan Land Use Map, and/or the Significant Gravel Resource Area Maps of the State Department of Mines and Geology:

a. Would development of the project impede the extraction of significant mineral resource deposits?	☐	☐	☐	☑

Substantiation for responses to A.4.a.

The proposed project site is not within a designated Mineral Resource Extraction Zone. Therefore, this impact would not be analyzed in the EIR.

B. Air:

Based on the criteria in the South Coast Air Quality Management *CEQA Handbook* (1993), the Air Quality Study prepared for the proposed project, and/or the land use proposed:

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Emissions				
a. Will the project result in significant air emissions or deterioration of ambient air quality either from stationary or mobile sources?	☑	☐	☐	☐
b. Could the proposed project produce potentially toxic air emissions?	☑	☐	☐	☐
c. Will the project potentially result in the creation of objectionable odors?	☐	☐	☑	☐
d. Could the project result in the alteration of air movement, moisture or temperature, or any change in climate either locally or regionally?	☐	☐	☐	☑

Substantiation for responses to B.1.a, and .b.

Short-Term Effects: The proposed project is not anticipated to result in significant short-term air quality impacts. The construction phase of the proposed project may result in temporary increases in air emissions due to heavy machinery or grading operations, increased truck trips, and increased vehicular trips by on-site workers. Local nuisances associated with increased dust/particulate levels and construction odors may affect residential areas surrounding the subject site to the west and south. Winds in the Antelope Valley are typically brisk and highly persistent, originating mainly from the west and south. Similar to most desert regions, wind speeds can be quite high at times. Hourly average wind speeds between 20 and 40 miles per hour may occur several days per year.[1] Most regional air quality problems are due to interbasin transport from the Los Angeles area through mountain passes such as Soledad Canyon. The prevailing winds typically move polluted air from the more densely populated portions of the South Coast Air Basin (SoCAB) toward the Mojave Desert Air Basin (MDAB), with the air entering the Desert Basin from mid-afternoon to late evening. However, appropriate mitigation measures for fugitive dust control and construction equipment/vehicle emissions would be implemented. The proposed project's construction impacts, including short-term air quality impacts, would be further analyzed in the EIR.

[1] Ibid, page 12.

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

Long-Term Effects: The proposed project may result in air quality impacts in regard to long-term operations. Implementation of the project would increase the amount of automobile traffic in the local area due to on-site employees, on-site residents, patients, and visitors. The project is not anticipated to result in substantial stationary source emissions. Impacts in regard to long-term operations air quality impacts would be further analyzed in the EIR.

Substantiation for responses to B.1.c.

Implementation of the proposed project could indirectly create some odors related to refuse generated by the hospital, medical office buildings and the assisted living facility. The dumpsters would be closed most of the time and the odors would not waft onto the surrounding area. Less than signficant impacts would result.

Substantiation for responses to B.1.d.

The proposed project would involve the construction of a hospital, two medical office buildings, and a senior housing/assisted living facility and as such, the proposed project is not anticipated to result in the alteration of air movement, moisture or temperature, or any change in climate either locally or regionally. No impact is expected to result from implementation of the proposed project.

C. Water:

1. Natural Streams, Springs, and Wetlands

Based on the type of project, the U.S.G.S. Topographics Maps, the exhibits and studies submitted for the project, and/or a site inspection:

a. Does the project site contain a blue-line stream, spring, seep, or wetland?

☐	☐	☐	☑

b. Will the project include changes in the course or volume of water in a local stream or wetland which require Department of Fish and Game or Army Corps of Engineers permits?

☐	☐	☐	☑

c. Will the project result in the loss of, or changes to, significant stands of riparian vegetation?

☐	☐	☐	☑

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

Substantiation for responses to C.1.a, .b and .c

The subject site has been previously disturbed. A single vegetation type, which is present throughout the proposed project site was identified as rabbitbrush scrub, it primarily consists of low-lying brush, sub-shrub/ground cover plants, and annual wildflowers. The site is void of any water features or riparian habitat. No impacts are anticipated in this regard. Therefore, this impact would not be addressed in the EIR.

2. Other Surface Waters

Based on a site inspection, and review of the Map of Aqueduct Facilities (Dept. of Water Resources, East Branch Hydrology Palmdale Area), and/or the General Plan:

If the project is adjacent to or near the California Aqueduct:

a. Could the project result in a significant increase in runoff of storm or nuisance water toward the aqueduct?

☐ ☐ ☐ ☑

b. Will the project be significantly affected by storm or nuisance water runoff flowing through aqueduct culverts or pools?

☐ ☐ ☐ ☑

Substantiation for responses to C.2.a and .b

The proposed project site is located approximately 1.5 miles from the California Aqueduct. No impacts are anticipated in this regard. Therefore, this impact would not be analyzed in the EIR.

Based on a review of the General Plan and/or a site inspection:

c. Is the project located above Lake Palmdale where urban runoff could significantly impact the lake?

☐ ☐ ☐ ☑

d. Is the project located in an inundation area below Lake Palmdale dams, or Littlerock Dam?

☐ ☐ ☐ ☑

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

Substantiation for responses to C.2.c

The proposed project site is located approximately 2 miles northwest of Lake Palmdale. The topography of the site is characterized as relatively steep, grading less than 10% southwest to northeast slope. Runoff flows generally from the south to north as surface flow from existing vacant land and Tierra Subida Avenue. Currently, the vacant undeveloped site has no existing drainage facilities on the site. Stormwater sheet flows from off-site across the project site towards Palmdale Boulevard. Implementation of the proposed project could produce indirect impacts related to short-term grading and other construction-related activities. No major modifications of landforms is proposed, nor would the proposed project grading create slopes, on- or off-site that could be subjected to landslides, mudslides, or erosion. The risk of landslides is considered low to unlikely. The degree to which construction activities impact water quality is partially determined by the time of year when the construction activity occurs.

Long-term occupancy of the project site by the proposed hospital, medical office buildings, and senior housing/assisted living facility would introduce non-point sources of pollution such as fertilizers, pesticides, household chemicals, and automobile products to the project vicinity. Impacts to water quality standards and/or waste discharge requirements would be addressed in the EIR and mitigation measures recommended as necessary.

Substantiation for responses to C.2.d.

According to the City of Palmdale *Safety Element* (1993), the proposed project site is not located downstream of any large bodies of water that could adversely affect the site in the event of earthquake-induced dam failures or seiches (wave oscillations in an enclosed or semi-enclosed body of water). No impacts are anticipated in this regard. Therefore, this impact would not be analyzed in the EIR.

Based on review of the FIRM Map, the Master Plan of Drainage and/or review by the Department of Public Works/Engineering:

e. Is the site in an area of flood hazard as shown on the FIRM Map, or as identified by the Engineering or Public Works Departments?

☑ ☐ ☐ ☐

f. Will the project result in a significant increase in peak runoff that could increase flood hazard off-site?

☑ ☐ ☐ ☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
g. Would development of the project impede the implementation of the City's Master Plan of Drainage or Drainage Management Plan?	☐	☐	☑	☐

Substantiation for responses to C.2.e.

The project site is located within a 500-year flood hazard zone. The project is also upstream to the northwest of the Palmdale and Little Rock Dams, and therefore, not in an inundation area. The California Aqueduct traverses the southwestern portion of the City above the valley floor. The California Aqueduct closely parallels the San Andreas Fault Rift Zone and crosses the fault in two locations. As a result, the California Aqueduct may rupture which may cause downstream flooding. The City of Palmdale General Plan Safety Element Exhibit S-7, *Aqueduct Failure Flow Directions*, depicts two channel pool locations and ultimate direction of flow. However, the Project site is not within these areas. The southern potential rupture area (Pool 52) is located approximately 2.1 miles from the project site, while the western area (Pool 51) is located approximately 2.3 miles. The Department of Water Resources (DWR) has installed flood control gates to mitigate any structural failures. By closing the gates upstream, the section of the aqueduct within this area would be isolated and not receive additional water flows. Aqueduct water present during failure would be diverted to pools that serve as detention basins. Pool 52 is located at Platt Ranch west of Lake Palmdale at the Nadeau Fault Crossing with storage for 138 acre-feet and capacity of 45.0 million gallons. Pool 51 is located on the San Andreas Fault with storage for 23 acre-feet and capacity for 7.5 million gallons of water. The extent and rate of inundation is speculative since the amount of water in the California Aqueduct varies between seasons and years.

Although the extent and rate of the inundation areas are speculative, due to the fact that the project is over a mile away from potential flooding hazards from failure of the California Aqueduct and development has occurred around the project site, flood inundation hazard potential from failure of the California Aqueduct is considered low.

Substantiation for responses to C.2.f.

The development of the proposed project would increase the amount of impervious surface, which would reduce the amount of percolation into the soil and increase the amount of stormwater runoff. This impact would be analyzed further in the EIR.

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

Substantiation for responses to C.2.g.

The implementation of the proposed project is not anticipated to impede the implementation of the City's *Master Plan of Drainage or Drainage Management Plan*. Less than significant impacts would result.

h. Will any aspect of the project result in discharge of materials into surface waters, or in any alteration of surface water quality, including but not limited to, temperature, dissolved oxygen, or turbidity?

☐ ☐ ☑ ☐

i. Will the project result in the significant alteration of the direction or rate of flow of groundwater?

☐ ☐ ☐ ☑

Substantiation for responses to C.2.h and .i

The proposed project would not involve the discharge of materials into surface waters, as no surface waters exist within the immediate site vicinity. In addition, project implementation would not result in the alteration of direction/flow of groundwater, as the project would not involve any alteration of groundwater aquifers. Impacts in this regard are not anticipated to be significant.

Based on the type of project, project submittals and exhibits, and/or a site inspection:

j. Could the project result in a change in the quantity or quality of groundwater, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?

☐ ☐ ☑ ☐

k. Could the project result in a substantial reduction in the amount of water otherwise available for public water supplies?

☑ ☐ ☐ ☐

Substantiation for responses to C.2.j and .k

Groundwater Quantity/Quality: The proposed project would result in an increase in impervious surfaces in comparison to the existing project site. Although the project would not involve direct impacts to a groundwater aquifer (cuts, excavations, withdrawals, additions, etc.), an increase in impervious surfaces

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

may reduce groundwater recharge on-site. However, the project is not of the scope or nature to result in a significant impact to local groundwater aquifers.

Public Water Supplies: The proposed Palmdale Medical Center would require public water supplies for hospital, office, and residential uses on-site. An SB 610 analysis (Water Supply Assessment) would be performed for the proposed project and incorporated into the EIR.

D. Plant Life:

Based on a site inspection, the biological report, and/or the Native Vegetation Preservation Plan submitted for the project:

1. Is there a significant stand of desert vegetation on the site which will be adversely impacted by the project?

☐	☐	☑	☐

2. Will the project result in a reduction of the numbers of any unique, rare, or endangered species of plants?

☐	☑	☐	☐

3. Will the project result in the introduction of invasive, non-native species of plants into an area; or will the project create a barrier to the normal replenishment of existing native plant species?

☐	☐	☑	☐

4. Will the project result in a significant reduction in acreage of native vegetation?

☐	☐	☑	☐

Substantiation for responses to D.1, .2, .3 and .4

According to the Biological Resources Survey performed for the proposed project by Bonterra Consulting on February 4, 2003, a single vegetation type exists throughout the project site, rabbitbrush scrub. Rabbitbrush scrub is not considered significant native desert vegetation. Therefore, project implementation is not anticipated to result in adverse impacts to a significant stand of native desert vegetation. According to the same Biological Resources Survey completed for the proposed project by Bonterra Consulting on February 4, 2003, five special status plant species have the potential to occur on the project site, but were not observed at the time of the survey because the survey was not conducted during their flowering season. The project is proposed to

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

include on-site landscaping, none of which would have invasive qualities. Potential impacts related to special status plant species would be addressed in the EIR and mitigation measures recommended as necessary.

E. Animal Life:

Based on the biology report submitted for the project and/or a site inspection: Will the proposal result in:

1. Will the project result in a significant loss of biological diversity?

☐	☑	☐	☐

2. Will the project result in the reduction of the numbers of any unique, rare, or endangered species of animals?

☐	☑	☐	☐

3. Is the project located in a Significant Ecological Area where the introduction of animals associated with urbanization could adversely affect native species; or where the project will result in a barrier to the migration or movement of animals?

☐	☐	☑	☐

4. Will the project cause significant deterioration of, or loss of, existing fish or wildlife habitat?

☐	☑	☐	☐

Substantiation for responses to E.1, .2, .3 and .4

The subject site is not situated in a Significant Ecological Area. According to the Biological Resources Survey preformed for the proposed project by Bonterra Consulting on February 4, 2003, the proposed project site has habitat suitable for supporting burrowing owls, a federal Species of Concern and a California Species of Special Concern. Although no burrowing owls were observed at the time of the survey and there was no evidence of their use of the site, the burrowing owl has a moderate potential to occur on the proposed project site. The potential impacts to burrowing owls and burrowing owl habitat would be analyzed further in the EIR and mitigation measures recommended as necessary.

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

Substantiation for response to F.3.

Implementation of the proposed project could expose persons to, or generate noise levels in excess of standards established in the City of Palmdale General Plan Noise Element. The proposed medical facility would introduce new sources of noise to the project area from traffic, emergency medical vehicles, parking lots, heating, ventilation and air conditioning (HVAC) units, trash compactors, hospital loading bays, etc. Based on the City of Palmdale's General Plan Noise Element, the Project site is not located within the Air Force Plant 42 noise impact area. Primary sources of noise in the vicinity of the Project are from mobile sources. Additionally, as part of the hospitals operations, a helispot would be located on site for emergency transport of patients, which will generate periodic noise during occasional use. Potential impacts related to noise would be addressed in the EIR and mitigation measures recommended as necessary.

G. Light or Glare:

Based on the type of project, and/or project submittals and exhibits:

1. Will the project produce significant new sources of light or glare that would disturb neighboring uses or significantly change the light environment visible from other areas of the City?

☑	☐	☐	☐

Substantiation for response to G.1.

The proposed project site is currently vacant land without any sources of light or glare. The development of the proposed project would introduce new light sources. Specific sources of light include interior and exterior lighting, street lighting, residential lighting, heliport lighting, security lighting, parking lot lighting, light and glare from headlights of the additional vehicles on adjacent roadways and vehicles which would turn into and out of new access driveways. Structures and equipment may also cause glare impacts on adjacent land uses. Potentially significant light and glare impacts would be addressed in the EIR and mitigation measures recommended as necessary.

H. Land Use:

1. Will the project result in a substantial alteration of the present or planned land use of an area?

☐	☐	☑	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
2. Are adjoining or planned land uses greatly different from that of the proposed project so that a potentially substantial interface problem would be created?	☐	☐	☑	☐
3. If the project is located within the Plant 42 AICUZ zone, does it conflict with the joint land use policies established for those zones?	☐	☐	☐	☑

Substantiation for responses to H.1, 2, 3.

The proposed project would result in the conversion of vacant land to commercial, office and residential uses, however according to the Palmdale General Plan, the current land use designation of the proposed project site is RC (Regional Commercial). The RC designation is designed to accommodate retail and service uses attracting consumers from a regional area. The proposed project would involve the construction of a general hospital, two medical office buildings, and a senior housing/assisted living facility. Development of the proposed project would require General Plan amendment to allow the Medical facility along with the senior housing/assisted living residential facility. In addition, implementation of the project would require the project area to be rezoned to office commercial with a mixed-use overlay, followed by approval of a Conditional Use Permit to allow for the development of the general hospital and senior housing/assisted living facility. Less than significant impacts would result.

I. Natural Resources:

1. Will the project result in a significant increase in the rate of use of any natural resources?	☐	☑	☐	☐
2. Will the project result in the substantial depletion of any non-renewable natural resources?	☐	☑	☐	☐

Substantiation for responses to I.1. and 2.

The proposed project involves the construction of a general hospital, two medical office buildings and a senior housing/assisted living facility. Natural gas, electricity and water resources are expected to be used as a result of project implementation. The proposed project's impacts on energy (natural gas and

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

electricity) and water resources would be analyzed in the EIR and mitigation measures recommended as necessary.

J. Risk of Upset:

1. Will the project result in a risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in the event of an accident or upset condition?

☑ ☐ ☐ ☐

Substantiation for response to J.1.

Operation of the proposed hospital facility would involve the use, storage, transportation, and disposal of hazardous substances, including chemicals, radiation, and medical waste. The impact of hazardous substance exposure to people or the environment would be addressed in the EIR and mitigation measures recommended as necessary.

2. Will the project result in possible interference with any emergency response plan or emergency evacuation plan?

☐ ☐ ☑ ☐

Substantiation for response to J.2.

According to the City of Palmdale's General Plan *Safety Element* (1993), the proposed project would not impede evacuation routes or emergency response plans. Therefore, this impact would not be analyzed in the EIR.

3. Is the site included on any known State Hazardous Waste Site lst?

☐ ☐ ☐ ☑

Substantiation for response to J.3.

According to the *Phase 1 Environmental Site Assessment and Limited Subsurface Evaluation, Bonino Trust Property, Palmdale, California* prepared for the proposed project site by GEOCON Consultants, Inc. on February 26, 2002, the site is not included on any State Hazardous Waste Site list. Therefore, this impact would not be evaluated in the EIR.

4. Is the project within or adjacent to a high fire hazard area as shown in the General Plan, identified by the Los Angeles County Fire Department or based on a site inspection?

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
☐	☐	☐	☑

Substantiation for response to J.4.

The proposed project site is approximately 1.5 miles from a Fire Zone 4 area (Brush Areas), according to the Palmdale General Plan Wildfire Hazard Zones Map (1993). No impact is anticipated in this regard. Therefore, this impact would not be addressed in the EIR.

K. Population:

Based on the type of project:

1. Will the project significantly alter the location, distribution, density, or growth rate of the human population of an area?

☐	☐	☑	☐

Substantiation for response to K.1

Implementation of the proposed project would result in a new general hospital, two medical office buildings, and an approximately 80-unit senior housing/assisted living facility. The project as proposed is not expected to alter the population characteristics in the area. However, due to the new employment opportunities, some new indirect impacts to schools and other public facilities could result from the proposed Project. Therefore, less than significant impacts would result.

L. Housing:

Based on the type of project?

1. Will the project create a significant demand for additional housing?

☐	☐	☐	☑

2. Will the project result in displacement of people from existing housing on the site?

☐	☐	☐	☑

Substantiation for response to L. 1 and L. 2.

The project would not substantially alter the housing stock in the area, but may cause a slight increase in demand due to employees of the proposed facility. The project site is currently vacant land. Therefore, no homes would be removed from

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

the proposed project area. No residences, people or alternative means of housing would be displaced by the proposed project. No impacts would occur as a result of the proposed project.

M. Transportation/Circulation:

Based on review of the type of project, project exhibits, a site inspection, and/or review of the Institute of *Transportation Engineers, Trip Generation* or the applicant's traffic study:

1. What is the estimated number of average daily vehicle trips, and a.m. and p.m. peak hour trips, generated by the proposed project?

   ADT: 9,648
   a.m. peak: 656
   p.m. peak: 889

2. Will the traffic generated by this project cause a reduction of Level of Service at an intersection or on a street segment?

   ☑ ☐ ☐ ☐

Substantiation for responses to M.1. and 2.

Implementation of the proposed project could exceed the level of service outlined in the City of Palmdale's General Plan *Circulation Element*, as indicated below:

Policy C1.4.1: Strive to maintain a Level of Service (LOS) C or better to the extent practical: in some circumstances, a LOS D may be acceptable for a short duration during peak periods.

Potential impacts related to Level of Service would be addressed in the EIR and mitigation measures recommended as necessary.

3. Does circulation within the project prevent the safe and orderly flow of people and vehicles, including emergency vehicles?

   ☐ ☐ ☑ ☐

4. Will the project create or experience access problems as designed, or create any obstruction to the safe flow of traffic?

   ☐ ☐ ☑ ☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

Substantiation for response to M.3 and .4

Implementation of the proposed project would include development of internal roadways and access driveways. Circulation within the project and emergency access would be designed pursuant to the recommendations of the City of Palmdale's City Engineer. Therefore, the project's impacts on internal circulation and emergency access are anticipated to be less than significant.

5. Could the project result in a significant alteration to rail or air traffic?

☐ ☐ ☑ ☐

Substantiation for response to M.5.

The proposed project would not involve significant changes in air traffic patterns or rail traffic patterns, nor would it affect air traffic or rail traffic. The proposed project proposes a helispot for emergency use only, although this is not expected to be used more than a few times a week. No significant impacts would occur as a result of the project.

6. Will the project create a significant shortage of parking?

☐ ☑ ☐ ☐

Substantiation for response to M.6.

The proposed project would include on-site parking in surface lots. Parking lot locations and corresponding capacities would be designed pursuant to the recommendations of the City of Palmdale's Director of Planning. Therefore, the project is not anticipated to create a significant shortage of parking.

N. Public Services:

1. Fire Protection

What is the roadway distance and location of the nearest fire station: The closest station is Station 24, located at 1050 West Rancho Vista Boulevard (Avenue P), approximately 1.5 miles to the north of the project site.

a. Will the project result in a need for significant additional fire protection services?

☐ ☑ ☐ ☐

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

Substantiation for response to N.1.a.

The Los Angeles County Fire Department (LACFD) provides fire protection services to the project area. There are total of three fire stations within the City. There are five additional stations that serve the outlying areas. Since implementation of the proposed project would potentially increase the number of people and structures in the project vicinity, it may promote the need for enhanced fire protection services. The City of Palmdale has worked with the Los Angeles County Fire Department in identifying and securing sites for new fire facilities and has adopted a Fire Facilities Impact Fee Ordinance. Compliance with the ordinance is presumed to mitigate impacts to fire protection services resulting from incremental growth in the City. Potential impacts related to fire services would be addressed in the EIR and mitigation measures recommended as necessary.

2. Police Protection

Are there any aspects of the project that would create a significant impact to police protection?

☐	☑	☐	☐

Substantiation for response to N.2.

The Los Angeles County Sheriff's Department provides contract services to the City of Palmdale, while traffic enforcement services along the highways and within the county are provided by the California Highway Patrol. Since implementation of the proposed project would increase the number of people, traffic and structures in the project vicinity, it may promote the need for enhanced police services. Occasionally, police services may be required to respond to medical emergencies related to criminal activity. Potential impacts related to police services would be addressed in the EIR and mitigation measures recommended as necessary.

3. Schools

a. In what elementary and high school attendance area is the project? Palmdale School District (K-8)/Antelope Valley Union High School District.

b. Approximately how many students will the project generate? None anticipated.

c. Would the students generated by the project significantly contribute to the affected schools exceeding their designed capacity?

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
☐	☑	☐	☐

Substantiation to response to N.3.c.

The project is not anticipated to directly generate students, as the proposed uses include a hospital, two medical office buildings, and a senior housing development. The proposed project would be subject to all fees and conditions outlined by the Palmdale School District and the Antelope Valley Union High School District, in which the project area is located. Future use of the area under an "office commercial/mixed use overlay" would not increase the demand for services provided by either of the referenced Districts. However, the project would generate new employment opportunities, resulting in the potential of additional student population, and indirect impacts could occur with an increased demand for schools. Potential impacts related to schools would be addressed in the EIR and mitigation measures recommended as necessary.

4. Parks and Recreation

Will the proposed project result in an impact on the quality or quantity of existing parks or recreational facilities, including trails or bicycle paths?

☐ ☐ ☐ ☑

Substantiation for response to N.4.

Implementation of the proposed project could result in an increase in the demand of park use in the City. Pelona Vista Park, south of project on Tierra Subida, may see a slight increase in usage. Potential impacts related to parks would be addressed in the EIR and mitigation measures recommended as necessary.

5. Public Facilities

Will the proposed project have a significant impact on maintenance of public facilities, including roads, drainage facilities, slopes, open space and trails?

☑ ☐ ☐ ☐

Substantiation for response to N.5.

Implementation of the proposed project would require the City to maintain newly constructed public infrastructure (i.e., street frontage, sewer, water, etc.). Future incremental increase in the public facility maintenance needs resulting from the proposed project would be consistent with the City's General Plan. Since the development of a general hospital, medical office buildings, and a senior housing/assisted living facility could necessitate the City's enhancement of local

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

infrastructure, potentially significant impacts would result. Potential impacts related to "other" public facilities would be addressed in the EIR and mitigation measures recommended as necessary.

6. Library Services

Will the project result in a significant impact to library services due to increased population?

☐ ☑ ☐ ☐

Substantiation for response to N.6.

Implementation of the proposed project could result in an increased use of the local library system in the City. Potential impacts related to libraries would be addressed in the EIR and mitigation measures recommended as necessary.

7. Other Governmental Services

Will the project have a significant impact on a government service or agency not listed above?

☑ ☐ ☐ ☐

Substantiation for response to N.7.

The management of hazardous materials is regulated by various federal, state, and local agencies. Federal and state agencies include the U.S. Environmental Protection Agency (U.S. EPA). U.S. Department of Transportation (DOT), California Environmental Protection Agency (CAL EPA), CAL EPA Division of Toxic Substance Control (DTSC), California State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB), Antelope Valley Air Quality Management District (AVAQMD), and the California Highway Patrol. Local Agencies include Los Angeles County Health Department (LACHD) and the Los Angeles County Fire Department. Medical waste management is regulated under the Medical Waste Management Act, which is enforced locally by the LACHD. Implementation of the proposed project would require annual or special inspections, such as air quality, worker safety, etc. Potential impacts related to "other" government services/agencies would be addressed in the EIR and mitigation measures recommended as necessary.

O. Energy:

1. Will the project result in the use of substantial amounts of fuel or energy?

☑ ☐ ☐ ☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
2. Will the project result in a substantial increase in demands upon existing sources of energy, or require the development of new sources of energy?	☑	☐	☐	☐

Substantiation for responses to O.1 and 2.

As noted in the substantiation to the response to questions I.1. and 2, the proposed project involves the construction of a general hospital, two medical office buildings and a senior housing/assisted living facility. Natural gas and electricity are expected to be used as a result of project implementation. It is not known at this time if alternative fuel choices (e.g. propane) would be used by the proposed hospital. The proposed project's impacts on energy (natural gas, electricity, and any alternative fuels) would be analyzed in the EIR.

P. Utilities:

Will the proposal result in a need for new systems, or substantial alterations to the following utilities:

1. Power or natural gas?	☐	☑	☐	☐
2. Communications systems?	☐	☑	☐	☐
3. Water?	☑	☐	☐	☐
4. Sanitary sewer?	☐	☐	☑	☐
5. Solid waste disposal?	☐	☑	☐	☐

Substantiation for responses to P.1, 2, 3, 4, and 5.

As previously indicated in the response to questions, O.1 and 2. and I.1. and 2, implementation of the proposed project would result in the conversion of vacant land to commercial, office, and residential uses, which would require the extension of gas, power, communication systems, water, and sanitary sewer services into the project site. Implementation of the proposed project would also

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

increase demands for electricity and natural gas, as well as water, sanitary sewer services and solid waste disposal. Impacts of the proposed project on gas, power, communication systems, water, sanitary sewer services, and local landfills would be analyzed in the EIR.

Q. Human Health:

Based on the type of project:

1. Will the project create any health hazard or potential health hazard (excluding mental health)?

☐	☑	☐	☐

2. Will the project result in the exposure of people to potential health hazards?

☐	☑	☐	☐

Substantiation for responses Q.1. and 2.

As previously noted in response to questions J.1 and 2 operation of the proposed hospital facility would involve the use, storage, transportation, and disposal of hazardous substances, including chemicals, radiation, and medical waste. Operation of the proposed general hospital would be required to comply with all Federal, State, and local agency rules and regulations related to the transport, storage, and use of such materials. Compliance with these rules and regulations would serve to reduce the potential for creating any health hazard or potential health hazard (excluding mental health) and exposure of people to potential health hazards. However, the proposed Project would be a benefit towards the overall health and welfare of the community by a providing a health care resource for the community residents. The EIR would include a comprehensive review of existing conditions, potential project impacts and may recommend additional mitigation measures to reduce the level of significance related potential hazards to human health.

R. Aesthetics:

1. Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?

☑	☐	☐	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

Substantiation for response to R.1.

The proposed project site is currently vacant, with future development anticipated to provide the region with emergency and hospital facilities and additional housing opportunities. However, implementation of the proposed project could degrade or otherwise change the visual character or quality of the site and its surroundings. The proposed hospital, medical office buildings and senior housing buildings would be located on a gently sloping area in the southwestern portion of the City, which would be visible from adjacent residences and may be visible from more distant portions of the valley. As a result, potentially significant aesthetic impacts could occur, and would be addressed, with mitigation measures recommended in the EIR. The hospital will have a total building height of approximately 75 feet, including the rooftop screening wall. Implementation of the proposed project could introduce new sources of light and glare in the project area. Specific sources of light include interior and exterior lighting, security lighting, parking lot lighting, light and glare from headlights of the additional vehicles on adjacent roadways and vehicles which would turn into and out of new access driveways, street lighting, residential lighting, and heliport lighting. Structures and equipment may also cause glare impacts on adjacent land uses. Potentially significant light and glare impacts would be addressed in the EIR and mitigation measures recommended as necessary.

S. Cultural Resources:

1. Will the proposal result in the alteration or destruction of a prehistoric or historic archaeological site, or historic structure(s)?

☐	☑	☐	☐

Site inspection performed by: CRM TECH

2. Will the proposal result in potential adverse impacts on paleontological resources?

☐	☑	☐	☐

Substantiation for responses to S.1. and 2.

According to the *Historical/Archaeological Resources Survey Report, Palmdale Medical Center/Universal Health Services, Inc.* prepared by CRM TECH on June 10, 2003, the proposed project site and adjacent area do not contain any prehistoric or historic archaeological sites or any historic structures. However, it is possible that future construction activities and grading within the project site could potentially result in the discovery of unknown, as yet undiscovered cultural resources. Potential impacts to cultural resources would be addressed in further detail with appropriate mitigation measures recommended in the EIR. According

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

to the *Paleontological Resources Assessment Report Palmdale Medical Center/Universal Health Services, Inc.*, prepared by CRM TECH on June 9, 2003, the proposed project's potential impact on paleontological resources is determined to be low for surficial Holocene alluvial sediments but high for Pleistocene and older alluvial sediments. Potential impacts to paleontological resources would be addressed in further detail with appropriate mitigation measures recommended in the EIR.

T. Public Controversy:

1. Is the project or action environmentally controversial in nature or can it reasonably be expected to become controversial upon disclosure to the public?

☐ ☐ ☐ ☑

Substantiation for response to T.1.

Projects of the size and shape of the Palmdale Medical Center typically draw objections from the public. However, at this time there are no known major areas of controversy or serious issues to be resolved. Given the nature of project design and construction, it is likely that various project elements would be refined as the project proceeds through the design and construction process

VII. 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 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?

☑ ☐ ☐ ☐

Substantiation for response A.

As described throughout this Initial Study, the implementation of the proposed project has the potential to degrade the quality of the environment. Potentially significant impacts related to implementation of the proposed project could occur. These potentially significant impacts would be addressed in the EIR and mitigation measures recommended as necessary.

As described in the substantiation for responses to VI. D and E, Plant Life and Animal Life, the implementation of the proposed project could affect burrowing owls and/or burrowing owl habitat. Therefore, the implementation of the project

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact

could result in potentially significant impacts related to habitat of a wildlife species.

As discussed in the substantiation for responses to VI. S, Cultural Resources, the proposed project's potential impact on paleontological resources is determined to be high for Pleistocene and older alluvial sediments. These potentially significant impacts would be addressed in the EIR and mitigation measures recommended as necessary.

B. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)

☑ ☐ ☐ ☐

Substantiation for response to B.

The implementation of the proposed project would potentially result in significant cumulative impacts related to air quality, biological resources, hazardous materials and hazards, hydrology and water quality, noise, public services, and transportation/traffic, and utilities and services systems. Potential cumulative impacts would be addressed in the EIR and mitigation measures would be recommended as necessary.

C. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

☑ ☐ ☐ ☐

Substantiation for response to C.

The implementation of the proposed project could potentially result in substantial adverse effects on human beings, including noise and air quality. Potential impacts on human beings would be addressed in the EIR and mitigation measures would be recommended as necessary.

APPENDIX 10.2:
CORRESPONDENCE

APPENDIX 10.2:
CORRESPONDENCE

MOJAVE DESERT air quality management district

Mojave Desert Air Quality Management District
14306 Park Avenue, Victorville, CA 92392
(760) 245-1661 fax (760) 245-2699
Visit our web site: http://www.mdaqmd.ca.gov
Charles L. Fryxell, Air Pollution Control Officer

City of Adelanto
Town of Apple Valley
City of Barstow
City of Blythe
City of Hesperia
City of Needles
County of Riverside
County of San Bernardino
City of Twentynine Palms
City of Victorville
Town of Yucca Valley

May 28, 2003

Richard Kite
Planning Department
City of Palmdale
38250 Sierra Highway
Palmdale, CA 93550

RECEIVED
MAY 30 2003
PLANNING

Re: Proposed Palmdale Medical Center (CUP 03-09)

Dear Mr. Kite:

The Antelope Valley Air Quality Management District (District) has reviewed the project notice for the Palmdale Medical Center (CUP 03-09). The District has the following comments:

- A Dust Control Plan (DCP) should be prepared for the construction of this facility for District review and approval. The DCP should be prepared in accordance with District Dust Control Plan guidance (a copy of this guidance will be provided upon request).

Thank you for the opportunity to review environmental documentation. If you have any questions regarding this letter please contact me at (760) 245-1661, extension 6726.

Sincerely,

Alan J. De Salvio
Acting Supervising Air Quality Engineer

cc: Bret Banks, AVAQMD

Palmdale Medical Center.doc

CHAIRMAN
Ron Carter
County of Los Angeles

VICE-CHAIRMAN
Bishop Henry Hearns
Vice-Mayor City of Lancaster

DIRECTOR
Robert Keys
President, Lake LA Town Council

Antelope Valley Transit Authority

DIRECTOR
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Mayor, City of Lancaster
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DIRECTOR
Jim Root
Councilmember, City of Palmdale

May 20, 2003

RECEIVED
MAY 2 1 2003
PLANNING DEPT.

Richard Kite
City of Palmdale Planning Department
38250 Sierra Highway
Palmdale, CA 93550

RE: CUP 03-09

Mr. Kite,

Thank you for the opportunity to comment on the above referenced project.

Currently this site is served by AVTA Route 1 on Palmdale Blvd. Given the nature of this project it may be advisable to provide for adequate internal circulation to accomadate buses. We may then be able to serve the hospital directly, rather than on Palmdale Blvd. If this option is determined to be in the best interest of the community, it would be advisable to provide ADA accessible benches and shelters, as well as access-ways to the buildings.

If it is determined to keep the circulation the way it is currently shown, it would be advisable to include ADA compliant sidewalks of sufficient width to accommodate ADA compliant bus benches and shelters on Tierra Subida to accommodate a future bus stop, if and when warranted. Benches, shelters and sidewalks should be provided at project completion for access to the Palmdale Blvd. frontage.

If you should have any questions regarding these comments, please contact me at 726-2616 ext. 206.

Sincerely,

Randy Floyd
Planning Manager

Note: A request for transit facilities does not imply that AVTA will provide, or continue to provide, service to the site.

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, REGIONAL PLANNING
IGR/CEQA BRANCH
120 SO. SPRING ST.
LOS ANGELES, CA 90012
PHONE: (213) 897-4429
FAX: (213) 897-1337

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Flex your power!
Be energy efficient!

IGR/CEQA No. 030551AL
Palmdale Medical Center
Vic. LA-14 / PM R59.8
Pre-CEQA Doc.

May 23, 2003

Mr. Richard Kite, Case Planner
City of Palmdale
38250 Sierra Highway
Palmdale, CA 93550

Dear Mr. Kite:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The proposed project is to build a medical center.

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. We wish to refer the project's traffic consultant to our traffic study guideline Website:

http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

and we list here some elements of what we generally are expecting in the traffic study:

1. Presentations of assumptions and methods used to develop trip generation, trip distribution, choice of travel mode, and assignments of trips to State Route 14.

2. Consistency of project travel modeling with other regional and local modeling forecasts and with travel data. The IGR/CEQA office may use indices to check results. Differences or inconsistencies must be thoroughly explained.

3. Analysis of ADT, AM and PM peak-hour volumes for both the existing and future conditions in the affected area. This should include freeways, interchanges, and intersections, and all HOV facilities. Interchange Level of Service should be specified (HCM2000 method requested). Utilization of transit lines and vehicles, and of all facilities, should be realistically estimated. Future conditions would include build-out of all projects (see next item) and any plan-horizon years.

4. Inclusion of all appropriate traffic volumes. Analysis should include traffic from the project, cumulative traffic generated from all specific approved developments in the area, and traffic growth other than from the project and developments. That is, include: existing + project + other projects + other growth.

5. Discussion of mitigation measures appropriate to alleviate anticipated traffic impacts. These mitigation discussions should include, but not be limited to, the following:

    - Description of Transportation Infrastructure Improvements
    - Financial Costs, Funding Sources and Financing
    - Sequence and Scheduling Considerations
    - Implementation Responsibilities, Controls, and Monitoring

    Any mitigation involving transit, HOV, or TDM must be rigorously justified and its effects conservatively estimated. Improvements involving dedication of land or physical construction may be favorably considered.

6. Specification of developer's percent share of the cost, as well as a plan of realistic mitigation measures under the control of the developer. The following ratio should be estimated: additional traffic volume due to project implementation is divided by the total increase in the traffic volume (see Appendix "B" of the Guidelines). That ratio would be the project equitable share responsibility.

    We note for purposes of determining project share of costs, the number of trips from the project on each traveling segment or element is estimated in the context of forecasted traffic volumes which include build-out of all approved and not yet approved projects, and other sources of growth. Analytical methods such as select-link travel forecast modeling might be used.

We look forward to reviewing the traffic study. We expect to receive a copy from the State Clearinghouse when the DEIR is completed. However, to expedite the review process, and clarify any misunderstandings, you may send a copy in advance to the undersigned.

If you have any questions, please feel free to contact me at (213) 897-4429 or Alan Lin the project coordinator at (213) 897-8391 and refer to IGR/CEQA No. 030551AL.

Sincerely,

STEPHEN J. BUSWELL
IGR/CEQA Branch Chief

Steve Buswell/AL

AT&T

NO CONFLICT

360 E. Alessandro Blvd.
Riverside, CA 92508-2402

RECEIVED
MAY 30 2003
PLANNING DEP

May 27, 2003

CITY OF PALMDALE
PLANNING DEPT.
Attn: Ms. Donna Fairchild & Mr. Richard Kite
38250 Sierra Highway
PALMDALE, CA 93550

Re: 1. TENTATIVE PARCEL MAP (TPM) 27063, 2. TENTATIVE PARCEL MAP (TPM) 27064
3. CONDITIONAL USE PERMIT (CUP) 03-09

Dear Ms. Donna Fairchild & Mr. Richard Kite:

This is in response to your three (3) inquiries dated May 8 and 15, 2003 regarding the above referenced projects.

After reviewing your location maps, please be advised that AT&T Network Services has no active facilities (transcontinental Fiber Optics Lines) within the vicinity of these projects.

Thank you for notifying AT&T of the pending project referenced above. Notification of future proposed work, performed in this vicinity should be directed to:

AT&T OSP Engineering
360 East Alessandro Blvd.
Riverside, CA 92508-2402

Should you have any questions or concerns regarding this project, please contact Ruben Martinez or me at (909) 776-3914 at your earliest convenience.

Please Note

AT&T Drawings are Proprietary Information Pursuant to Company instructions–This Office does not distribute drawings for Pre–Planning and Design Engineering purposes.

Please contact your local City, County, Utility Notification Center or AT&T On Site Plant Protection workforce to determine prior to contacting AT&T Engineering. If you are referred to our office because of a possible conflict with AT&T lines, we will confirm and provide you with the appropriate drawings and pertinent information required to avoid a conflict with AT&T lines prior to the start of your construction project.

Sincerely,

Ruben Martinez for

Franco Jauregui
Project Engineer

AFT

N. C.

PALMDALE

PLANNING DEPARTMENT
38250 Sierra Highway
Palmdale, CA 93550
(661) 267-5200

May 15, 2003

RE: CONDITIONAL USE PERMIT (CUP) 03-09 (previously reviewed as Pre-Application 12-02-4)

PLANNER: Richard Kite, Associate Planner

Attached are copies of plans and other materials for the above referenced application. Under the State of California Permit Streamlining Act, the City has 30 days from submittal date to determine completeness of this application. To assist the City and the Planning Department in determining completeness, your written comments on the completeness of this application would be appreciated. Per the City's development review process, you have until **June 15, 2003,** to provide comments. Should you find the application complete but still wish to submit special conditions, they should be submitted at this time. It is possible that comments and/or special conditions received after this date may not be incorporated into this case.

Thank you for assisting the Planning Department in meeting mandatory time limits.

COMMENTS / SPECIAL CONDITIONS

_____

_____

_____

_____

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

JAMES A. NOYES, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
www.ladpw.org

ADDRESS ALL CORRESPONDENCE TO
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

September 17, 2003

IN REPLY PLEASE
REFER TO FILE: WM-4

RECEIVED
SEP 29 2003
PLANNING DEPT.

Mr. Richard Kite
Associate Planner
Development Services
City of Palmdale
38250 Sierra Highway
Palmdale, CA 93550

Dear Mr. Kite:

RESPONSE TO A NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR PALMDALE MEDICAL CENTER CITY OF PALMDALE

Thank you for the opportunity to provide comments on the subject document. The proposed General Hospital consists of a critical care unit, laboratory, pharmacy, surgical suites, newborn nurseries, obstetrical facilities, emergency services, imaging suites, dietary services, and administration/public areas. A helisport would be provided for transport of patients to and from the facility. Additional site improvements would include parking areas, internal roadways, landscaping, and utilities/infrastructure. This multiuse medical facility would be developed in phases. The site is located at the northeast corner of Avenue Q-7 and Tierra Subida Avenue within the southwestern portion of the City of Palmdale. We have reviewed the submittal and offer the following comments:

Environmental Programs

As projected in the Los Angeles County Countywide Siting Element, which was approved in late 1997 by a majority of the cities in the County of Los Angeles with a majority of the population 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 activities associated with the proposed project and the postdevelopment operation over the life of the proposed project will 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 infrastructure in this County is inadequate to handle the hazardous waste currently being generated. The proposed project may generate hazardous waste and/or household hazardous waste, which could adversely impact the existing hazardous waste management infrastructure. 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 treatment or disposal facilities, and/or stormwater treatment facilities, our Environmental Programs Division must be contacted for required approvals and operating permits.

All development and redevelopment projects which fall into one of the Standard Urban Storm Water Mitigation Plans (SUSMP) project types, characteristics or activities, must obtain SUSMP approval.

Food service establishments may be required to provide a grease treatment device and will be subject to review and approval by our Environmental Programs Division.

If you have any questions, please contact Ms. Stacey Haro at (626) 458-3547.

Geotechnical and Materials Engineering

The requested Environmental Impact Report must be submitted for review.

The Environmental Impact Report shall address the geotechnical issues identified in the Notice of Preparation/Initial Study.

Description of the project and the associated grading, i.e., existing and proposed grades, etc., must be shown on a topographic map. Also all geotechnical hazards must be identified, and any mitigation measures discussed in detail. The requested information shall be included in the appropriate documents, as requested by others.

If you have any questions, please contact Mr. Amir M. Alam at (626) 458-4925.

Land Development

Grading and Drainage

The environmental document has been reviewed only for drainage and water quality impacts to Los Angeles County areas and facilities. There are no comments at this time.

If you have any questions, please contact Mr. Michael Hales at (626) 458-4921.

Transportation Planning

We have reviewed the subject document and determined that the proposed project would not have any significant impacts on Los Angeles County Highways.

If you have any questions, please contact Mr. Hubert Seto at (626) 458-4349.

Traffic and Lighting

The proposed project has the potential to significantly impact the County and County/City roadways and intersections in the area. We would like the opportunity to review the related environmental documents and traffic study upon its completion. The County's methodology shall be used when evaluating the County and/or County/City intersections. The study shall also address the cumulative impacts generated by this and nearby developments and include the level of service analysis for the affected intersections. If traffic signals or other mitigation measures are warranted at the affected intersections, the developer shall determine its proportionate share of traffic signal or other mitigation costs and submit this information to Public Works for review and approval. A copy of our Traffic Impact Analysis Report Guidelines is enclosed.

If you have any questions, please contact Ms. Jennifery Frary at (626) 300-4792.

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.

If you have any questions regarding the environmental review process of Public Works, please contact Ms. Massie Munroe at the address on the first page or at (626) 458-4359.

Very truly yours,

JAMES A. NOYES
Director of Public Works

for ROD H. KUBOMOTO
Assistant Deputy Director
Watershed Management Division

MM:sw
C:/MYFILES/EIRs/43.doc

Enc.

Traffic Impact Analysis Report Guidelines

January 1, 1997

Prepared by the County of Los Angeles
Department of Public Works

James A. Noyes
Director of Public Works

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JHC:ce
T-2/ACCESS2
(01/22/99)

I. Introduction

The County of Los Angeles Department of Public Works has established the following Guidelines for the preparation of Traffic Impact Analysis (TIA) reports. The purpose of these Guidelines is to establish procedures to ensure consistency of analysis and the adequacy of information presented and timely review by County staff. It is strongly recommended that the applicant's traffic engineer consult with County staff before beginning the study to establish the scope and basic assumptions of the study and any deviations from these Guidelines to avoid unnecessary delays or revisions. For assistance in the TIA scoping process, the Traffic and Lighting Division, Traffic Studies Unit, can be contacted at (626) 458-5909.

II. Requirements

Generally, the Department staff is concerned with adverse impacts on traffic if:

1. Traffic generated by a project considered alone or cumulatively with other related projects, when added to existing traffic volumes, exceeds certain capacity thresholds of an intersection or roadway, contributes to an unacceptable level of service (LOS), or exacerbates an existing congested condition.

2. Project generated traffic interferes with the existing traffic flow (e.g., due to the location of access roads, driveways, and parking facilities).

3. Proposed access locations do not provide for adequate safety (e.g., due to limited visibility on curving roadways).

4. Nonresidential uses generate commuter or truck traffic through a residential area.

5. Project generated traffic significantly increases on a residential street and alters its residential character.

A traffic report must be prepared by a registered Civil or Traffic Engineer. A traffic report is generally needed if a project generates over 500 trips per day or where other possible adverse impacts as discussed in the Analysis and Impact Section (see page 4) of these Guidelines are identified. Before a full review is conducted, the County staff will check the completeness of the TIA report using the attached check list (Exhibit A). If the report is missing any of the check list items, it will be returned for revision.

Existing daily directional and peak-hour through and turning traffic volumes on the roadways surrounding and/or logically associated with the project site, including Secondary and Major highways and freeways. Local streets affected by the project should also be shown. Each report shall include appendices providing count data used in the preparation of the report. The source and date of the traffic volume information shall be indicated. Count data should not be over one year old. Since peak volumes vary considerably, a ten percent daily variation is not uncommon, especially on recreational routes or roadways near shopping centers; therefore, representative peak-hour volumes are to be chosen carefully.

All assumed roadways and intersections or any other transportation circulation improvements must be identified and discussed. The discussion should include the scope and the status of the assumed improvements including the construction schedule and financing plan. It should be noted that all assumed roadways and intersections or any other transportation circulation improvements will be made a condition of approval for the project to be in place prior to the issuance of building permits. If assumed improvements do not get built on time due to an unforeseeable condition, traffic conditions for a different assumed highway network or other mitigation measures will be considered if a traffic study is submitted with a different assumed network or other measures are recommended to mitigate the traffic impact in question.

C. Analysis and Impact

The following information is required:

1. Trip Generation Analysis

Tabulate the estimated number of daily trips and a.m. and p.m. peak-hour trips generated by the proposed project entering and exiting the site. Trip generation factors and source are to be included. The trip generation rates contained in the latest edition of the Institute of Transportation Engineers Trip Generation manual should generally be used, except in the case of condominiums/townhomes when the following rates should be used per unit:

The County of Los Angeles Department of Regional Planning (DRP) and other public agencies (if necessary) should be contacted to obtain the latest listings. A table and a map showing the status, project/zone change/conditional use permit/parcel map/tract number, and the location of each project must be provided. For a computer printout of the listing of all filed projects within the County, Land Development Management Section of the DRP, at (213) 974-6481 can be contacted.

4. LOS Analysis

If it appears that the project's generated traffic alone or together with other projects in the area could worsen the LOS of an intersection or roadway, a "before" and "after" LOS analysis is necessary. The Intersection Capacity Utilization (ICU) or Critical Movement Analysis are two methods often used to assess existing and future LOS at intersections.

If the ICU planning method is used, a maximum of 1,600 vehicles per hour per lane should be used (2,880 vehicles per hour should be used for dual left-turn lanes) and a ten percent yellow clearance cycle should be included. Intersection LOS analysis and calculation work sheets, as well as diagrams showing turning volumes shall be included in the report for the following traffic conditions:

(a) Existing traffic;
(b) Existing traffic plus ambient growth to the year the project will be completed (preproject);
(c) Traffic in (b) plus project traffic;
(d) Traffic in (c) with the proposed mitigation measures (if necessary);
(e) Traffic in (c) plus the cumulative traffic of other known developments; and
(f) Traffic in (e) with the proposed mitigation measures (if necessary).

The project's impact on two-lane roadways should also be analyzed for all of the above traffic conditions if those two-lane roadways are used for access. LOS service analysis contained in the Highway Capacity Analysis, Chapter 8, Two-Lane Highways, should be used to evaluate the project's impact. For simplified analysis, use the established significant impact thresholds for two-lane roadways as shown on page 7.

6. Analysis Discussion

Discuss conclusions regarding the adverse impacts caused by the proposed project on the roadway system. If the cumulative traffic impact of this and other projects require mitigation measures, such as traffic signals, then estimate the percent share using the project percent share formula given in the Section III D of the TIA Guidelines. When the proposed project and other nearby developments are expected to significantly impact adjacent roadways, the developer may be required to enter into a secured agreement to contribute to a benefit district to fund major roadway and bridge improvements in the region. Also, for all recommendations to increase the number of travel lanes on a street or at an intersection as a mitigation measure, the report must clearly identify the impacts associated with such a change such as whether or not additional right of way will be required and whether it is feasible to acquire the right of way based on the level of development of the adjacent land and buildings (if any).

Discuss other possible adverse impacts on traffic. Examples of these are: (1) the limited visibility of access points on curved roadways; (2) the need for pavement widening to provide left-turn and right-turn lanes at access points into the proposed project; (3) the impact of increased traffic volumes on local residential streets; and (4) the need for road realignment to improve sight distance.

Projects which propose to amend the County's General Plan Land Use and substantially increase potential traffic generation must provide an analysis of the project at current planned land use versus proposed land use in the build out condition for the project area. The purpose of such analysis is to provide decision makers with the understanding of the planned circulation network's ability to accommodate additional traffic generation caused by the proposed General Plan Land Use amendments.

D. Traffic Models and Model Generated TIA's

Computerized traffic models are planning tools used to develop future traffic projections based on development growth patterns. The Department currently operates two traffic models, one for the Santa Clarita Valley and another for the Ventura Corridor area. The Department can test proposed development project traffic impacts for the public in these areas for a fee. For assistance in the traffic modeling, the Planning Division, Transportation Planning/Assessments Section, can be contacted at (626) 458-4351.

The project percent share should be based on the peak-hour volumes that warrant signals. If both peak hours satisfy the installation of signals, the average of the two peak-hour volumes should be used in the percent share analysis.

F. Mitigation Measures

The following information is required.

Identify feasible mitigation measures which would mitigate the project and/or other related projects' significant impacts to a level of insignificance. Also, identify those mitigation measures which will be implemented by others. Those mitigation measures that are assumed to be implemented by others will be made a condition of approval for the project to be in place prior to issuance of building permits. Mitigation measures may include, but are not limited to, the following:

1. Traffic Engineering Techniques

a. Locate access points to optimize visibility and reduce potential conflict.
b. Design parking facilities to avoid queuing into public streets during peak arrival periods.
c. Provide additional off-street parking.
d. Dedicate visibility easements to assure adequate sight distance at intersections and driveways.
e. Signalize or modify traffic signals at intersections.
f. Install left-turn phasing and/or multiple turning lanes to accommodate particularly heavy turning movements.
g. Widen the pavement to provide left- or right-turn lanes to lessen the interference with the traffic flow.[1]
h. Widen intersection approaches to provide additional capacity.
i. Prohibit left turns to and from the proposed development.
j. Restrict on-street parking during peak hours to increase street capacity.[1]

2. Contribute to a benefit district to fund major capital improvements

[1] Physical roadway improvements to improve capacity should be considered before considering parking restrictions.

The geographic area examined in the TIA must include the following, at a minimum.

- All CMP arterial monitoring intersections (see Exhibit B of the Guidelines), including freeway on- or off-ramp intersections, where the proposed project will add 50 or more trips during either the a.m. or p.m. peak hours.

- Main line freeway monitoring locations (see Exhibit C of the Guidelines) where the project will add 150 or more trips, in either direction, during the a.m. or p.m. weekday peak hours.

- Caltrans must also be consulted to identify other specific locations to be analyzed on the State highway system.

If, based on these criteria, the TIA identifies no facilities for study, no further traffic analysis is required.

JHC:ce
T-2/ACCESS
(01/07/98)

Attach.

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

JAMES F. STAHL
Chief Engineer and General Manager

May 29, 2003

File No: 20-00.00-00

RECEIVED
JUN 0 2 2003
PLANNING DEPT.

Mr. Richard Kite, Associate Planner
Planning Department
City of Palmdale
38250 Sierra Highway
Palmdale, CA 93550

Dear Mr. Kite:

Conditional Use Permit No. 03-09 (Pre-Application No. 12-02-4)

The letter and plans for the subject project, forwarded by your office, were received by the County Sanitation Districts of Los Angeles County (Districts) on May 19, 2003. The proposed development is located within the jurisdictional boundaries of District No. 20. We offer the following comments regarding sewerage service:

- Previous comments submitted by the Districts in correspondence dated December 30, 2002 (copy enclosed), to your agency, still apply to the subject project with the following updated information.
- The Palmdale Water Reclamation Plant currently processes an average flow of 8.9 million gallons per day.
- The expected average wastewater flow from the 300,000 square foot (sf) hospital and 60,000 sf medical office building is approximately 90,000 gallons per day.

If you have any questions, please contact the undersigned at (562) 699-7411, extension 2717.

Very truly yours,

James F. Stahl

Ruth I. Frazen
Engineering Technician
Planning & Property Management Section

RIF:eg
Enclosures
c: S. Wienke
236100.1

Recycled Paper

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

JAMES F. STAHL
Chief Engineer and General Manager

December 30, 2002

File No: 20-00.00-00

Mr. Richard Kite, Associate Planner
Planning Department
City of Palmdale
38250 Sierra Highway
Palmdale, CA 93550

Dear Mr. Kite:

Pre-Application No. 12-02-4

This is in reply to your letter which was received by the County Sanitation Districts of Los Angeles County (Districts) on December 27, 2002. The proposed development is located within the jurisdictional boundaries of District No. 20. We offer the following comments regarding sewerage service:

1. Because of the project's location, the flow originating from the proposed project would have to be transported to the Districts' trunk sewer by local sewer(s) which are not maintained by the Districts. If no local sewer lines currently exist, it is the responsibility of the developer to convey any wastewater generated by the project to the nearest local sewer and/or Districts' trunk sewer. The nearest Districts' trunk sewers are the Trunk "D" Trunk Sewer and the 5th Street West Trunk Sewer. The 10-inch diameter Trunk "D" Trunk Sewer, located in Avenue Q at Tierra Subida Avenue, has a design capacity of 2.2 million gallons per day (mgd) and conveyed a peak flow of 0.4 mgd when last measured in 2002. The 10-inch diameter 5th Street West Trunk Sewer, located in 5th Street West north of Avenue Q-8, has a design capacity of 2.4 million gallons per day (mgd) and conveyed a peak flow of 0.2 mgd when last measured in 2002.

2. The wastewater generated by the proposed project will be treated at the Palmdale Water Reclamation Plant (WRP). The Palmdale WRP has a design capacity of 15 mgd and currently processes an average flow of 9 mgd.

3. A copy of the Districts' average wastewater generation factors is enclosed to allow you to estimate the volume of wastewater the project will generate.

4. The proposed project may require a Districts' permit for Industrial Wastewater Discharge. Project developers should contact the Districts' Industrial Waste Section at extension 2900, in order to reach a determination on this matter. If this permit is necessary, project developers will be required to forward copies of final plans and supporting information for the proposed project to the Districts for review and approval before beginning project construction. For additional Industrial Wastewater Discharge Permit information, you may visit the Districts' website at www.lacsd.org under "Industrial Waste."

5. The Districts are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting (directly or indirectly) to the Districts' Sewerage System or **increasing the existing strength and/or quantity of wastewater attributable to a particular parcel or operation already connected**. This connection fee is required to construct an incremental expansion of the Sewerage System to accommodate the proposed project which will mitigate the impact of this project on the present Sewerage System. Payment of a connection fee will be required before a permit to connect to the sewer is issued. A copy of the Connection Fee Information Sheet is enclosed for your convenience. For more specific information regarding the connection fee application procedure and fees, please contact the Connection Fee Counter at extension 2727.

6. In order for the Districts to conform with the requirements of the Federal Clean Air Act (CAA), the design capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into the Air Quality Management Plan, which is prepared by the South Coast Air Quality Management District in order to improve air quality in the South Coast Air Basin as mandated by the CAA. All expansions of Districts' facilities must be sized and service phased in a manner which will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise you that the Districts intend to provide this service up to the levels which are legally permitted and to inform you of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 699-7411, extension 2717.

Very truly yours,

James F. Stahl

Ruth I. Frazen

Ruth I. Frazen
Engineering Technician
Planning & Property Management Section

RIF:eg

Enclosures

c: S. Wienke

182346 1

TABLE 1
LOADINGS FOR EACH CLASS OF LAND USE

DESCRIPTION	UNIT OF MEASURE	FLOW (Gallons per Day)	COD (Pounds per Day)	SUSPENDED SOLIDS (Pounds per Day)
RESIDENTIAL				
Single Family Home	Parcel	260	1.22	0.59
Duplex	Parcel	312	1.46	0.70
Triplex	Parcel	468	2.19	1.05
Fourplex	Parcel	624	2.92	1.40
Condominiums	Parcel	195	0.92	0.44
Single Family Home (reduced rate)	Parcel	156	0.73	0.35
Five Units or More	No. of Dwlg. Units	156	0.73	0.35
Mobile Home Parks	No. of Spaces	156	0.73	0.35
COMMERCIAL				
Hotel/Motel/Rooming House	Room	125	0.54	0.28
Store	1000 ft²	100	0.43	0.23
Supermarket	1000 ft²	150	2.00	1.00
Shopping Center	1000 ft²	325	3.00	1.17
Regional Mall	1000 ft²	150	2.10	0.77
Office Building	1000 ft²	200	0.86	0.45
Professional Building	1000 ft²	300	1.29	0.68
Restaurant	1000 ft²	1,000	16.68	5.00
Indoor Theatre	1000 ft²	125	0.54	0.28
Car Wash				
Tunnel - No Recycling	1000 ft²	3,700	15.86	8.33
Tunnel - Recycling	1000 ft²	2,700	11.74	6.16
Wand	1000 ft²	700	3.00	1.58
Financial Institution	1000 ft²	100	0.43	0.23
Service Shop	1000 ft²	100	0.43	0.23
Animal Kennels	1000 ft²	100	0.43	0.23
Service Station	1000 ft²	100	0.43	0.23
Auto Sales/Repair	1000 ft²	100	0.43	0.23
Wholesale Outlet	1000 ft²	100	0.43	0.23
Nursery/Greenhouse	1000 ft²	25	0.11	0.06
Manufacturing	1000 ft²	200	1.86	0.70
Dry Manufacturing	1000 ft²	25	0.23	0.09
Lumber Yard	1000 ft²	25	0.23	0.09
Warehousing	1000 ft²	25	0.23	0.09
Open Storage	1000 ft²	25	0.23	0.09
Drive-in Theatre	1000 ft²	20	0.09	0.05

INFORMATION SHEET FOR APPLICANTS
PROPOSING TO CONNECT OR INCREASE THEIR DISCHARGE TO
THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY SEWERAGE SYSTEM

THE PROGRAM

The County Sanitation Districts of Los Angeles County are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting to a Sanitation District's sewerage system. Your connection to a City or County sewer constitutes a connection to a Sanitation District's sewerage system as these sewers flow into a Sanitation District's system. The County Sanitation Districts of Los Angeles County provide for the conveyance, treatment, and disposal of your wastewater. **PAYMENT OF A CONNECTION FEE TO THE COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY WILL BE REQUIRED BEFORE A CITY OR THE COUNTY WILL ISSUE YOU A PERMIT TO CONNECT TO THE SEWER.**

I. WHO IS REQUIRED TO PAY A CONNECTION FEE?

(1) Anyone connecting to the sewerage system for the first time any structure located on a parcel(s) of land within a County Sanitation District of Los Angeles County.

(2) Anyone increasing the quantity of wastewater discharged due to the construction of additional dwelling units on or a change in land usage of a parcel already connected to the sewerage system.

(3) Anyone increasing the improvement square footage of a commercial or institutional parcel by more than 25 percent.

(4) Anyone increasing the quantity and/or strength of wastewater from an industrial parcel.

(5) If you qualify for an Ad Valorem Tax or Demolition Credit, connection fee will be adjusted accordingly.

II. HOW ARE THE CONNECTION FEES USED?

The connection fees are used to provide additional conveyance, treatment, and disposal facilities (capital facilities) which are made necessary by new users connecting to a Sanitation District's sewerage system or by existing users who significantly increase the quantity or strength of their wastewater discharge. The Connection Fee Program insures that all users pay their fair share for any necessary expansion of the system.

III. HOW MUCH IS MY CONNECTION FEE?

Your connection fee can be determined from the Connection Fee Schedule specific to the Sanitation District in which your parcel(s) to be connected is located. A Sanitation District boundary map is attached to each corresponding Sanitation District Connection Fee Schedule. Your City or County sewer permitting office has copies of the Connection Fee Schedule(s) and Sanitation District boundary map(s) for your parcel(s). If you require verification of the Sanitation District in which your parcel is located, please call the Sanitation Districts' information number listed under Item IX below.

IV. WHAT FORMS ARE REQUIRED*?

The Connection Fee application package consists of the following:

(1) Information Sheet for Applicants (this form)
(2) Application for Sewer Connection
(3) Connection Fee Schedule with Sanitation District Map (one schedule for each Sanitation District)

*Additional forms are required for Industrial Dischargers.

V. WHAT DO I NEED TO FILE?

(4) Completed Application Form
(5) A complete set of architectural blueprints (not required for connecting one single family home)
(6) Fee Payment (checks payable to: County Sanitation Districts of Los Angeles County)
(7) Industrial applicants must file additional forms and follow the procedures as outlined in the application instructions

VI. WHERE DO I SUBMIT THE FORMS?

Residential, Commercial, and Institutional applicants should submit the above listed materials either by mail or in person to:

County Sanitation Districts of Los Angeles County
Connection Fee Program, Room 130
1955 Workman Mill Road
Whittier, CA 90601

Industrial applicants should submit the appropriate materials directly to the City or County office which will issue the sewer connection permit.

VII. HOW LONG DOES IT TAKE TO PROCESS MY APPLICATION?

Applications submitted by mail are generally processed and mailed within three working days of receipt. Applications brought in person are processed on the same day provided the application, supporting materials, and fee are satisfactory. Processing of large and/or complex projects may take longer.

VIII. HOW DO I OBTAIN MY SEWER PERMIT TO CONNECT?

An approved Application for Sewer Connection will be returned to the applicant after all necessary documents for processing have been submitted. Present this approved-stamped copy to the City or County Office issuing sewer connection permits for your area at the time you apply for actual sewer hookup.

IX. HOW CAN I GET ADDITIONAL INFORMATION?

If you require assistance or need additional information, please call the County Sanitation Districts of Los Angeles County at (562) 699-7411, extension 2727.

X. WHAT ARE THE DISTRICTS' WORKING HOURS?

The Districts' offices are open between the hours of 7:00 a.m. and 4:00 p.m., Monday through Thursday, and between the hours of 7:00 a.m. and 3:00 p.m. on Friday, except holidays. When applying in person, applicants must be at the Connection Fee counter at least 30 minutes before closing time.

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100

JAMES A. NOYES, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

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JUN 02 2003
PLANNING DEPT.

IN REPLY PLEASE
REFER TO FILE: W-0

May 28, 2003

To: City of Palmdale
38250 Sierra Highway
Palmdale, CA 93550

To: Universal Health Services, Inc.
367 South Gulph Road
King of Prussia, PA 19406

LOS ANGELES COUNTY WATERWORKS DISTRICT NO. 40, ANTELOPE VALLEY
INFORMATION ON CERTIFICATION OF WATER SERVICE AVAILABILITY
REQUEST OF City of Palmdale **; DATED:** May 15, 2003
NE corner of Ave. Q-7 & Tierra Subida

☐ ZONE CHANGE ☒ CUP 03-09 ☐ Zone Change 02-01

APN: 3004-023-001,002,003,004,005,006 RESIDENTIAL/BUSINESS UNITS/LOTS 2
INQUIRY NO. I _ - __; AREA OF PARCEL 8.26 +/- AC.; ZONING C-4

The District's response to the request for certification of the availability of water service includes the following information.

☒ The property is located entirely within the boundaries of the Waterworks District.

☐ The property is not within the District at this time, however, a request for annexation has been initiated by the owner which is being processed. The statements of this letter are applicable only upon satisfactory completion of the annexation process.

Based on the District's present system capacity and planned improvement projects and information received of other developments pending, it appears that the District will have a sufficient water supply to serve this development when needed.

All property to be developed is subject to requirements of the County/City Fire Department and the Waterworks District. These requirements have not been established for this proposed development at this time. To provide water service to previously unserved property, depending upon the requirements of the water service requested by the owner/developer, the requirements of the City/County Fire Department, and the Waterworks District, the District may require that (1) various charges be paid by the

owner/developer of the property, (2) water system facilities be installed both on-site and off-site by a State licensed contractor retained by the owner/developer, using plans prepared by a private engineer retained by the owner/developer, and reviewed and approved by the District upon payment of applicable charges and specifications paid for by the owner/developer and prepared by the District, or (3) a combination of (1) and (2).

All construction work is subject to inspection and acceptance by the District. Permanent water service will not be allowed until all District requirements for water service have been satisfied. Inspection charges are based on an engineering estimate of actual costs.

Once constructed, the water system facilities are to be dedicated gratis to the District for subsequent operation and maintenance. Depending upon the extent and value of the facilities constructed by the owner/developer, various credits may be allowed against the District's charges and/or reimbursement/participation agreements may be entered into.

These facilities must be installed and in service to the satisfaction of the District in a timely manner, namely, before occupancy of the premises is to occur or before permanent water service is requested to be provided by the District, or one year has lapsed from the date of District approval of the plan and specifications, whichever event occurs first. Should the required facilities not be so completed, the District may discontinue any temporary water service being provided without further notice.

Permanent water service will only be provided through a metered service connection upon proper application and payment of applicable charges.

It is strongly recommended to the owner/developer that he keep the District continuously informed as to the progress of this development and the scheduled need for water service.

The on-site water system facilities will include principally water mains, fire hydrants, metered service connections and appurtenances.

The off-site facilities may include water mains, fire hydrants, pressure regulation stations, booster pumping stations, water tank facilities, sites of land easements and other rights-of-way, and source facilities such as water wells.

(MF235) 1/25/95

ANTELOPE VALLEY UNION HIGH SCHOOL DISTRICT

44811 SIERRA HIGHWAY, LANCASTER, CALIFORNIA 93534-3226
(661) 948-7655

BOARD OF TRUSTEES
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June 5 2003
FDO/436

RECEIVED
JUN 12 2003
PLANNING DEPT.

Richard Kite, Associate Planner
Planning Department
City of Palmdale
38250 Sierra Hwy
Palmdale, CA 93550

Subject: CUP 03-09

Attention: Richard Kite,

The Antelope Valley Union High School District has reviewed the above referenced plans and application for CUP 03-09.

The District has no objection to the request as long as the development is required to pay all applicable developer impact fees to the district.

Sincerely,

Jeffery E. Foster
Assistant Superintendent Administrative Services

CITY OF PALMDALE
OFFICE OF THE
PLANNING DEPARTMENT

M E M O R A N D U M

TO: Members of the Development Advisory Board

FROM: Planning Department

DISTRIBUTION DATE: May 15, 2003

SUBJECT: **CONDITIONAL USE PERMIT (CUP) 03-09**
(Previously reviewed as Pre-Application 12-02-4)
DETERMINATION OF APPLICATION COMPLETENESS / CONDITION SETTING
A request to develop a 300,000 square foot general hospital and two 60,000 square foot medical office buildings on 37 acres to be located at the northeast corner of Tierra Subida and Avenue Q-7.
APPLICANT: Universal Health Services, Inc.
ENGR./REPR.: HKS, Inc.

PLANNER: **Richard Kite, Associate Planner**

Attached are copies of plans and other materials for the above referenced application. **DETERMINATION OF APPLICATION COMPLETENESS / CONDITION SETTING** has been scheduled for the DAB meeting of:

Wednesday, June 4, 2003

Please send your WRITTEN comments regarding this application to the above referenced planner by June 2, 2003.

COMMENTS/SPECIAL CONDITIONS

_____

_____

_____

_____

FORM 264
12/90

COUNTY OF LOS ANGELES FIRE DEPARTMENT
FIRE PROTECTION REQUIREMENTS - INCORPORATED AREAS

Map
DATE 9/23/03 CITY OF Palmdale

SUBJECT: CUP 03-09

LOCATION : Vista Subida & Ave Q-7

FIRE FLOW

[ ] Hydrants and fire flow are adequate to meet current Fire Department requirements.

[X] The required fire flow for public fire hydrants at this location is 5000 gallons per minute at 20 psi for a duration of 5 hours, over and above maximum daily domestic demand.

[X] The required on-site fire flow for private on-site hydrants is 2500 gallons per minute at 20 psi. Each private on-site hydrant must be capable of flowing 1250 gallons per minute at 20 psi with any two hydrants flowing simultaneously.

[X] Fire Hydrant requirements as follows:
Install 4 Public Fire Hydrant(s). Install 8 Private On-site Fire Hydrant(s). Upgrade 2 Public Fire Hydrant(s).

[X] All hydrants shall measure 6" x 4" x 2-1/2" brass or bronze, conforming to current AWWA standard C503 or approved equal. All hydrants shall be installed a minimum of 25' from a structure or protected by a (2) two hour fire wall.

[ ] Location: As per map on file with this office.

[X] Other location: Indicate all existing F.H. locations.

[X] All required fire hydrants shall be installed, tested and accepted prior to construction. Vehicular access must be provided and maintained serviceable throughout construction.

[X] Additional on-site hydrants may be required during the building permit process.

[ ] Upgrade not necessary, if existing hydrant meets fire flow requirements.

[X] Comments: See attached for additional requirements.

All hydrants shall be installed in conformance with Title 20, L.A. County Government Code or appropriate city regulations. This shall include minimum six-inch diameter mains. Arrangements to meet these requirements must be made with the water purveyor serving the area.

ZONE _____ MAP _____

BY _____ DATE 10/3/03

FIRE PROTECTION ENGINEERING SECTION - ~~(805) 723-4455~~ (661) 949-6319

FORM 185
3/91

ADDITIONAL
BUILDING AND OCCUPANCY REQUIREMENTS

	NOT SHOWN	SHOWN	
1.	(X)	( )	Provide fire dept access to within 150 ft of all exterior portions of walls.
2.	(X)	( )	Access must be clear to sby and kept clear at all times.
3.	(X)	( )	Medians may not encroach upon fire dept. access width.
4.	(X)	( )	Minimum width for access for this project is 28 feet.
5.	(X)	( )	Centerline of access way must be within 30 feet of building edge/wall - (both buildings).
6.	(X)	( )	Explain all lines around buildings - walls, no openings, enclosed courtyard etc.
7.	(X)	( )	Provide area justification for each building - fire flow requirements may be lowered with additional information. (Lowered to 3500 gpm/20 psi)
8.	( )	( )	

(OVER)

SOUTHERN CALIFORNIA

ASSOCIATION of GOVERNMENTS

Main Office

818 West Seventh Street

12th Floor

Los Angeles, California

90017-3435

t (213) 236-1800

f (213) 236-1825

www.scag.ca.gov

Officers: President: Mayor Bev Perry, Brea • First Vice President: Councilmember Ron Roberts, Temecula • Second Vice President: Supervisor Hank Kuiper, Imperial • Past President: Councilmember Ronald Bates, Los Alamitos

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Riverside County: Marion Ashley, Riverside County • Ron Loveridge, Riverside • Jeff Miller, Corona • Greg Pettis, Cathedral City • Ron Roberts, Temecula • Charles White, Moreno Valley

San Bernardino County: Paul Biane, San Bernardino County • Bill Alexander, Rancho Cucamonga • Edward Burgnon, Town of Apple Valley • Lawrence Dale, Barstow • Lee Ann Garcia, Grand Terrace • Susan Longville, San Bernardino • Gary Ovitt, Ontario • Deborah Robertson, Rialto

Ventura County: Judy Mikels, Ventura County • Glen Becerra, Simi Valley • Carl Morehouse, San Buenaventura • Toni Young, Port Hueneme

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Bill Davis, Simi Valley

Printed on Recycled Paper 559-09/04/03

September 10, 2003

Mr. Richard Kite
Associate Planner
Planning Department
City of Palmdale
38250 N. Sierra Highway
Palmdale, CA 93550

RE: **Comments on the Notice of Preparation for a Draft Environmental Impact Report for the Palmdale Medical Center – SCAG No. I 20030490**

Dear Mr. Richard Kite:

Thank you for submitting the **Notice of Preparation for a Draft Environmental Impact Report for the Palmdale Medical Center** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects, and programs with regional plans. This 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 aforementioned **Notice of Preparation** and have determined that **the proposed Project is regionally significant per California Environmental Quality Act (CEQA) Guidelines (Section 15206).** The proposed Project considers a commercial office building employing more than 1,000 persons or encompassing more than 250,000 square feet of floor area. CEQA requires that EIRs discuss any inconsistencies between the proposed project and 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 Draft EIR 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 Draft EIR. 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 Draft EIR when this document is available. If you have any questions regarding the attached comments, please contact me at (213) 236-1867. Thank you.

Sincerely,

Jeffrey M. Smith

JEFFREY M. SMITH, AICP
Senior Regional Planner
Intergovernmental Review

RECEIVED
SEP 15 2003
PLANNING DEPT.

COMMENTS ON THE PROPOSAL TO DEVELOP A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PALMDALE MEDICAL CENTER SCAG NO. I 20030490

PROJECT DESCRIPTION

The proposed Project considers the development of a mixed-use medical facility encompassing approximately 360,000 square feet of floor area and up to 250 beds. The proposed Project would also include an affordable senior housing component consisting of 80 dwelling units. The proposed Project site is located approximately one-half mile west of the SR-14 freeway, situated at the northeast corner of Avenue Q-7 and Tierra Subida Avenue, within the southwestern portion of the City of Palmdale.

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 Palmdale Medical Center.

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.*

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.

3.05 *Encourage patterns of urban development and land use, which reduce costs on infrastructure construction and make better use of existing facilities.*

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.

3.12 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.

3.16 Encourage developments in and around activity centers, transportation corridors, underutilized infrastructure systems, and areas needing recycling and redevelopment.

3.18 Encourage planned development in locations least likely to cause environmental impact.

3.20 Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.

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.

3.27 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.

REGIONAL TRANSPORTATION PLAN

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, faster and economical movements of people and goods.

- *Average Work Trip Travel Time in Minutes – 25 minutes (Auto)*

- *PM Peak Freeway Travel Speed – 45 minutes (Transit)*
- *PM Peak Non-Freeway Travel Speed*
- *Percent of PM Peak Travel in Delay (Fwy)*
- *Percent of PM Peak Travel in Delay (Non-Fwy)*

Accessibility - Transportation system 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 45 Minutes door to door travel time (Mode Neutral)*
- *Average transit access time*

Environment - Transportation system should sustain development and preservation of the existing system and the environment. (All Trips)

- *CO, ROG, NOx, PM10, PM2.5 – Meet the applicable SIP Emission Budget and the Transportation Conformity requirements*

Reliability – Transportation system should have reasonable and dependable levels of service by mode. (All Trips)

- *Transit – 63%*
- *Highway – 76%*

Safety - Transportation systems should provide minimal accident, death and injury. (All Trips)

- *Fatalities Per Million Passenger Miles – 0*
- *Injury Accidents – 0*

Equity/Environmental Justice - The benefits of transportation investments should be equitably distributed among all ethnic, age and income groups. (All trips)

- *By Income Groups Share of Net Benefits – Equitable Distribution of Benefits among all Income Quintiles*

Cost-Effectiveness - Maximize return on transportation investment (All Trips). Air Quality, Mobility, Accessibility and Safety

- *Return on Total Investment – Optimize return on Transportation Investments*

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.

AIR QUALITY CHAPTER CORE ACTIONS

The **Air Quality Chapter** core actions related to the proposed project includes:

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.

11.07 *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.*

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.

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (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, 49 U.S.C. '5301 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 and 65082 respectively.

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 State Implementation 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 Impacts Reports of projects of regional significance for consistency with regional plans [California Environmental Quality Act Guidelines Sections 15206 and 15125(b)].

Pursuant to 33 U.S.C. '1288(a)(2) (Section 208 of the Federal Water Pollution Control Act), SCAG is the authorized ***Areawide Waste Treatment Management Planning Agency***.

SCAG is responsible for preparation of the ***Regional Housing Needs Assessment***, pursuant to California Government Code Section 65584(a).

SCAG is responsible (with the Association of Bay Area Governments, the Sacramento Area Council of Governments, and the Association of Monterey Bay Area Governments) for preparing the ***Southern California Hazardous Waste Management Plan*** pursuant to California Health and Safety Code Section 25135.3.

Revised July 2001

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

JAMES A. NOYES, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
www.ladpw.org

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: W-0

RECEIVED
SEP - 8 2003
PLANNING DEPT

September 3, 2003

Mr. Richard Kite
City of Palmdale Planning Department
38250 North Sierra Highway
Palmdale, CA 93550

Dear Mr. Kite:

LOS ANGELES COUNTY WATERWORKS DISTRICT NO. 40, ANTELOPE VALLEY NOTICE OF PREPARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PALMDALE MEDICAL CENTER

Thank you for the opportunity to review the Notice of Preparation of Draft Environmental Impact Report for the Palmdale Medical Center. We agree with your assessment that this project will have a potential impact on the water system. We have no comments to offer at this time.

If you have any questions, please contact Mr. George Papik at (626) 300-3349.

Very truly yours,

JAMES A. NOYES
Director of Public Works

MANUEL DEL REAL
Assistant Deputy Director
Waterworks and Sewer Maintenance Division

GMP:lb
WW0494

STATE OF CALIFORNIA - HEALTH AND HUM SERVICES AGENCY GRAY DAVIS, Governor

OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILTIES DEVELOPMENT DIVISION
311 South Spring Street, Suite 1001
Los Angeles, California 90013
Phone (213) 897-0166
FAX (213) 897-0168 [North LA Region]
FAX (213) 576-1306 [South LA Region]

September 5, 2003

RECEIVED
SEP - 8 2003
PLANNING DEPT

Mr. Richard Kite, Associate Planner
City of Palmdale
38250 N. Sierra Hwy.
Palmdale, CA 93550

RE: Draft Environmental Impact Report
Proposed Palmdale Medical Center

Dear Mr. Kite:

Thank you for informing us of the general acute care hospital proposed to be constructed in your city. An assessment of the nature of the site and potential for earthquake damage, based upon geologic and engineering investigations and reports prepared by a geotechnical engineer, licensed in the State of California, shall be submitted to us and approved before plan approval of any construction plans and specifications. Before we will issue a building permit for the acute care hospital, plans and specifications must be reviewed and approved by our office and evidence of all city clearances, such as zoning, conditional use permit, etc. must be provided to us.

If you have any questions or wish to discuss any aspect of this project or our requirements, please call at 213-897-7014.

Sincerely,

Paul A. Coleman, Architect
Deputy Division Chief

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, REGIONAL PLANNING
IGR/CEQA BRANCH
120 SO. SPRING ST.
LOS ANGELES, CA 90012
PHONE: (213) 897-4429
FAX: (213) 897-1337

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IGR/CEQA No. 0308101AL, NOP
Palmdale Medical Center
Vic. LA-14 / PM R59.78
SCH#: 2003081136

September 3, 2003

RECEIVED
SEP - 8 2003
PLANNING DEPT

Mr. Richard Kite, Case Planner
City of Palmdale
38250 Sierra Highway
Palmdale, CA 93550

Dear Mr. Kite:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The proposed project is a mixed-use medical facility that would be constructed in phases.

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. We wish to refer the project's traffic consultant to our traffic study guideline Website:

http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

and we list here some elements of what we generally are expecting in the traffic study:

1. Presentations of assumptions and methods used to develop trip generation, trip distribution, choice of travel mode, and assignments of trips to State Route 14.

2. Consistency of project travel modeling with other regional and local modeling forecasts and with travel data. The IGR/CEQA office may use indices to check results. Differences or inconsistencies must be thoroughly explained.

3. Analysis of ADT, AM and PM peak-hour volumes for both the existing and future conditions in the affected area. This should include freeways, interchanges, and intersections, and all HOV facilities. Interchange Level of Service should be specified (HCM2000 method requested). Utilization of transit lines and vehicles, and of all facilities, should be realistically estimated. Future conditions would include build-out of all projects (see next item) and any plan-horizon years.

4. Inclusion of all appropriate traffic volumes. Analysis should include traffic from the project, cumulative traffic generated from all specific approved developments in the area, and traffic growth other than from the project and developments. That is, include: existing + project + other projects + other growth.

5. Discussion of mitigation measures appropriate to alleviate anticipated traffic impacts. These mitigation discussions should include, but not be limited to, the following:

    - Description of Transportation Infrastructure Improvements
    - Financial Costs, Funding Sources and Financing
    - Sequence and Scheduling Considerations
    - Implementation Responsibilities, Controls, and Monitoring

    Any mitigation involving transit, HOV, or TDM must be rigorously justified and its effects conservatively estimated. Improvements involving dedication of land or physical construction may be favorably considered.

6. Specification of developer's percent share of the cost, as well as a plan of realistic mitigation measures under the control of the developer. The following ratio should be estimated: additional traffic volume due to project implementation is divided by the total increase in the traffic volume (see Appendix "B" of the Guidelines). That ratio would be the project equitable share responsibility.

    We note for purposes of determining project share of costs, the number of trips from the project on each traveling segment or element is estimated in the context of forecasted traffic volumes which include build-out of all approved and not yet approved projects, and other sources of growth. Analytical methods such as select-link travel forecast modeling might be used.

We look forward to reviewing the traffic study. We expect to receive a copy from the State Clearinghouse when the DEIR is completed. However, to expedite the review process, and clarify any misunderstandings, you may send a copy in advance to the undersigned.

If you have any questions, please feel free to contact me at (213) 897-4429 or Alan Lin the project coordinator at (213) 897-8391 and refer to IGR/CEQA No. 0308101AL.

Sincerely,

STEPHEN J. BUSWELL
IGR/CEQA Branch Chief

cc: Scott Morgan, State Clearinghouse

Steve Buswell/AL

SBC Pacific Bell

SBC Pacific Bell
Telephone Company
41 S. Chester Avenue
Room 202
Pasadena, CA 91106

626.396.7045 Fax

June 20, 2003

RECEIVED
JUN 2 3 2003
PLANNING DEPT.

City of Palmdale
Planning Department
38306 9th Street East
Palmdale, CA 93550

Attention: Richard Kite

RE: CUP 03-09
N/E Corner Avenue Q-7 & Tierra Subida

Dear Mr. Kite:

This is with reference to your letter dated May 15, 2003, regarding the above-referenced pending project.

Pacific Bell has reviewed the map and application, and has no recommendations or comments to submit at this time.

Thank you for notifying us. If you have any questions, please call this office or the Engineer, Mike Martin, on (661) 266-3207.

Sincerely,

W. S. Clissold
Right of Way Administrator
(626) 356-7330

WSC:plc

PAC BELL,

PALMDALE

PLANNING DEPARTMENT
38250 Sierra Highway
Palmdale, CA 93550
(661) 267-5200

May 15, 2003

RE: **CONDITIONAL USE PERMIT (CUP) 03-09 (previously reviewed as Pre-Application 12-02-4)**

PLANNER: **Richard Kite, Associate Planner**

Attached are copies of plans and other materials for the above referenced application. Under the State of California Permit Streamlining Act, the City has 30 days from submittal date to determine completeness of this application. To assist the City and the Planning Department in determining completeness, your written comments on the completeness of this application would be appreciated. Per the City's development review process, you have until **June 15, 2003,** to provide comments. Should you find the application complete but still wish to submit special conditions, they should be submitted at this time. It is possible that comments and/or special conditions received after this date may not be incorporated into this case.

Thank you for assisting the Planning Department in meeting mandatory time limits.

COMMENTS / SPECIAL CONDITIONS

_____

_____

_____

_____

PALMDALE

APPLICATION FOR CONDITIONAL USE PERMIT / SITE PLAN REVIEW/ MAJOR MODIFICATION / TIME EXTENSION

Case No.: CUP 03-05

Type of Application: Site Plan Review _____ Conditional Use Permit X
Major Modification _____ Time Extension _____

Was a Pre-Application filed? Yes ☑ No ☐ If yes, reference DAB: 12-02-4

REQUEST TO DEVELOP:

27	acres	Commercial	2	360,000
(Number)		(Type of Use*)	(No. of Bldgs.)	(Total Square Feet)

*Types of uses: Industrial (mfg., service, warehouse); Commercial (retail, office, medical, restaurant); Residential (condo, apartments, single-family); Other (please specify).

Existing Zoning: ~~C-2~~ C-4

Existing General Plan Designation: RC

Assessor's Parcel Number(s): 3004-023-1,2,3,4,5,6

Project Location (Address if Available): NE corner of Avenue Q7 & Tierra Subida

List case number(s) of any previous applications filed on this site:

List all related applications being filed with this project: GPA 03-05 ZC 03-05 EIR 03-01

If proposed use is located within an existing tract or building, please list Tract and Lot, Parcel No.(s), and Planning Department Case No.(s):

APPLICANT:
Name Universal Health Services, Inc.
Address 367 South Gulph Road, King of Prussia, PA 19406
Telephone No.: (610) 768-3300 Fax No.: (610) 992-4560

CONTACT PERSON:
Name Donald J. Pyskacek
Address 367 South Gulph Road, King of Prussia, PA 19406
Telephone No.: (610) 768-3300 Fax No.: (610) 992-4560

ARCHITECT/ENGINEER/REPRESENTATIVE:
Name HKS, Inc. (Noel Barrick)
Address 1919 McKinney Avenue, Dallas, TX 75201-1753
Telephone No.: (214) 969-3030 Fax No.: (214) 969-3397

Please include in mailing list all other persons to be notified regarding this application.

APPENDIX 10.3:
TRAFFIC STUDY

PALMDALE MEDICAL CENTER
TRAFFIC IMPACT STUDY

City of Palmdale

Prepared for

City of Palmdale

Prepared by

RBF CONSULTING

3536 CONCOURS, STE. 220, ONTARIO, CALIFORNIA 91764-5592
CONTACT: MATT BURRIS 909.581.1755 mburris@rbf.com

April 13, 2004

JN 10-102534

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EXECUTIVE SUMMARY

This study analyzes the forecast traffic impacts associated with the proposed Palmdale Hospital project in the City of Palmdale, west of the State Route 14 (SR-14) freeway. The proposed project consists of 300,000 square feet of hospital space, 80 multi-family senior dwelling units, and 120,000 square feet of medical office building space. Access for the proposed project is planned at Palmdale Boulevard via Trade Center Drive, and at Tierra Subida Avenue (10th Street West) via Date Palm Drive.

All the study intersections are currently operating at an acceptable LOS (LOS D or better) according to City of Palmdale performance criteria.

The study intersections are forecast to operate at an acceptable LOS (LOS D or better) according to City of Palmdale performance criteria for forecast year 2006 without project conditions, with the exception of the following three intersections:

- 10th Street West/Rancho Vista Boulevard (p.m. peak hour only);
- Tierra Subida Avenue/Rayburn Road (p.m. peak hour only); and
- Sierra Highway/Palmdale Boulevard (p.m. peak hour only).

To eliminate the forecast year 2006 without project conditions deficiencies at the three study intersections, the following improvements are recommended:

- **10th Street West/Rancho Vista Boulevard** - Widen southbound 10th Street West approach from two left-turn lanes, two through lanes, and one shared through/right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane; and
- **Tierra Subida Avenue/Rayburn Road** - Signalize intersection.
- **Sierra Highway/Palmdale Boulevard** - Restripe westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of one left-turn lane, two through lanes, and one shared through/right-turn lane.

Assuming implementation of the recommended improvements, the three deficient study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2006 without project conditions.

The proposed project is forecast to generate approximately 9,648 daily trips, which includes approximately 656 a.m. peak hour trips and approximately 889 p.m. peak hour trips.

It should be noted that this analysis assumes a conservative trip generation analysis by not factoring in any onsite trip capture discounts to account for any relation between trips generated by the onsite compatible land uses. For example, as a worst-case scenario, this analysis assumes none of the medical office generated trips are related to either the hospital or senior dwelling units.

The study intersections are forecast to operate at an acceptable LOS (LOS D or better) according to

City of Palmdale performance criteria for forecast year 2006 with project conditions, with the exception of the following intersection:

- Tierra Subida Avenue/5th Street West (p.m. peak hour only).

Based on the City of Palmdale thresholds of significance, the addition of project-generated trips is forecast to not result in any significant impacts at the study intersections for forecast year 2006 with project conditions.

To eliminate the forecast year 2006 with project conditions deficiencies at the Tierra Subida Avenue/5th Street West intersection, the following mitigation measure is recommended:

- **Tierra Subida Avenue/5th Street West** - Widen southbound Tierra Subida Avenue approach from one left-turn lane, and one through lane to consist of one left-turn lane, and two through lanes.

Assuming implementation of the recommended mitigation measure, the deficient Tierra Subida Avenue/5th Street West intersection is forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2006 with project conditions.

The study intersections are forecast to operate at a deficient LOS (LOS E or worse) according to City of Palmdale performance criteria for forecast year 2020 without project conditions, with the exception of the following eight intersections:

- 10th Street West/SR-14 SB Off-Ramp (signalized);
- 10th Street West/Market Place Drive (signalized);
- 10th Street West/Technology Drive (signalized);
- Tierra Subida Avenue/Date Palm Drive (one-way stop-controlled);
- Tierra Subida Avenue/Avenue Q-8 (one-way stop-controlled);
- SR-14 NB Off-Ramp/Avenue P (signalized);
- Sierra Highway/Palmdale Boulevard (signalized); and
- 30th Street East/Palmdale Boulevard (signalized).

To eliminate the forecast year 2020 without project conditions deficiencies at the sixteen study intersections, the following improvements are recommended:

- **25th Street West/Elizabeth Lake Road** - Restripe the eastbound Elizabeth Lake Road approach from one left-turn lane and two through lanes to consist of two left-turn lanes and two through lanes.
- **10th Street West/Mall Entrance** - Widen the southbound 10th Street West approach from one left-turn lane, three through lanes, and one right-turn lane to consist of two

left-turn lanes, three through lanes, and one right-turn lane.

- **10th Street West/Rancho Vista Boulevard** - Widen the southbound 10th Street West approach from two left-turn lanes, three through lanes, and one right-turn lane to consist of two left-turn lanes, four through lanes, and one right-turn lane. Widen the westbound Rancho Vista Boulevard approach from two left-turn lanes, three through lanes, and one right-turn lane to consist of two left-turn lanes, four through lanes, and one right-turn lane.

- **10th Street West/Beechdale Drive** - Widen the southbound 10th Street West approach from one through lane and one shared through/right-turn lane to consist of two through lanes and one shared through/right-turn lane.

- **10th Street West/Elizabeth Lake Road** - Widen the northbound 10th Street West approach from one left-turn lane, one through lane, and one shared through/right-turn lane to consist of two left-turn lanes, one through lane, and one shared through/right-turn lane. Widen the southbound 10th Street West approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane. Widen the eastbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane.

- **Tierra Subida Avenue/5th Street West** - Signalize intersection.

- **Tierra Subida Avenue/Rayburn Road** - Widen the northbound Tierra Subida approach from one through lane and one right-turn lane to consist of two through lanes and one right-turn lane. Restripe the westbound Rayburn Road approach from one left-turn lane and one right-turn lane to consist of two left-turn lanes and one right-turn lane.

- **Tierra Subida Avenue/City Ranch Road** - Signalize intersection. Widen the northbound Tierra Subida approach from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane, two through lanes, and one shared through/right-turn lane. Widen the southbound Tierra Subida approach from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane, two through lanes, and one shared through/right-turn lane. Widen the eastbound City Ranch Road approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

- **Tierra Subida Avenue/Avenue S** - Signalize Intersection. Widen the northbound Tierra Subida Avenue approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane. Widen the southbound Tierra Subida Avenue approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane. Widen the eastbound Avenue S approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, two through lanes, and one right-turn lane. Widen the westbound Avenue S approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, two through lanes, and one right-turn lane.

- **Lowes Drive/Rancho Vista Boulevard** - Modify the eastbound and westbound Avenue P approach phasing from protected plus permitted to permitted plus protected.

- **Trade Center Drive/Palmdale Boulevard** - Widen the southbound Trade Center Drive approach from one left-turn lane and one right-turn lane to consist of two left-turn lanes and one right-turn lane. Modify signal phasing at the southbound Trade Center Drive approach from permitted left-turn phasing to consist of protected left-turn phasing. Modify the Trade Center Drive/Palmdale Boulevard intersection traffic signal to include southbound Trade Center Drive overlap, which will preclude u-turn movement on eastbound to westbound Palmdale Boulevard. Widen the eastbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of one left-turn lane, three through lanes, and two right-turn lanes. Modify Trade Center Drive/Palmdale Boulevard intersection traffic signal to include westbound Palmdale Boulevard right-turn overlap, which will preclude u-turn movement on southbound to northbound Trade Center Drive.

- **5th Street West/Palmdale Boulevard** - Widen westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane. Modify signal phasing at the 5th Street West/Palmdale Boulevard intersection to include of protected left-turns for the eastbound and westbound approaches.

- **Southbound SR-14 Off-Ramp/Palmdale Boulevard** - Widen the eastbound Palmdale Boulevard approach from one through lane and one shared through/right-turn lane to consist of two through lanes and one right-turn lane.

- **Northbound SR-14 Off-Ramp/Palmdale Boulevard** - Widen the SR-14 northbound Off-Ramp from one left-turn lane and one right-turn lane to consist of two left-turn lanes and one right-turn lane.

- **Southbound SR-14 Ramps/Avenue S** - Restripe the SR-14 southbound Off-Ramp from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane and one shared left-turn/right-turn lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane and one through lane to consist of two left-turn lanes and two through lanes.

- **Northbound SR-14 Ramps/Avenue S** - Modify the eastbound approach from a permitted left-turn phasing to protected left-turn phasing.

Assuming implementation of the recommended improvements, the sixteen deficient study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2020 without project conditions.

The addition of project-generated trips at the CMP study intersections does not result in a significant impact according to the Los Angeles County CMP established thresholds of significance for forecast year 2006 with project conditions, with the exception of the following intersection:

- Sierra Highway/Palmdale Boulevard (p.m. peak hour only).

It should be noted that the City has a Capital Improvement Project (10-year CIP Program) to widen Tierra Subida between Palmdale Boulevard and Avenue S from two lanes to four lanes. Additionally, the City has a project in the 10-year CIP to widen Palmdale Boulevard from four lanes to six lanes between State Route 14 and 30th Street East. This report's recommendations to improve the Tierra Subida Avenue-5th Street and the Palmdale Boulevard-Sierra Highway intersections have already been planned and will be implemented within the next ten years. However, if these improvements are not made by 2006, when this project will be complete, than significant impacts may occur as described herein.

INTRODUCTION

This study analyzes the forecast traffic impacts associated with the proposed Palmdale Hospital project in the City of Palmdale, west of the State Route 14 (SR-14) freeway. The proposed project consists of 300,000 square feet of hospital space, 80 multi-family senior dwelling units, and 120,000 square feet of medical office building space. Access for the proposed project is planned at Palmdale Boulevard via Trade Center Drive, and at Tierra Subida Avenue (10th Street West) via Date Palm Drive. Exhibit 1 shows the regional project location. Exhibit 2 shows the location of the project site.

Study Area

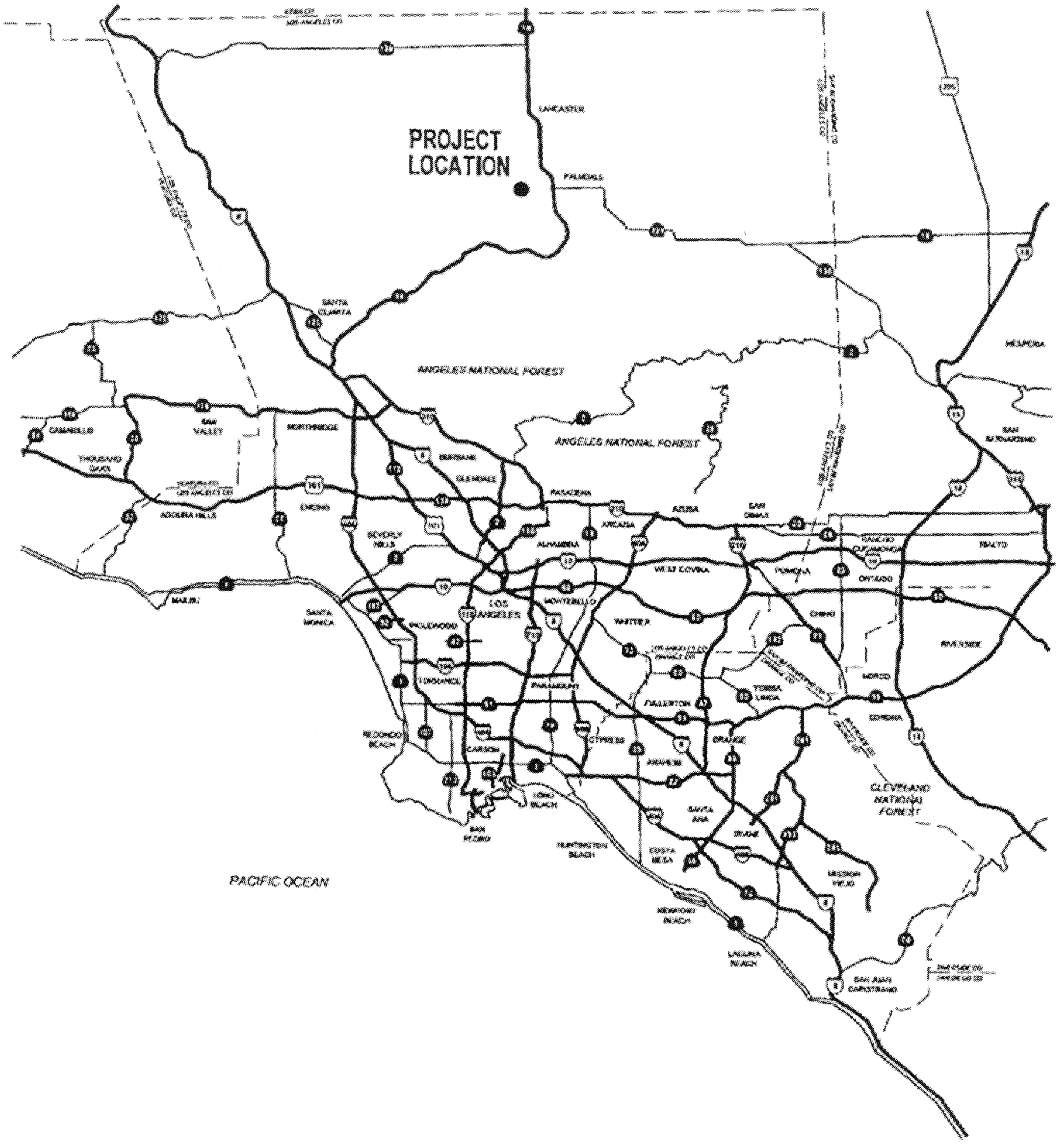
City of Palmdale staff identified the following twenty-four intersections for analysis in this study:

- 25th Street West/Elizabeth Lake Road (signalized);
- 10th Street West/SR-14 SB Off-Ramp (signalized);
- 10th Street West/AV Mall - K Mart Plaza (signalized);
- 10th Street West/Rancho Vista Boulevard (signalized);
- 10th Street West/Market Place Drive (signalized);
- 10th Street West/Beechdale Drive (signalized);
- 10th Street West/Technology Drive (signalized);
- 10th Street West/Elizabeth Lake Road (signalized);
- Tierra Subida Avenue/Date Palm Drive (one-way stop-controlled);
- Tierra Subida Avenue/Avenue Q-8 (one-way stop-controlled);
- Tierra Subida Avenue/5th Street West (one-way stop-controlled);
- Tierra Subida Avenue/Rayburn Road (one-way stop-controlled);
- Tierra Subida Avenue/City Ranch Road (two-way stop-controlled);
- Tierra Subida Avenue/Avenue S (four-way stop-controlled);
- Lowes Drive/Rancho Vista Boulevard (signalized);
- SR-14 NB Off-Ramp/Avenue P (signalized);
- Trade Center Drive/Palmdale Boulevard (one-way stop-controlled);
- 5th Street West/Palmdale Boulevard (signalized);
- SR-14 SB Off-Ramp/Palmdale Boulevard (signalized);
- SR-14 NB Off-Ramp/Palmdale Boulevard (signalized);
- SR-14 SB Ramps/Avenue S (signalized);
- SR-14 NB Ramps/Avenue S (signalized);
- Sierra Highway/Palmdale Boulevard (signalized); and
- 30th Street East/Palmdale Boulevard (signalized).

Exhibit 3 shows the location of the study intersections, which are analyzed for the following study scenarios:

- Existing Conditions;
- Forecast Year 2006 Without Project Conditions;
- Forecast Year 2006 With Project Conditions;
- Forecast Year 2020 Without Project Conditions; and
- Forecast Year 2020 With Project Conditions.

For the purposes of this analysis, the study area is divided into two areas for illustration of peak hour intersection volumes and intersection geometry as shown in Exhibit 3.



RBF

Regional Project Location

Exhibit 1

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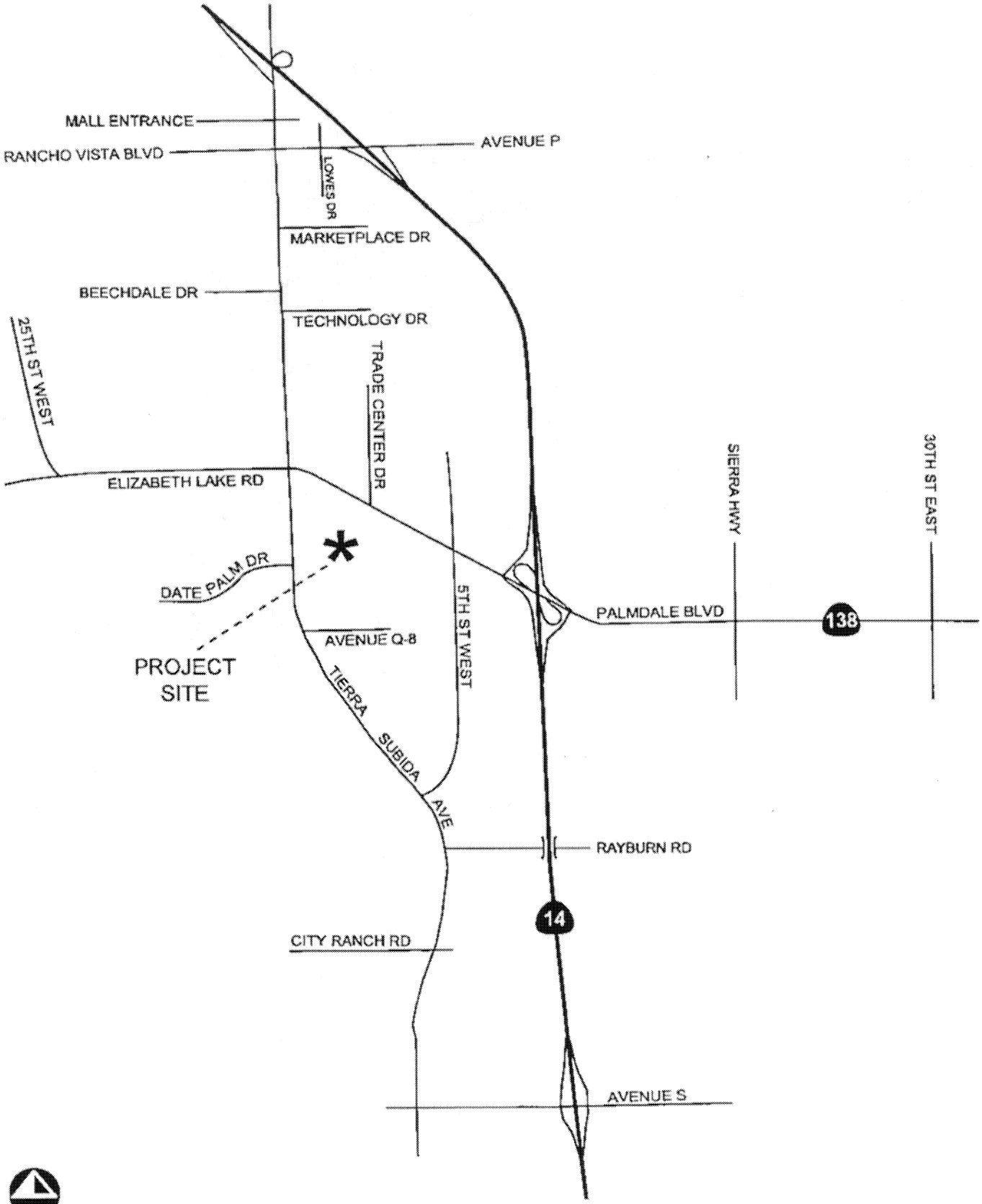
MAY/2003



Not to Scale

RBF

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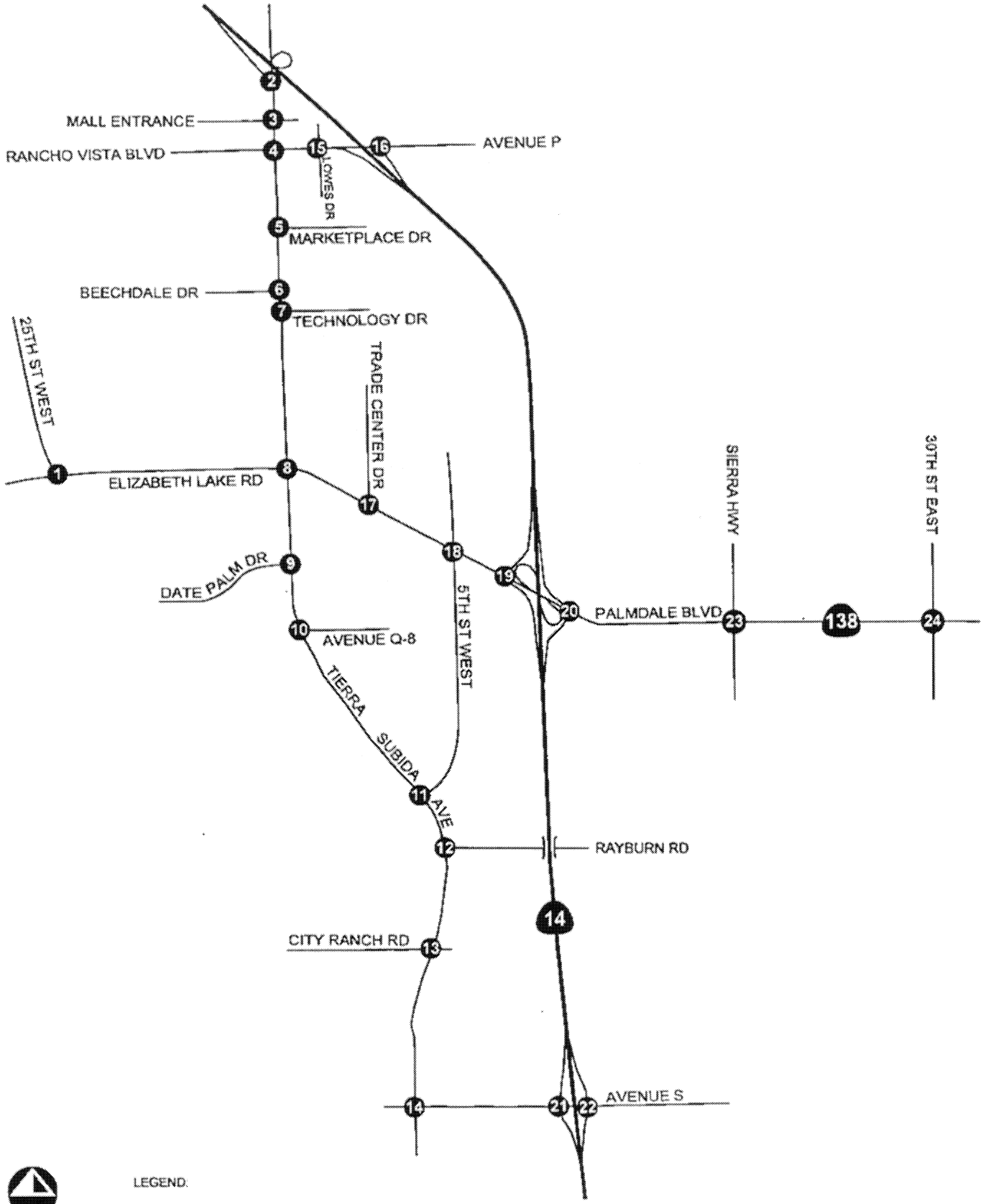
Project Site Location

Exhibit 2



Study Intersection Locations

Exhibit 3

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Analysis Methodology

Level of service (LOS) is commonly used as a qualitative description of intersection operation and is based on the type of traffic control and experienced delay at the intersection. The Highway Capacity Manual (HCM) analysis methodology for *Signalized Intersections* and *Unsignalized Intersections* was utilized to determine the operating LOS of the study intersections.

The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on corresponding stopped delay per vehicle ranges for signalized and unsignalized intersections shown in Table 1. The City of Palmdale target for peak hour intersection operation is LOS D or better.

Table 1
LOS & Delay Ranges

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	**Unsignalized Intersections**
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board, *Highway Capacity Manual*, Special Report 209, Third Edition (Washington D.C., 1997).

Thresholds of Significance

The City of Palmdale has established thresholds of significance, based on the Intersection Capacity Utilization (ICU) analysis method, to determine whether the addition of project-generated trips results in a significant impact at the signalized study intersections. The ICU analysis methodology describes the operation of an intersection based on corresponding Volume/Capacity (V/C) ratios with 1.00 representing severely congested conditions.

To determine whether the addition of project-generated trips results in a significant impact at a study intersection, the City of Palmdale utilizes the following threshold of significance:

- A significant project impact occurs when a proposed project increases traffic demand at a study intersection by 2-percent of capacity (V/C ≥ 0.02), causing or worsening LOS F (V/C > 1.00).

EXISTING CONDITIONS

The characteristics of the roadway system in the vicinity of the project site are described below:

SR-14 provides regional access for the project site as a five-lane freeway facility with two northbound lanes and three southbound lanes. There are four interchanges along SR-14 within the study area.

10th Street West is a four- to six-lane roadway, oriented in a north-south direction. South of Palmdale Boulevard, 10th Street West changes name to Tierra Subida Avenue.

Tierra Subida Avenue is a two- to four-lane roadway, oriented in a north-south direction. North of Palmdale Boulevard, Tierra Subida Avenue changes name to 10th Street West. Adjacent to the project site, Tierra Subida Avenue is a three-lane divided roadway, consisting of one northbound lane, two southbound lanes, and a continuous left-turn lane.

Palmdale Boulevard is a four- to six-lane roadway, oriented in an east-west direction. West of 10th Street West, Palmdale Boulevard changes name to Elizabeth Lake Road.

Elizabeth Lake Road is a two- to four-lane roadway, oriented in an east-west direction. East of 10th Street West, Elizabeth Lake Road changes name to Palmdale Boulevard.

AV Mall - K Mart Plaza Road is a five-lane divided roadway, oriented in an east-west direction that provides access to commercial sites located on either side of 10th Street West. AV Mall consists of two westbound lanes and three eastbound lanes. K Mart Plaza Road consists of three westbound lanes and two eastbound lanes.

Rancho Vista Road is a six-lane divided roadway with a raised median, oriented in an east-west direction. East of 10th Street West, Rancho Vista Road changes name to Avenue P.

Avenue P is a six-lane divided roadway with a raised median, oriented in an east-west direction. West of 10th Street West, Avenue P changes name to Rancho Vista Road.

Market Place Drive is a five-lane divided roadway with a raised median, oriented in an east-west direction. Marketplace Drive consists of three westbound lanes and two eastbound lanes.

Beechdale Drive is a two-lane undivided roadway, oriented in an east-west direction.

Technology Drive is a four-lane divided roadway with a continuous left-turn lane, oriented in an east-west direction.

Date Palm Drive is a two-lane undivided roadway, oriented in an east-west direction.

Avenue Q-8 is a two-lane undivided roadway, oriented in an east-west direction.

Rayburn Road is a two-lane undivided roadway, oriented in an east-west direction.

City Ranch Road is a two-lane undivided roadway, oriented in an east-west direction. East of Tierra Subida Avenue, City Ranch Road provides access to a City-park.

Avenue S is a two-lane undivided roadway, oriented in an east-west direction. Avenue S widens to a four-lane divided roadway with raised median in the vicinity of the SR-14/Avenue S Ramps.

Lowes Drive is a north-south oriented roadway that provides access to commercial sites located on either side of Avenue P. North of Avenue P, Lowes Drive is a two-lane undivided roadway. South of Avenue P, Lowes Drive is a five-lane divided roadway with a raised median consisting of three northbound lanes, and two southbound lanes.

25th Street West is a three-lane divided roadway with a continuous left-turn lane, oriented in an east-west direction. 25th Street West consists of one northbound lane, and two southbound lanes.

Trade Center Drive is a two-lane divided roadway with a continuous left-turn lane, oriented in a north-south direction.

5th Street West is a four-lane divided roadway with a continuous left-turn lane, oriented in a north-south direction.

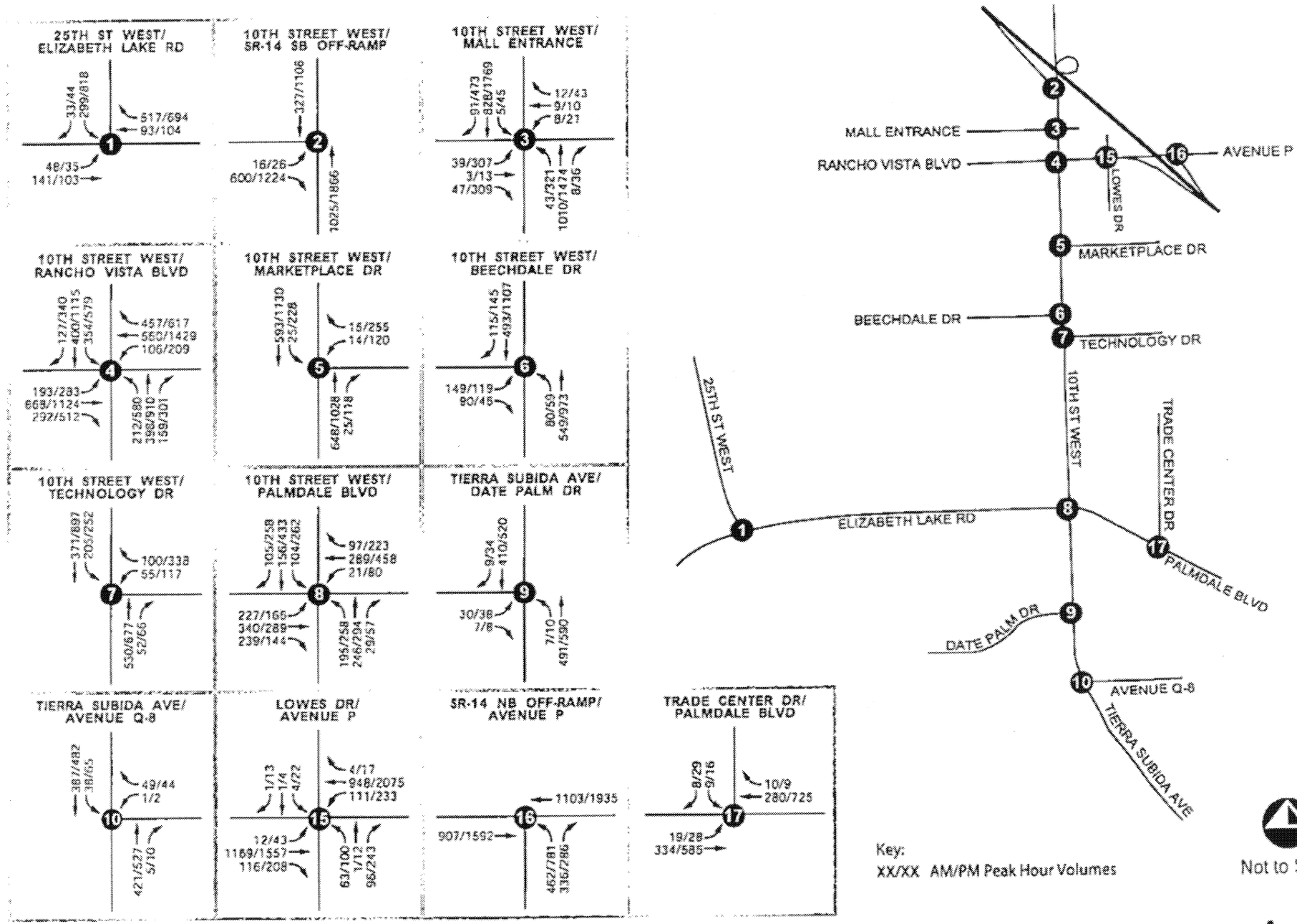
Existing Conditions Peak Hour Level of Service

To determine the existing operation of the study intersections, intersection movement counts were taken at the study intersections during typical weekday a.m. and p.m. peak hour periods in November 2002; detailed traffic count data is included in Appendix A.

Exhibits 4 and 5 show existing a.m. and p.m. peak hour study intersection movement volumes at the study intersections; Exhibits 6 and 7 show existing conditions study intersection geometry.

Table 2 summarizes the existing a.m. and p.m. peak hour delay and corresponding LOS of the study intersections; detailed HCM analysis sheets are provided in Appendix B.

As shown in Table 2, all the study intersections are currently operating at an acceptable LOS (LOS D or better) according to City of Palmdale performance criteria.



Area 1

Existing Conditions AM/PM Peak Hour Intersection Volumes

Exhibit 4

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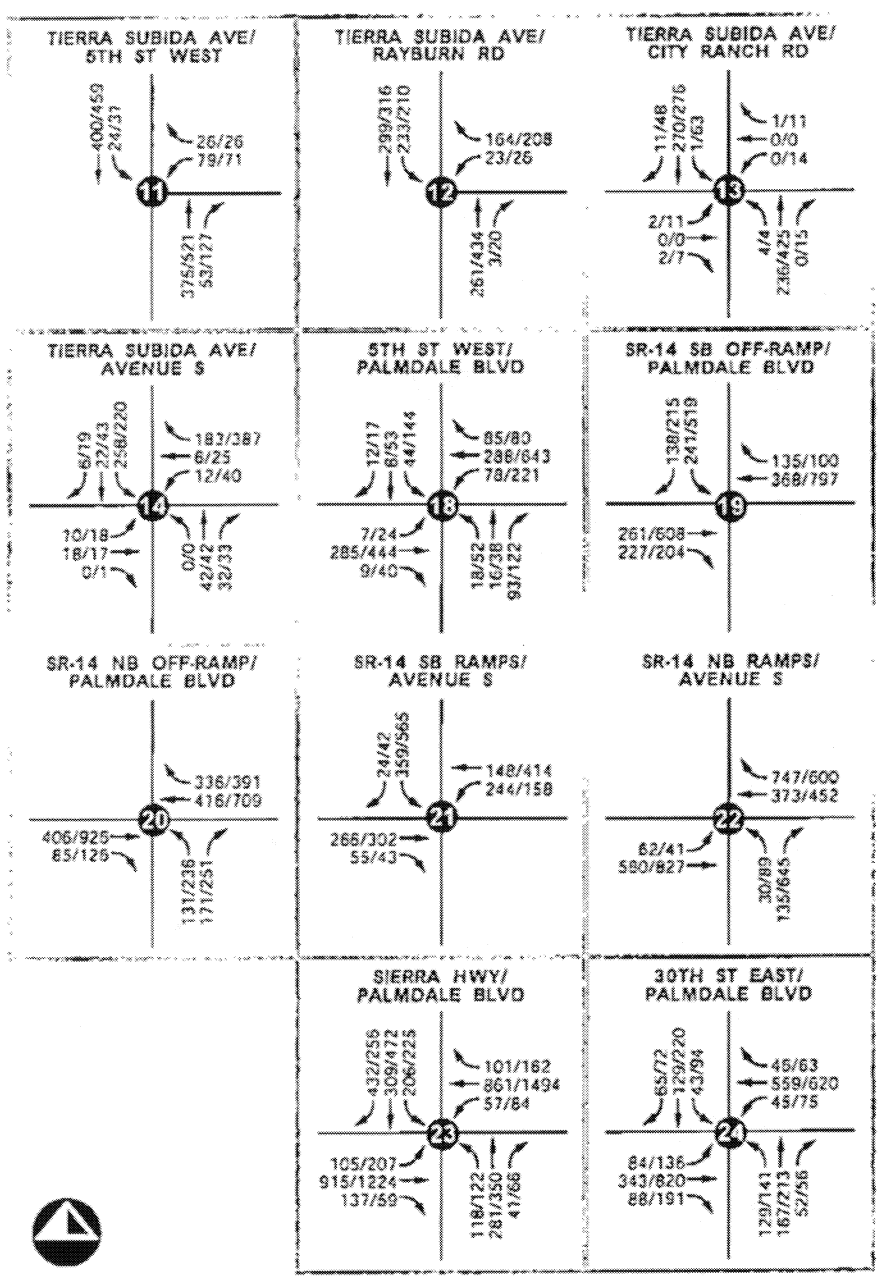

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Area 2

Existing Conditions AM/PM Peak Hour Intersection Volumes

Exhibit 5

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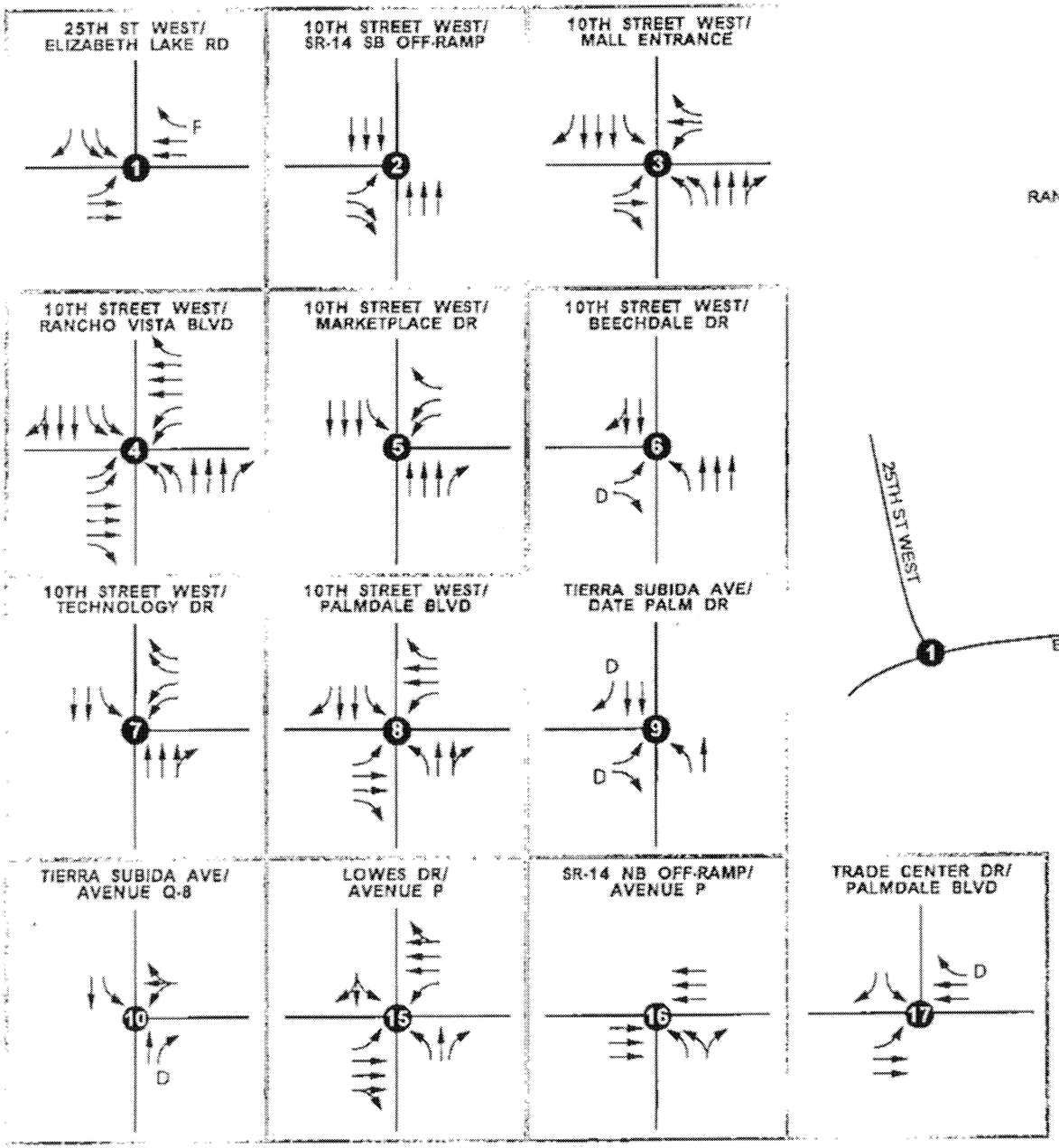

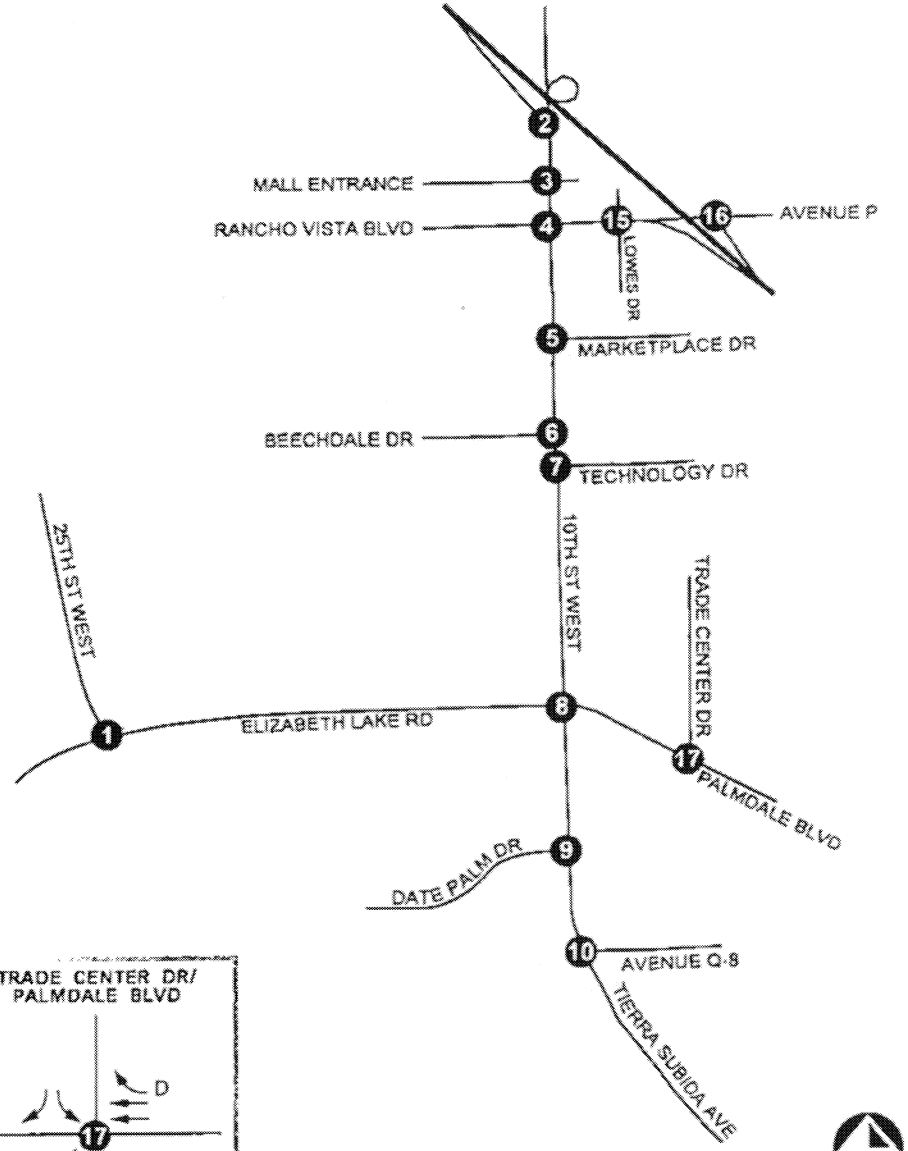

Key:
F FREE RIGHT TURN LANE
D DEFACTO RIGHT TURN LANE

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Area 1
Existing Study Intersection Geometry

Exhibit 6

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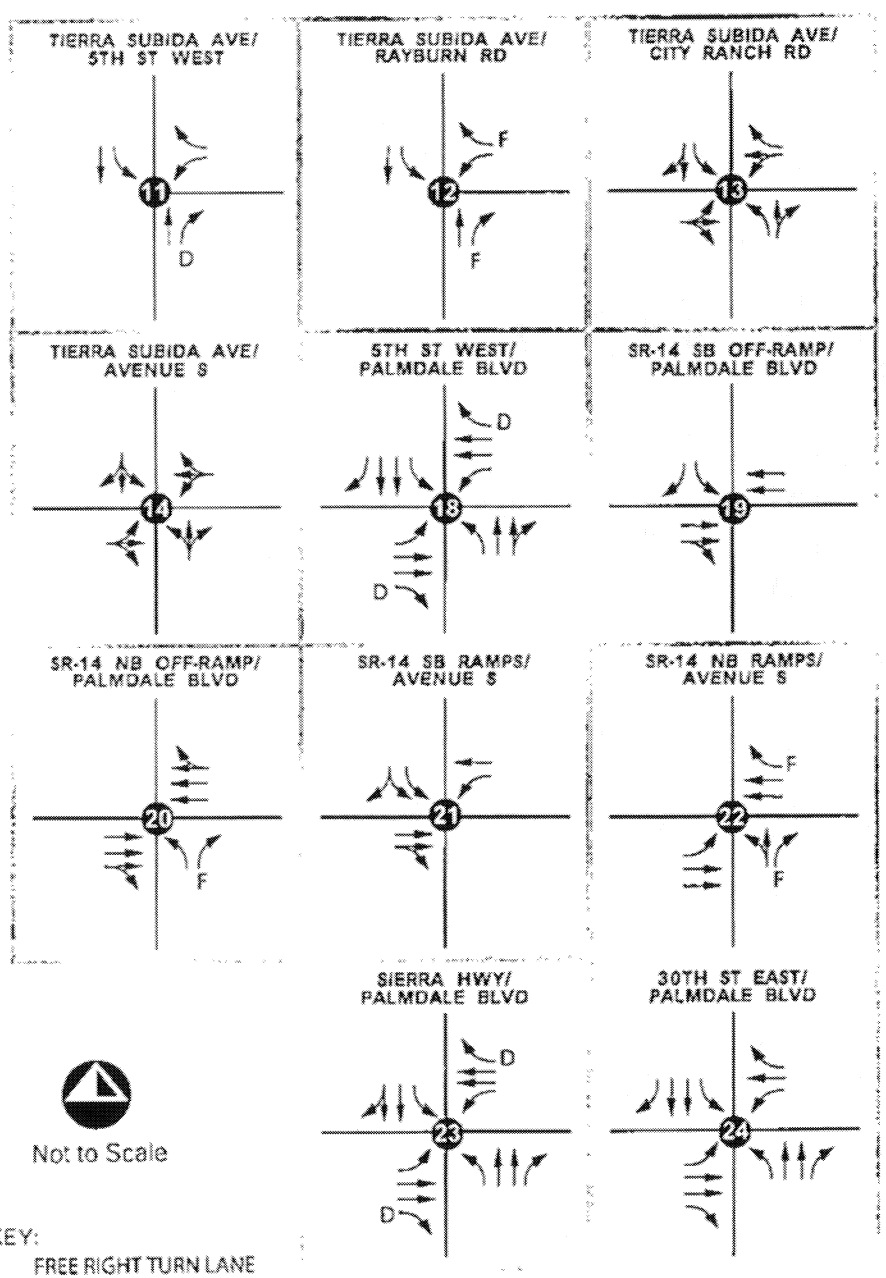

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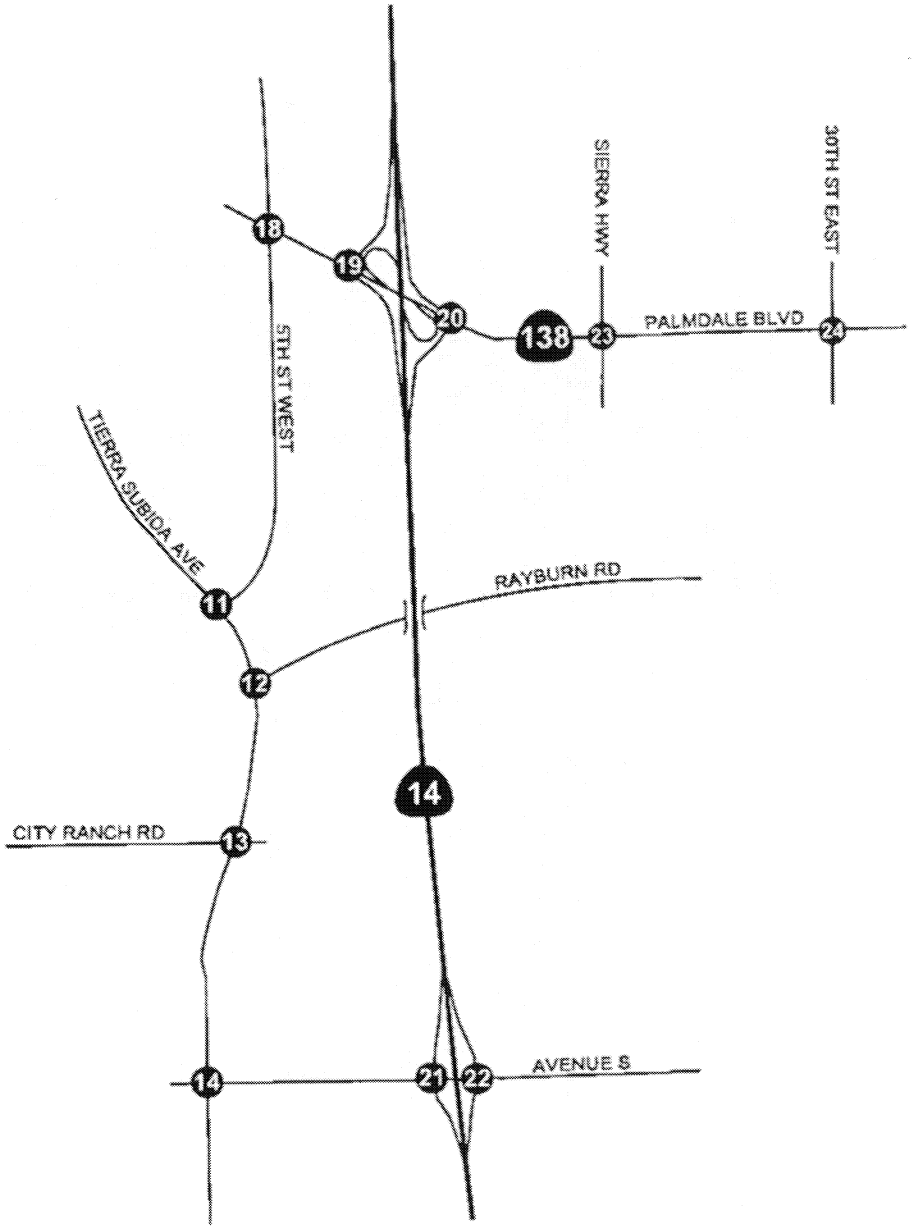

Area 2
Existing Study Intersection Geometry
Exhibit 7

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Table 2

Existing Peak Hour LOS

Study Intersection	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS
25th St West/Elizabeth Lake Rd	18.8 - B	12.2 - B
10th St West/SB SR-14 Off-Ramp	19.0 - B	28.5 - C
10th St West/AV Mall-K Mart Plaza	6.6 - A	23.1 - C
10th St West/Rancho Vista Blvd	26.4 - C	37.8 - D
10th St West/Market Place Dr	4.1 - A	20.3 - C
10th St West/Beechdale Dr	15.5 - B	8.8 - A
10th St West/Technology Dr	14.8 - B	14.1 - B
10th St West/Elizabeth Lake Rd	29.3 - C	33.7 - C
Tierra Subida Ave/Date Palm Dr	16.5 - C	21.6 - C
Tierra Subida Ave/Ave Q-8	11.3 - B	12.6 - B
Tierra Subida Ave/5th St West	16.7 - C	21.4 - C
Tierra Subida Ave/Rayburn Rd	22.7 - C	27.7 - D
Tierra Subida Ave/City Ranch Rd	11.2 - B	16.0 - C
Tierra Subida Ave/Ave S	9.3 - A	11.8 - B
Lowes Dr/Rancho Vista Blvd	9.8 - A	17.6 - B
NB SR-14 Off-Ramp/Ave P	22.9 - C	25.2 - C
Trade Center Dr/Palmdale Blvd	10.7 - B	15.3 - C
5th St West/Palmdale Blvd	14.1 - B	13.4 - B
SB SR-14 Off-Ramp/Palmdale Blvd	18.0 - B	21.2 - C
NB SR-14 Off-Ramp/Palmdale Blvd	15.5 - B	14.9 - B
SB SR-14 Ramps/Ave S	26.7 - C	26.2 - C
NB SR-14 Ramps/Ave S	3.2 - A	6.3 - A
Sierra Hwy/Palmdale Blvd	31.0 - C	36.6 - D
30th St East/Palmdale Blvd	21.1 - C	21.7 - C

FORECAST YEAR 2006 WITHOUT PROJECT CONDITIONS

Forecast year 2006 traffic volumes (without proposed project) were derived by applying an annual growth rate factor of four-percent to existing traffic volumes to account for cumulative traffic growth as directed by City of Palmdale staff.

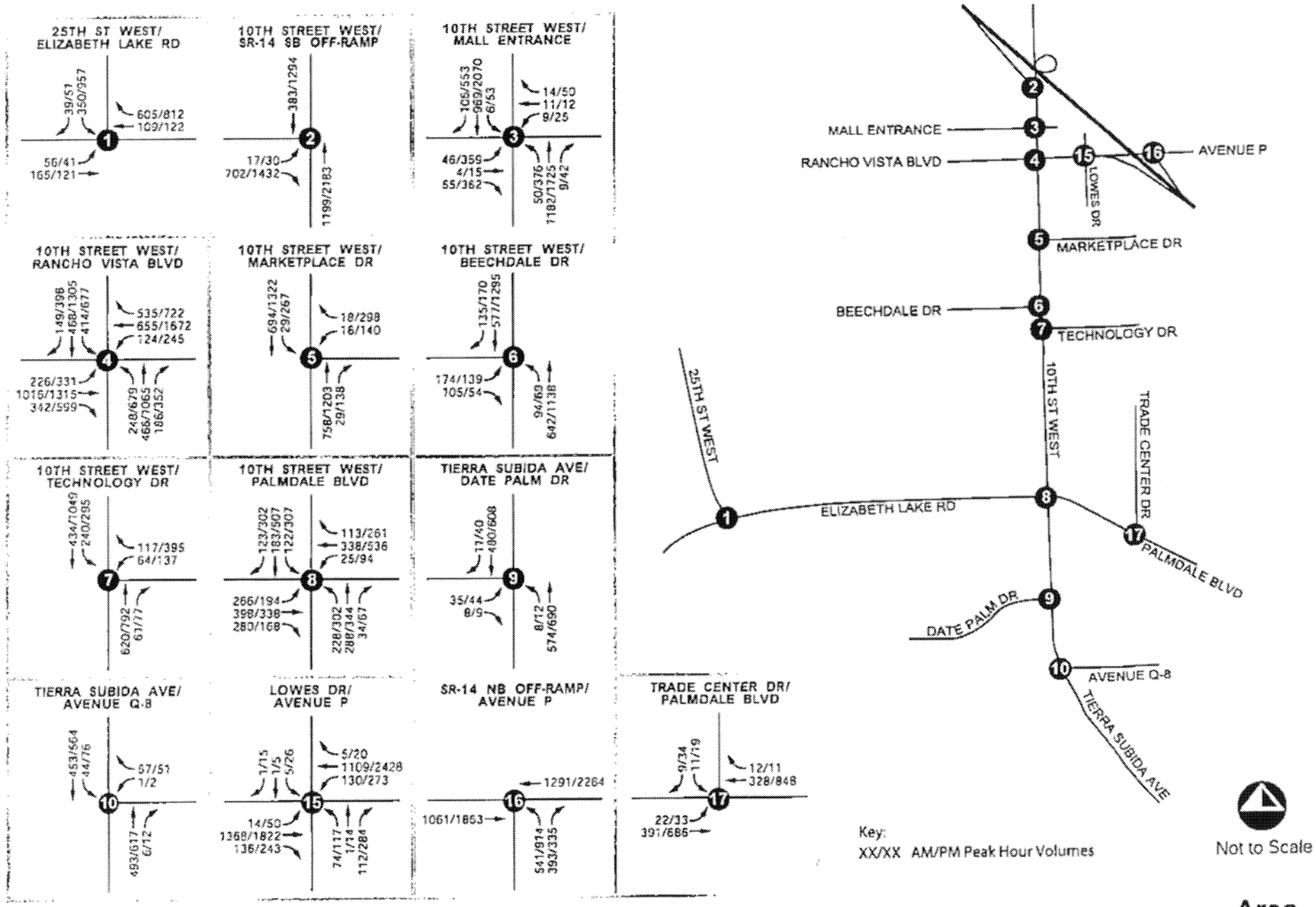
Forecast Year 2006 Without Project Conditions Peak Hour Level of Service

Exhibits 8 and 9 shows forecast year 2006 without project conditions peak hour intersection traffic volumes. Table 3 summarizes the a.m. and p.m. peak hour delay and corresponding LOS of the study intersections for forecast year 2006 without project conditions; detailed HCM analysis sheets are provided in Appendix B.

Table 3
Forecast Year 2006 Without Project Peak Hour LOS

Study Intersection	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS
25th St West/Elizabeth Lake Rd	18.9 - B	12.5 - B
10th St West/SB SR-14 Off-Ramp	19.8 - B	47.7 - D
10th St West/AV Mall-K Mart Plaza	6.8 - A	26.8 - C
10th St West/Rancho Vista Blvd	**27.3 - C**	**56.1 - E**
10th St West/Market Place Dr	4.2 - A	21.5 - C
10th St West/Beechdale Dr	15.9 - B	9.6 - A
10th St West/Technology Dr	15.1 - B	14.5 - B
10th St West/Elizabeth Lake Rd	29.9 - C	35.7 - D
Tierra Subida Ave/Date Palm Dr	19.7 - C	28.9 - D
Tierra Subida Ave/Ave Q-8	12.1 - B	14.0 - B
Tierra Subida Ave/5th St West	20.8 - C	30.2 - D
Tierra Subida Ave/Rayburn Rd	**29.8 - D**	**39.5 - E**
Tierra Subida Ave/City Ranch Rd	12.0 - B	19.1 - C
Tierra Subida Ave/Ave S	10.2 - B	14.8 - B
Lowes Dr/Rancho Vista Blvd	10.3 - B	20.5 - C
NB SR-14 Off-Ramp/Ave P	24.4 - C	34.2 - C
Trade Center Dr/Palmdale Blvd.	11.3 - B	18.2 - C
5th St West/Palmdale Blvd	14.3 - B	13.7 - B
SB SR-14 Off-Ramp/Palmdale Blvd	18.3 - B	22.7 - C
NB SR-14 Off-Ramp/Palmdale Blvd	15.7 - B	15.4 - B
SB SR-14 Ramps/Ave S	27.9 - C	28.4 - C
NB SR-14 Ramps/Ave S	3.2 - A	6.5 - A
Sierra Hwy/Palmdale Blvd	**34.9 - C**	**57.3 - E**
30th St East/Palmdale Blvd	22.1 - C	23.6 - C

Note: Deficient intersection operation shown in bold



Area 1

Forecast Year 2006 Without Project AM/PM Peak Hour Intersection Volumes

Exhibit 8

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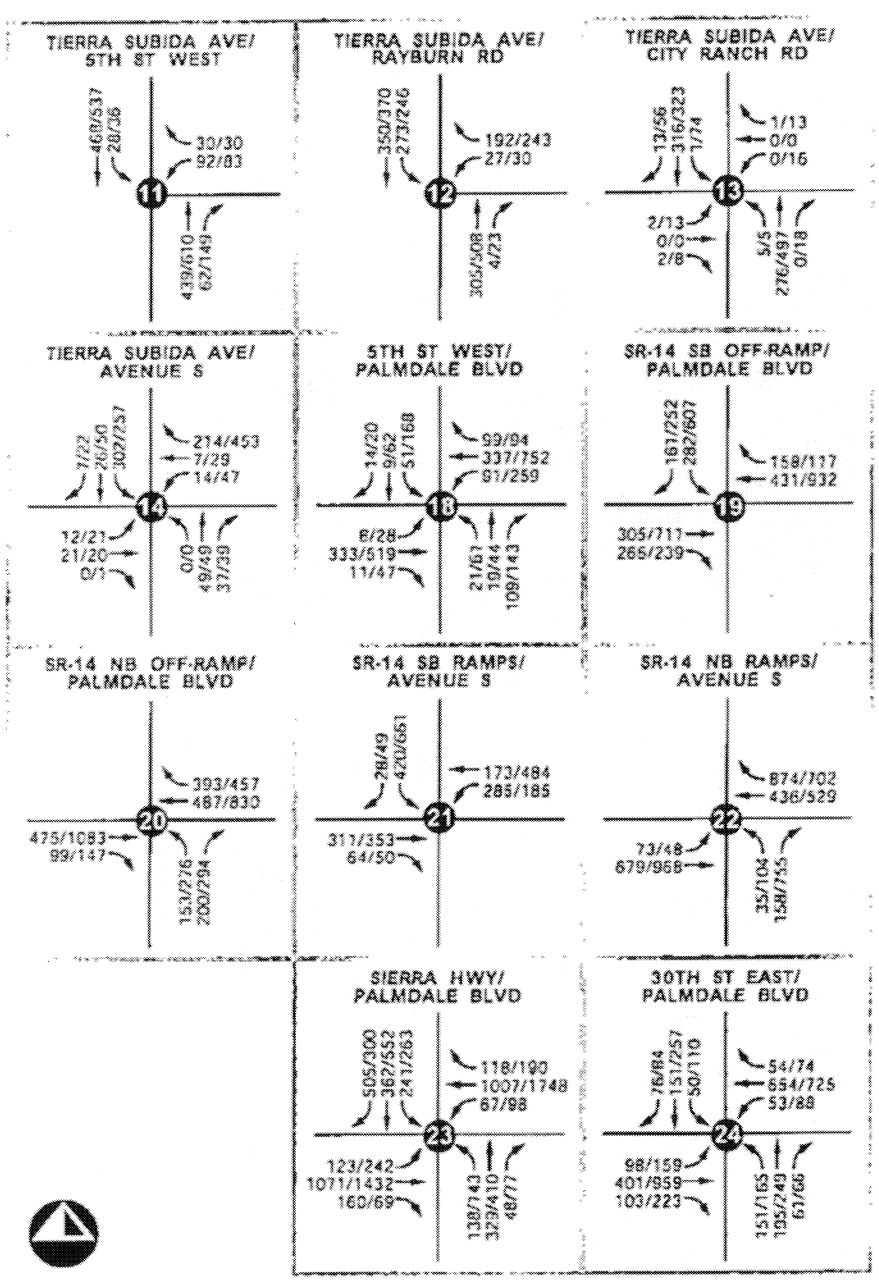

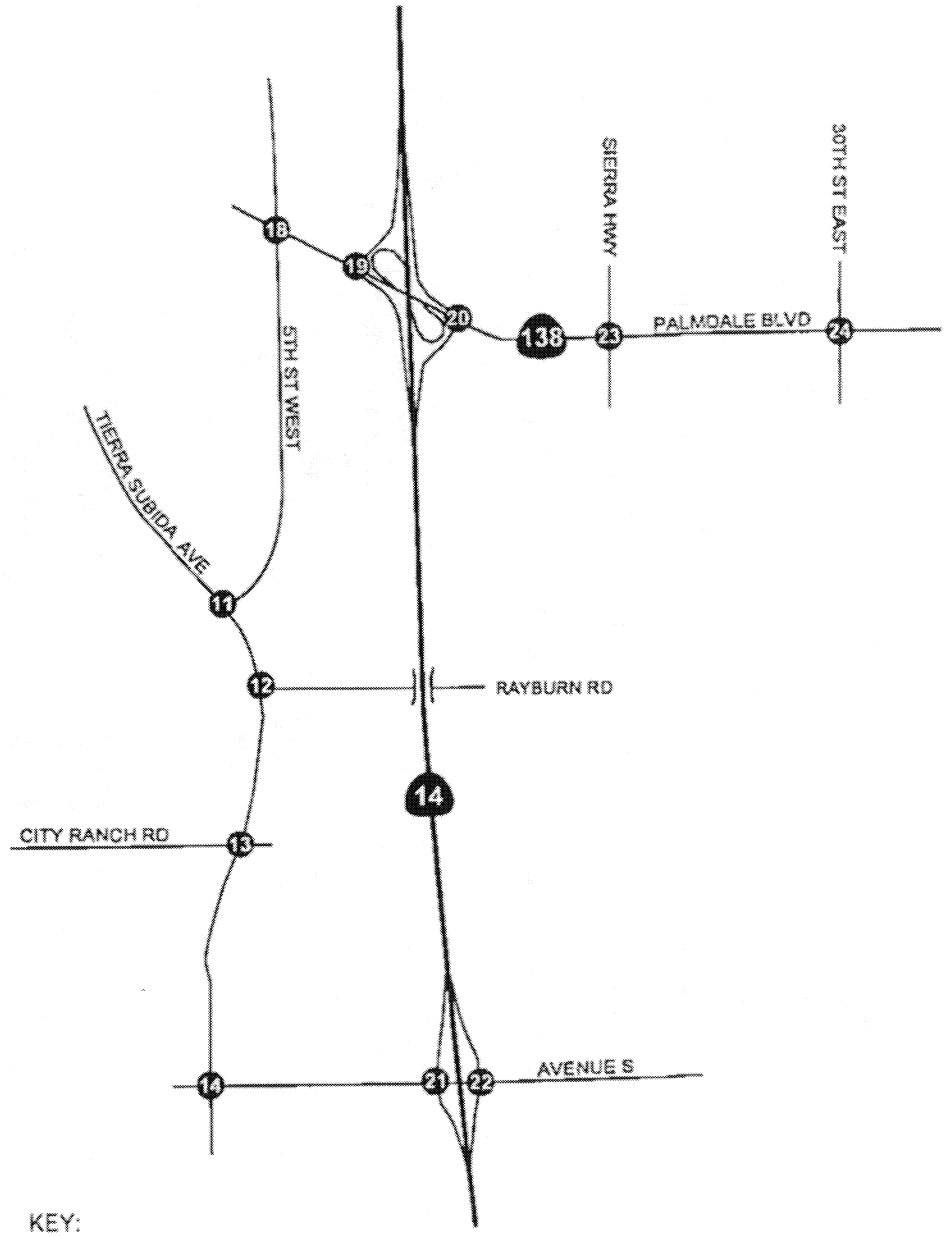

KEY:
XX/XX AM/PM Peak Hour Volumes

Not to Scale

Area 2

Forecast Year 2006 Without Project AM/PM Peak Hour Intersection Volumes

Exhibit 9

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As shown in Table 3, the study intersections are forecast to operate at an acceptable LOS (LOS D or better) according to City of Palmdale performance criteria for forecast year 2006 without project conditions, with the exception of the following three intersections:

- 10th Street West/Rancho Vista Boulevard (p.m. peak hour only);
- Tierra Subida Avenue/Rayburn Road (p.m. peak hour only); and
- Sierra Highway/Palmdale Boulevard (p.m. peak hour only).

Forecast Year 2006 Without Project Conditions Signal Warrant Analysis

A signal warrant analysis was prepared for the Tierra Subida Avenue/Rayburn Road intersection utilizing Caltrans *Traffic Manual* analysis methodology to determine whether forecast year 2006 without project traffic volumes at the deficiently operating intersection warrants signalization.

Table 4 summarizes the results of the signal warrant analysis for the Tierra Subida Avenue/Rayburn Road intersection for forecast year 2006 without project conditions; detailed traffic signal warrant calculation sheets are contained in Appendix C.

Table 4
Forecast Year 2006 Without Project Conditions
Tierra Subida Avenue/Rayburn Road Signal Warrant Analysis

Warrant Type	Warrant Required Tierra Subida Ave Daily Volume (2 directions)	Forecast Tierra Subida Ave Daily Volume (2 directions)	Tierra Subida Ave Warrant Satisfied? (% Satisfied)	Warrant Required Rayburn Rd Daily Volume (1 direction)	Forecast Rayburn Rd Daily Volume (1 direction)	Rayburn Rd Warrant Satisfied? (% Satisfied)	Signalization of Intersection Warranted?
Minimum Vehicular	6,720	13,670	Yes (100%)	1,680	2,730	Yes (100%)	
Interruption of Continuous Traffic	10,080	13,670	Yes (100%)	850	2,730	Yes (100%)	YES

As seen in Table 4, both the *Minimum Vehicular Traffic Signal Warrant* and the *Interruption of Continuous Traffic Signal Warrant* are satisfied for the Tierra Subida Avenue/Rayburn Road intersection for forecast year 2006 without project conditions.

Forecast Year 2006 Without Project Conditions Recommended Improvements

To eliminate the forecast year 2006 without project conditions deficiencies at the three study intersections, the following improvements are recommended:

- **10th Street West/Rancho Vista Boulevard** - Widen southbound 10th Street West approach from two left-turn lanes, two through lanes, and one shared through/right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane.

- **Tierra Subida Avenue/Rayburn Road** - Signalize intersection.

- **Sierra Highway/Palmdale Boulevard** - Restripe westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of one left-turn lane, two through lanes, and one shared through/right-turn lane.

Assuming the recommended improvements, Table 5 shows the improved LOS of the three study intersections for forecast year 2006 without project conditions; detailed HCM analysis sheets are provided in Appendix B.

Table 5
Forecast Improved Year 2006 Without Project Peak Hour LOS

Study Intersection	Non-Improved		Improved	
	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS
10th St West/Rancho Vista Blvd	27.3 - C	**56.1 - E**	27.2 - C	44.7 - D
Tierra Subida Ave/Rayburn Rd	29.8 - D	**39.5 - E**	13.7 - B	13.7 - B
Sierra Hwy/Palmdale Blvd	34.9 - C	**57.3 - E**	33.8 - C	41.8 - D

Note: Deficient intersection operation shown in bold.

As shown in Table 5, assuming implementation of the recommended improvements, the three deficient study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2006 without project conditions.

It should be noted that the City has a Capital Improvement Project (10-year CIP Program) to widen Tierra Subida between Palmdale Boulevard and Avenue S from two lanes to four lanes. Additionally, the City has a project in the 10-year CIP to widen Palmdale Boulevard from four lanes to six lanes between State Route 14 and 30th Street East. This report's recommendations to improve the Tierra Subida Avenue-5th Street and the Palmdale Boulevard-Sierra Highway intersections have already been planned and will be implemented within the next ten years. However, if these improvements are not made by 2006, when this project will be complete, than significant impacts may occur as described herein.

PROPOSED PROJECT

The proposed Palmdale Hospital project consists of 300,000 square feet of hospital space, 80 multi-family senior dwelling units, and 120,000 square feet of medical office building space. The project is located west of the State Route 14 (SR-14) freeway, and southeast of the intersection of Palmdale Boulevard and Tierra Subida Avenue. Access for the proposed project is planned at Palmdale Boulevard via Trade Center Drive, and at Tierra Subida Avenue (10th Street West) via Date Palm Drive. Exhibit 10 shows the project site plan.

As part of the proposed Palmdale Hospital project, the following project-related circulation improvements are planned:

- The Tierra Subida Avenue/Date Palm Drive intersection and the Trade Center Drive/Palmdale Boulevard intersection will be signalized;
- Palmdale Boulevard will be widened along the project site frontage to include an eastbound right-turn lane at the Trade Center Drive/Palmdale Boulevard intersection. The existing raised median on Palmdale Boulevard will be modified to provide a westbound left-turn lane at the Trade Center Drive/Palmdale Boulevard intersection;
- The project site driveway on Palmdale Boulevard will be constructed to provide one shared left-turn/through lane, and one right-turn lane;
- Tierra Subida Avenue will be widened along the project site frontage to include a northbound right-turn lane at the Tierra Subida Avenue/Date Palm Drive intersection. The existing continuous left-turn lane on Tierra Subida Avenue will be re-striped to provide a southbound left-turn lane at the Tierra Subida Avenue/Date Palm Drive intersection; and
- The project site driveway on Tierra Subida Avenue will be constructed to provide one left-turn lane, and one shared through/right-turn lane.

Project Trip Generation

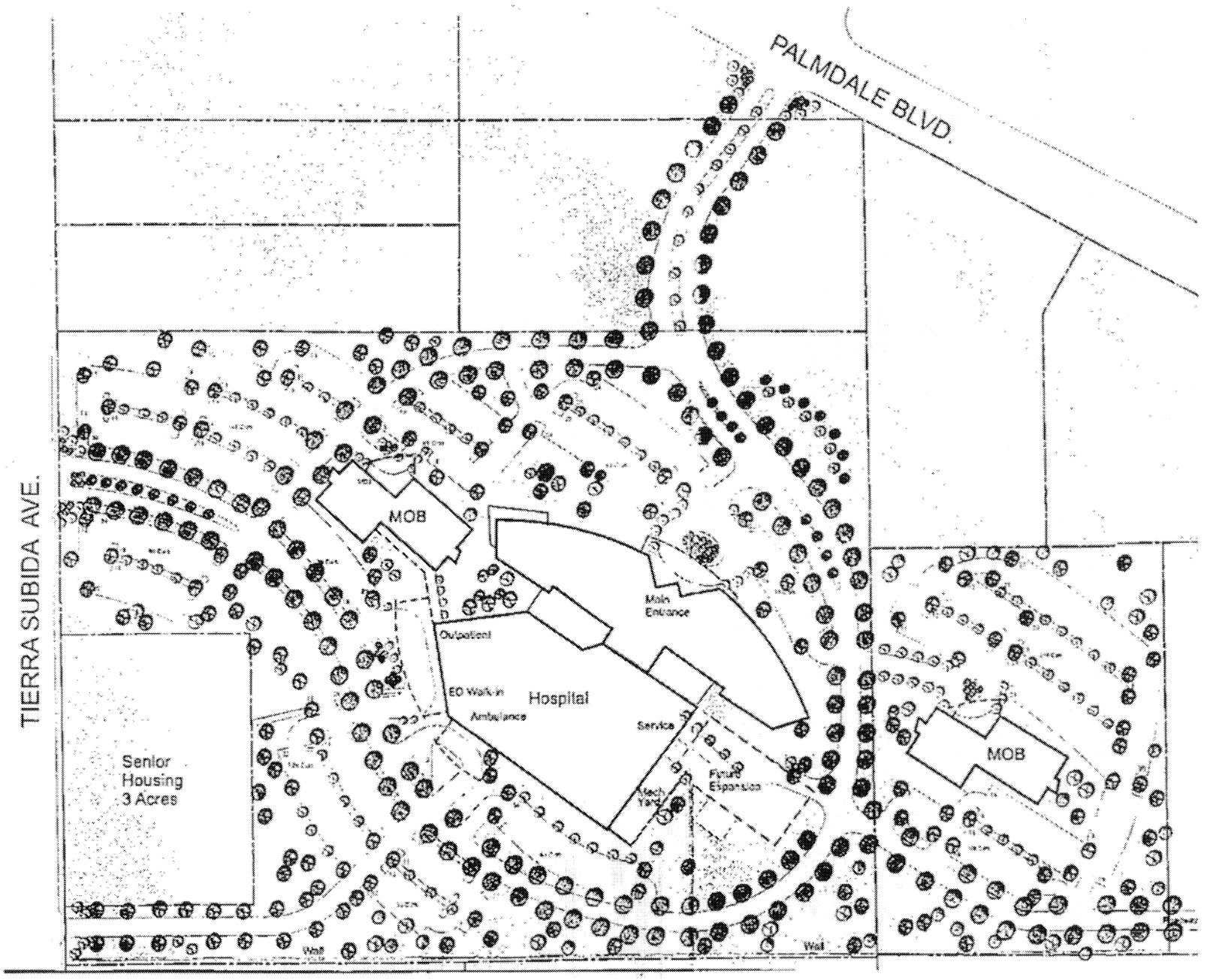
Table 6 summarizes *Institute of Transportation Engineers (ITE)* trip generation rates used to calculate the number of trips forecast to be generated by the proposed project.

Table 7 summarizes the trips forecast to be generated by the proposed project utilizing the trip generation rates shown in Table 6.

Table 6
Proposed Project Trip Rates

Land Use (ITE Code)	Rates	AM Peak Hour Rates			PM Peak Hour Rates			Daily Trip Rate
		In	Out	Total	In	Out	Total	
Hospital (610)	tsf	0.83	0.37	1.20	0.50	0.97	1.47	16.78
Elderly Housing-Attached (253)	du	0.04	0.03	0.07	0.06	0.04	0.10	3.48
Medical Office Building (720)	tsf	1.94	0.49	2.43	0.99	2.67	3.66	36.13

Source: *1997 ITE Trip Generation Manual, 6th Edition*



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Project Site Plan

Exhibit 10

Table 7
Forecast Project Trip Generation

Land Use	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
	In	Out	Total	In	Out	Total	
300 tsf Hospital	248	111	359	150	292	442	5,034
80 du Elderly Housing-Attached	3	2	5	5	3	8	278
120 tsf Medical Office Building	233	59	292	119	320	439	4,336
Total	**484**	**172**	**656**	**274**	**615**	**889**	**9,648**

As shown in Table 7, the proposed project is forecast to generate approximately 9,648 daily trips, which includes approximately 656 a.m. peak hour trips and approximately 889 p.m. peak hour trips.

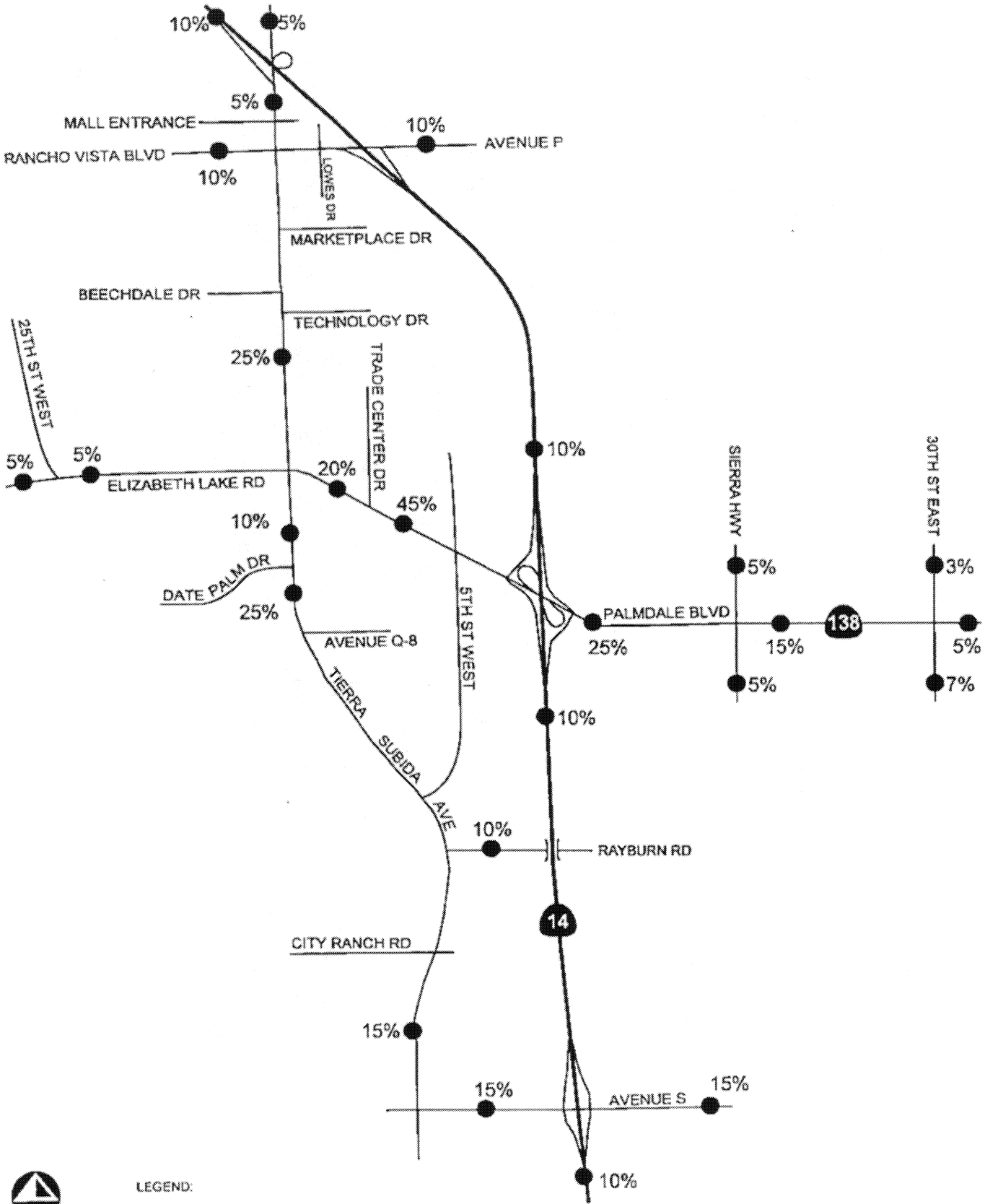
It should be noted that this analysis assumes a conservative trip generation analysis by not factoring in any onsite trip capture discounts to account for any relation between trips generated by the onsite compatible land uses. For example, as a worst-case scenario, this analysis assumes none of the medical office generated trips are related to either the hospital or senior dwelling units.

Project Trip Distribution

Exhibit 11 shows the forecast trip percent distribution of project-generated trips approved by City staff for use in this analysis.

Project Trip Assignment

Exhibits 12 and 13 show the corresponding assignment of project-generated peak hour trips assuming the trip percent distribution shown in Exhibit 11.



Forecast Proposed Project Trip Percent Distribution

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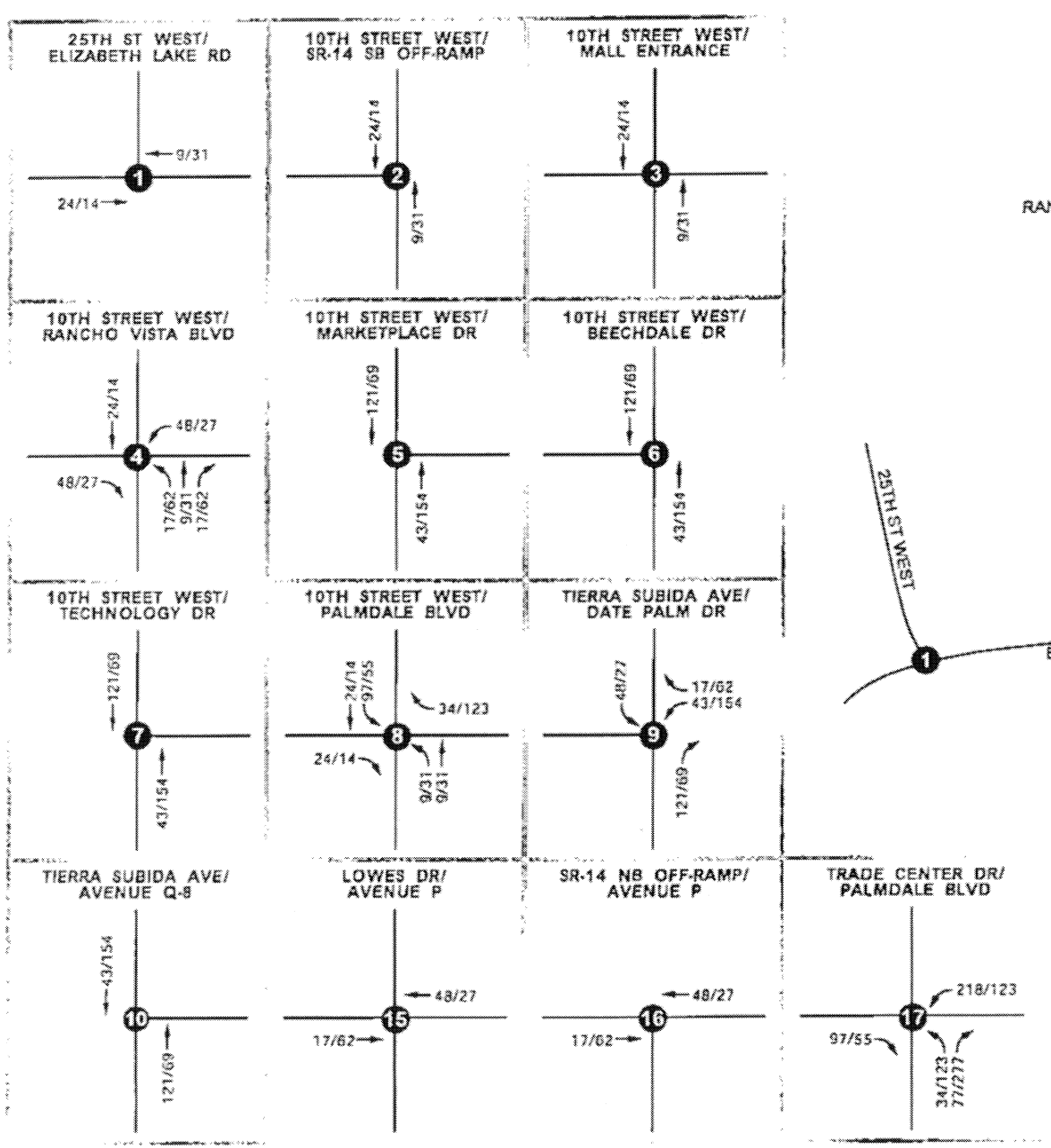
Exhibit 11



Area 1

Forecast Project-Generated AM/PM Peak Hour Trip Assignment

Exhibit 12

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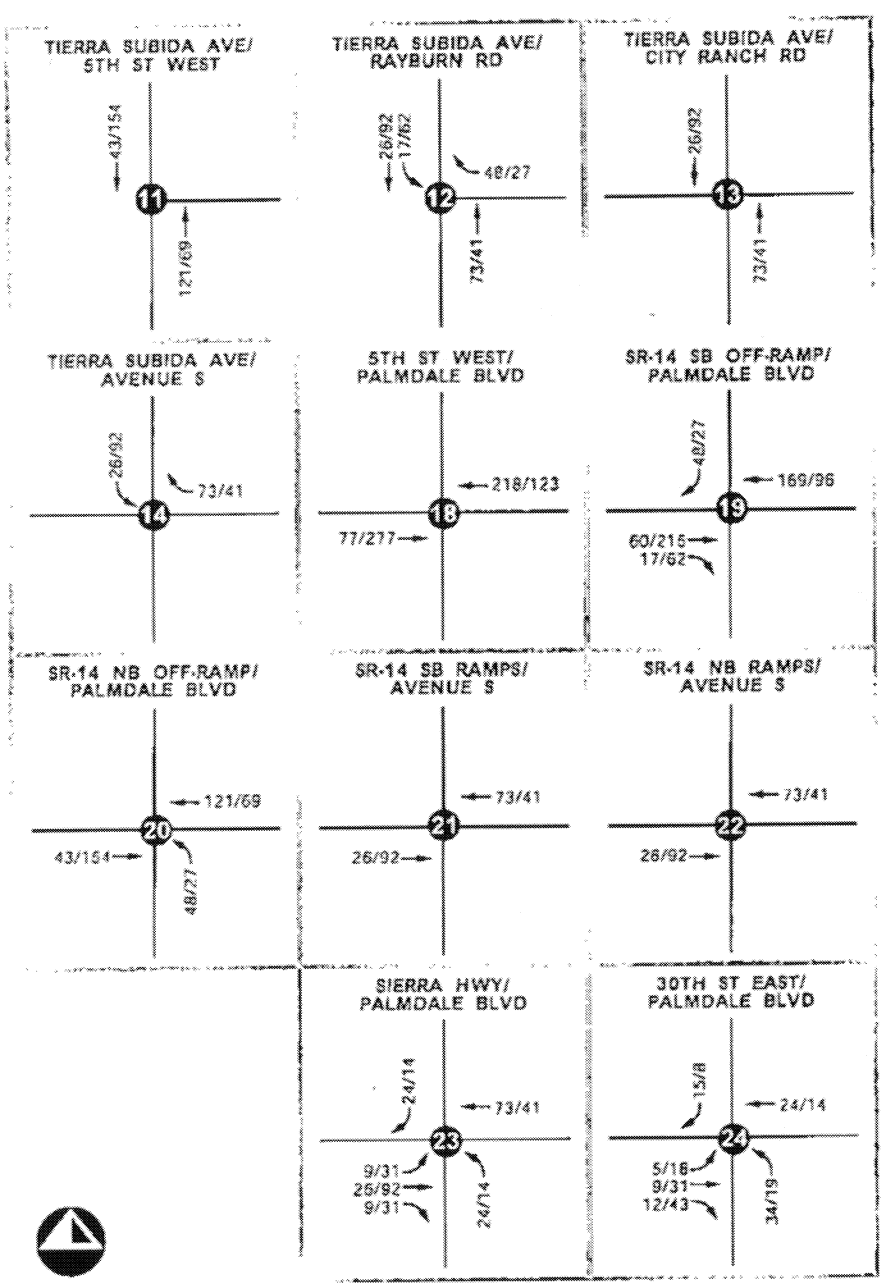

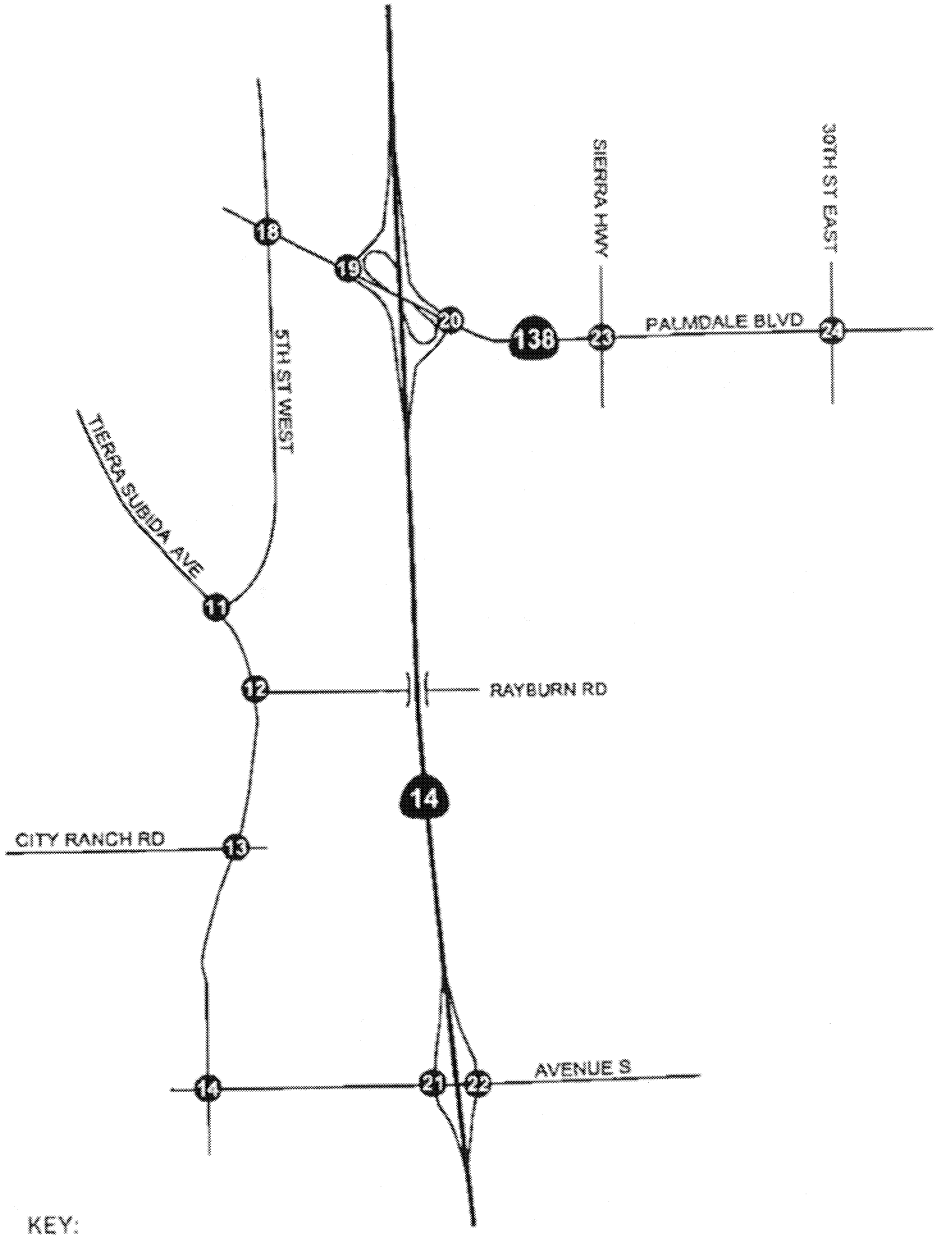

KEY:
XX/XX AM/PM Peak Hour Volumes

Not to Scale

Area 2

Forecast Project-Generated AM/PM Peak Hour Trip Assignment

Exhibit 13

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FORECAST YEAR 2006 WITH PROJECT CONDITIONS

Forecast year 2006 with proposed project traffic volumes were derived by adding forecast year 2006 project-generated trips to forecast year 2006 without project traffic volumes. In addition to project-planned circulation improvements, forecast year 2006 with project conditions assume implementation of improvements recommended to eliminate forecast year 2006 without project conditions deficiencies.

Forecast Year 2006 With Project Conditions Peak Hour Level of Service

Exhibits 14 and 15 shows forecast year 2006 with project conditions peak hour intersection traffic volumes. Table 8 summarizes the a.m. and p.m. peak hour delay and corresponding LOS of the study intersections for forecast year 2006 with project conditions; detailed HCM analysis sheets are provided in Appendix B.

As shown in Table 8, the study intersections are forecast to operate at an acceptable LOS (LOS D or better) according to City of Palmdale performance criteria for forecast year 2006 with project conditions, with the exception of the following intersection:

- Tierra Subida Avenue/5th Street West (p.m. peak hour only).

As also shown in Table 8, based on the City of Palmdale thresholds of significance, the addition of project-generated trips is forecast to not result in any significant impacts at the study intersections for forecast year 2006 with project conditions.

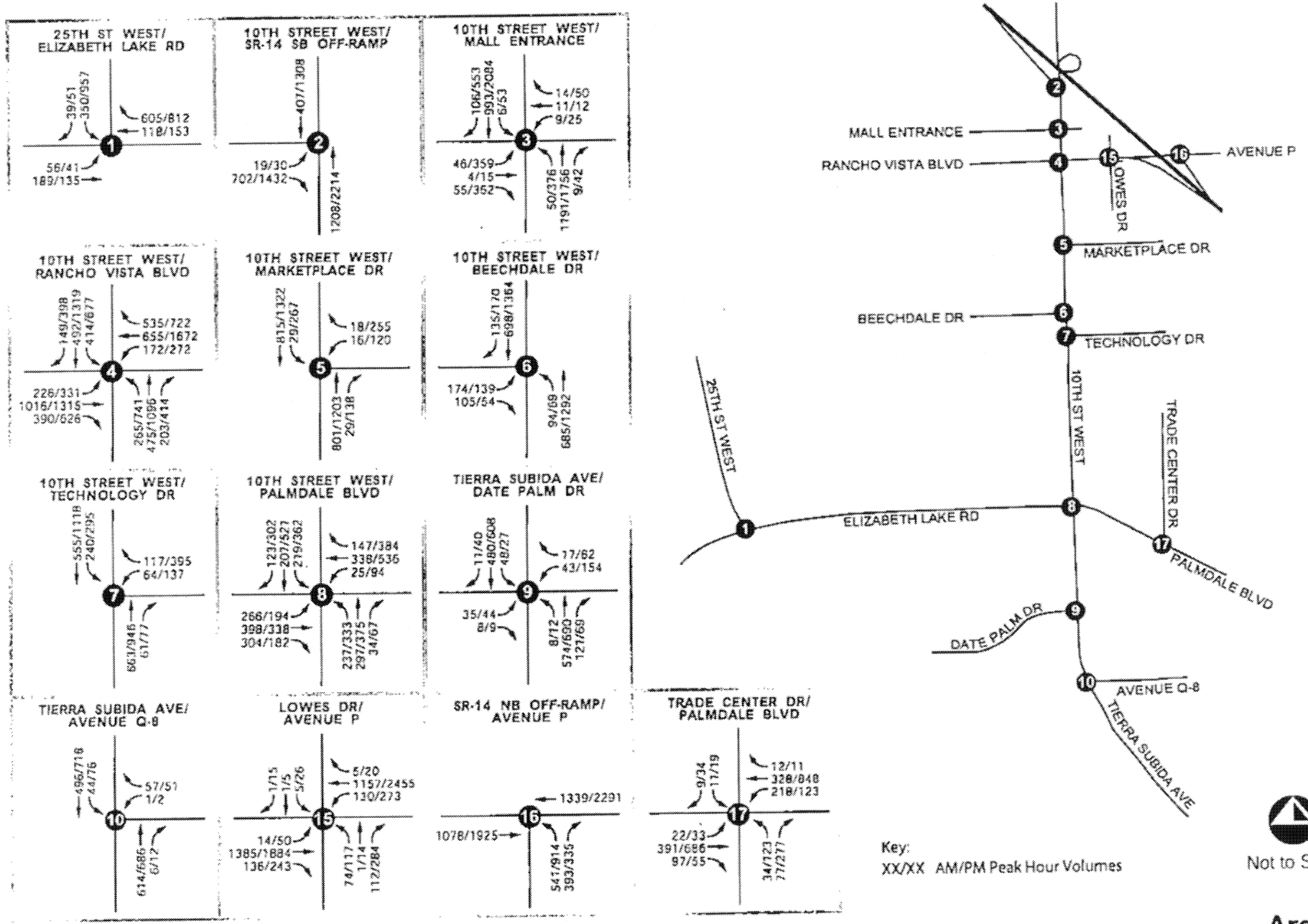
Forecast Year 2006 With Project Conditions Recommended Mitigation Measures

To eliminate the forecast year 2006 with project conditions deficiencies at the Tierra Subida Avenue/5th Street West intersection, the following mitigation measure is recommended:

- **Tierra Subida Avenue/5th Street West** - Widen southbound Tierra Subida Avenue approach from one left-turn lane, and one through lane to consist of one left-turn lane, and two through lanes.

Assuming the recommended mitigation measure, Table 9 shows the improved LOS of the Tierra Subida Avenue/5th Street West intersection for forecast year 2006 with project conditions; detailed HCM analysis sheets are provided in Appendix B.

As described above, the City has a Capital Improvement Project (10-year CIP Program) to widen Tierra Subida between Palmdale Boulevard and Avenue S from two lanes to four lanes. This report's recommendations to improve the Tierra Subida Avenue-5th Street intersection has already been planned and will be implemented within the next ten years. However, if these improvements are not made by 2006, when this project will be complete, than significant impacts may occur as described.



Area 1

Forecast Year 2006 With Project AM/PM Peak Hour Intersection Volumes

Exhibit 14

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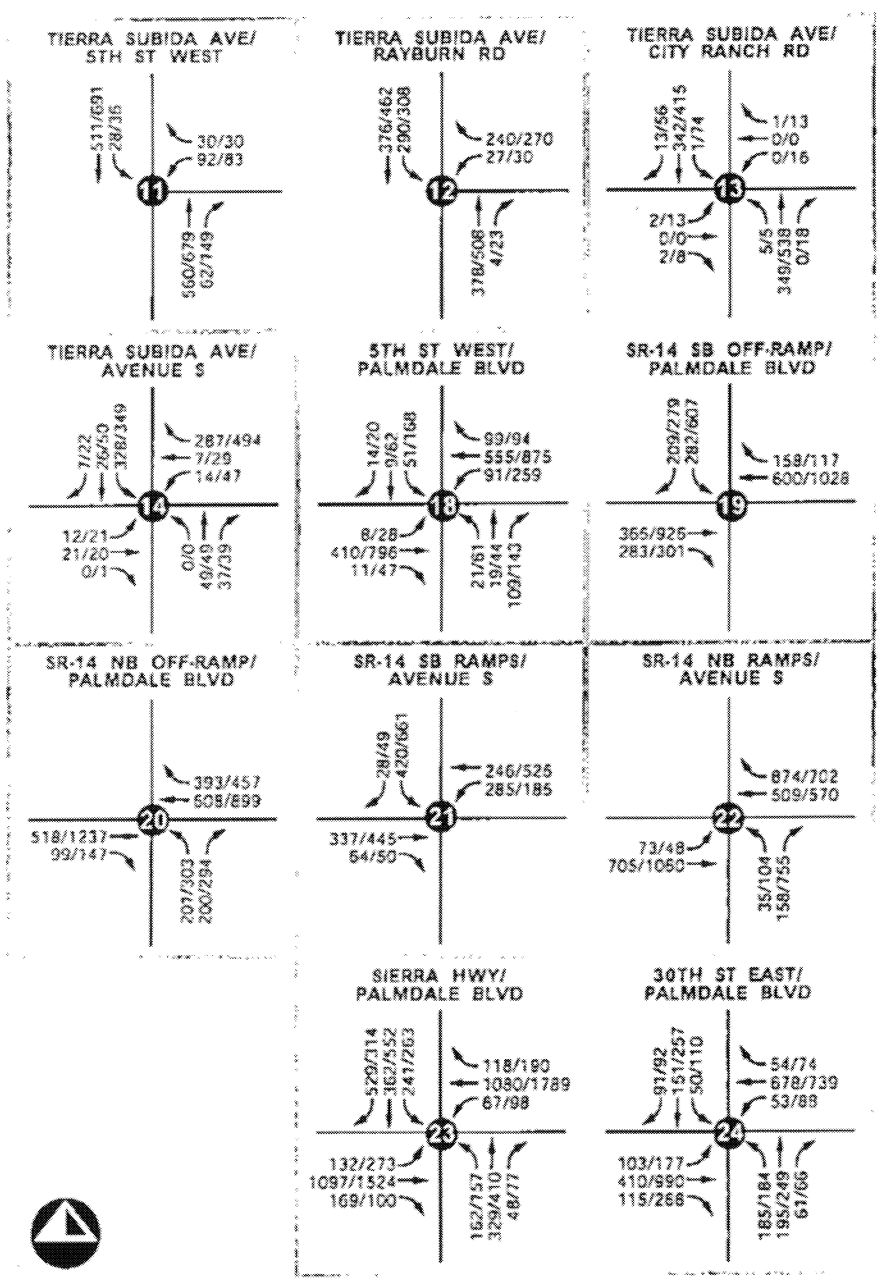

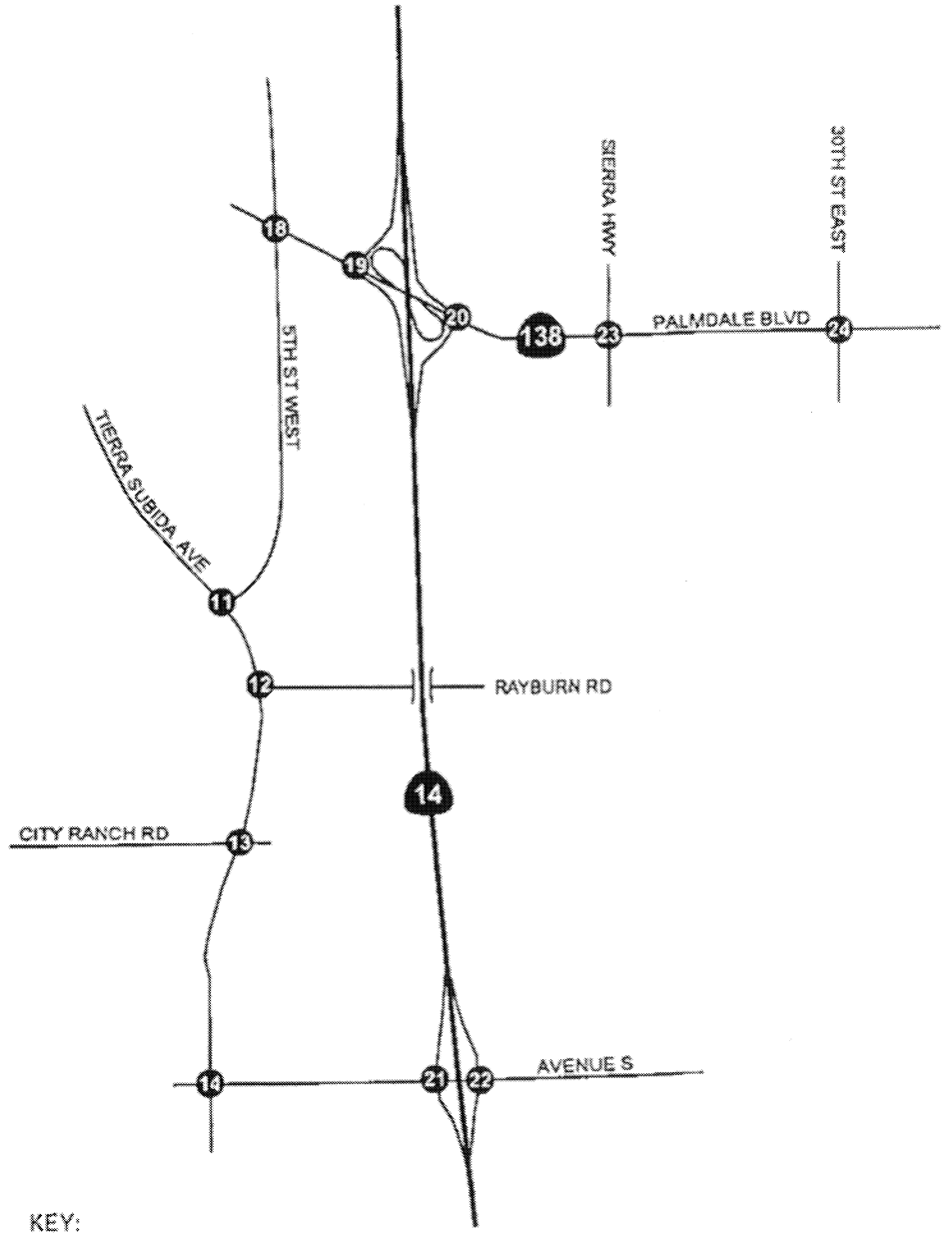

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Area 2

Forecast Year 2006 With Project AM/PM Peak Hour Intersection Volumes

Exhibit 15

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Table 8
Forecast Year 2006 With Project Peak Hour LOS

Study Intersection	Forecast Year 2006 Without Project		Forecast Year 2006 With Project		Significant Impact?
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
	Delay - V/C - LOS	Delay - V/C - LOS	Delay - V/C - LOS	Delay - V/C - LOS	
25th St West/Elizabeth Lake Rd	18.9 - 0.18 - B	12.5 - 0.37 - B	19.2 - 0.18 - B	13.6 - 0.38 - B	NO
10th St West/SB SR-14 Off-Ramp	19.8 - 0.53 - B	47.7 - 1.03 - D	19.8 - 0.53 - B	49.1 - 1.03 - D	NO
10th St West/AV Mall-K Mart Plaza	6.8 - 0.29 - A	26.8 - 0.84 -C	6.7 - 0.30 - A	26.8 - 0.84 - C	NO
10th St West/Rancho Vista Blvd	27.2 - 0.57 - C	44.7 - 0.96 - D	27.9 - 0.58 - C	48.4 - 0.98 - D	NO
10th St West/Market Place Dr	4.2 - 0.19 - A	21.5 - 0.63 - C	3.9 - 0.20 - A	21.2 - 0.66 - C	NO
10th St West/Beechdale Dr	15.9 - 0.39 - B	9.6 - 0.59 - A	15.1 - 0.43 - B	9.3 - 0.61 - A	NO
10th St West/Technology Dr	15.1 - 0.32 - B	14.5 - 0.41 - B	14.1 - 0.33 - B	14.4 - 0.45 - B	NO
10th St West/Elizabeth Lake Rd	29.9 - 0.49 - C	35.7 - 0.69 - D	30.9 - 0.50 - C	38.2 - 0.80 - D	NO
Tierra Subida Ave/Dale Palm Dr	19.7 - N/A - C	28.9 - N/A - D	8.5 - 0.40 - A	13.0 - 0.54 - B	NO
Tierra Subida Ave/Ave Q-8	12.1 - N/A - B	14.0 - N/A - B	13.5 - N/A - B	15.3 - N/A - C	NO
Tierra Subida Ave/5th St West	**20.8 - N/A - C**	**30.2 - N/A - D**	**27.1 - N/A - D**	**48.1 - N/A - E**	**NO**
Tierra Subida Ave/Rayburn Rd	13.7 - 0.36 - B	13.7 - 0.47 - B	14.0 - 0.42 - B	14.3 - 0.53 - B	NO
Tierra Subida Ave/City Ranch Rd	12.0 - N/A - B	19.1 - N/A - C	12.8 - N/A - B	22.5 - N/A - C	NO
Tierra Subida Ave/Ave S	10.2 - 0.46 - B	14.8 - 0.70 - B	11.2 - 0.52 - B	20.1 - 0.80 - C	NO
Lowes Dr/Rancho Vista Blvd	10.3 - 0.41 - B	20.5 - 0.63 - C	10.2 - 0.41 - B	20.7 - 0.64 - C	NO
NB SR-14 Off-Ramp/Ave P	24.4 - 0.70 - C	34.2 - 0.99 - C	24.4 - 0.71 - C	35.0 - 0.99 - D	NO
Trade Center Dr/Palmdale Blvd.	11.3 - N/A - B	18.2 - N/A - C	20.1 - 0.31 - C	21.9 - 0.48 - C	NO
5th St West/Palmdale Blvd	14.3 - 0.18 - B	13.7 - 0.50 - B	11.3 - 0.25 - B	12.7 - 0.63 - B	NO
SB SR-14 Off-Ramp/Palmdale Blvd	18.3 - 0.31 - B	22.7 - 0.66 - C	17.5 - 0.36 - B	23.4 - 0.69 - C	NO
NB SR-14 Off-Ramp/Palmdale Blvd	15.7 - 0.20 - B	15.4 - 0.40 - B	16.6 - 0.25 - B	15.5 - 0.45 - B	NO
SB SR-14 Ramps/Ave S	27.9 - 0.55 - C	28.4 - 0.69 - C	27.5 - 0.56 -C	29.4 - 0.71 - C	NO
NB SR-14 Ramps/Ave S	3.2 - 0.23 - A	6.5 - 0.36 - A	3.1 - 0.24 - A	6.2 - 0.39 - A	NO
Sierra Hwy/Palmdale Blvd	33.8 - 0.80 - C	41.8 - 0.94 - D	36.0 - 0.84 - D	47.3 - 0.98 - D	NO
30th St East/Palmdale Blvd	22.1 - 0.58 - C	23.6 - 0.71 - C	22.8 - 0.63 - C	24.4 - 0.75 - C	NO

Note: Deficient intersection operation shown in bold. N/A = Not applicable.

Table 9

Forecast Improved Year 2006 With Project Peak Hour LOS

Study Intersection	Non-Mitigated		Mitigated	
	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS
Tierra Subida Ave/5th Street West	27.1 - N/A - D	**48.1 - N/A - E**	18.8 - N/A - C	25.0 - N/A - D

Note: Deficient intersection operation shown in bold. N/A = Not applicable.

As shown in Table 9, assuming implementation of the recommended mitigation measure, the deficient Tierra Subida Avenue/5th Street West intersection is forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2006 with project conditions.

FORECAST YEAR 2020 WITHOUT PROJECT CONDITIONS

The City of Palmdale has a traffic model to forecast long-range horizon year traffic volumes. Forecast year 2020 traffic volumes (without proposed project) were provided by City of Palmdale staff for use in this analysis. Forecast year 2020 without project conditions assume implementation of improvements recommended to eliminate forecast year 2006 without project conditions deficiencies, and mitigation measures recommended to eliminate forecast year 2006 with project conditions deficiencies.

Forecast Year 2020 Without Project Conditions Peak Hour Level of Service

Exhibits 16 and 17 shows forecast year 2020 without project conditions peak hour intersection traffic volumes. Table 10 summarizes the a.m. and p.m. peak hour delay and corresponding LOS of the study intersections for forecast year 2020 without project conditions; detailed HCM analysis sheets are provided in Appendix B.

As shown in Table 10, the study intersections are forecast to operate at a deficient LOS (LOS E or worse) according to City of Palmdale performance criteria for forecast year 2020 without project conditions, with the exception of the following eight intersections:

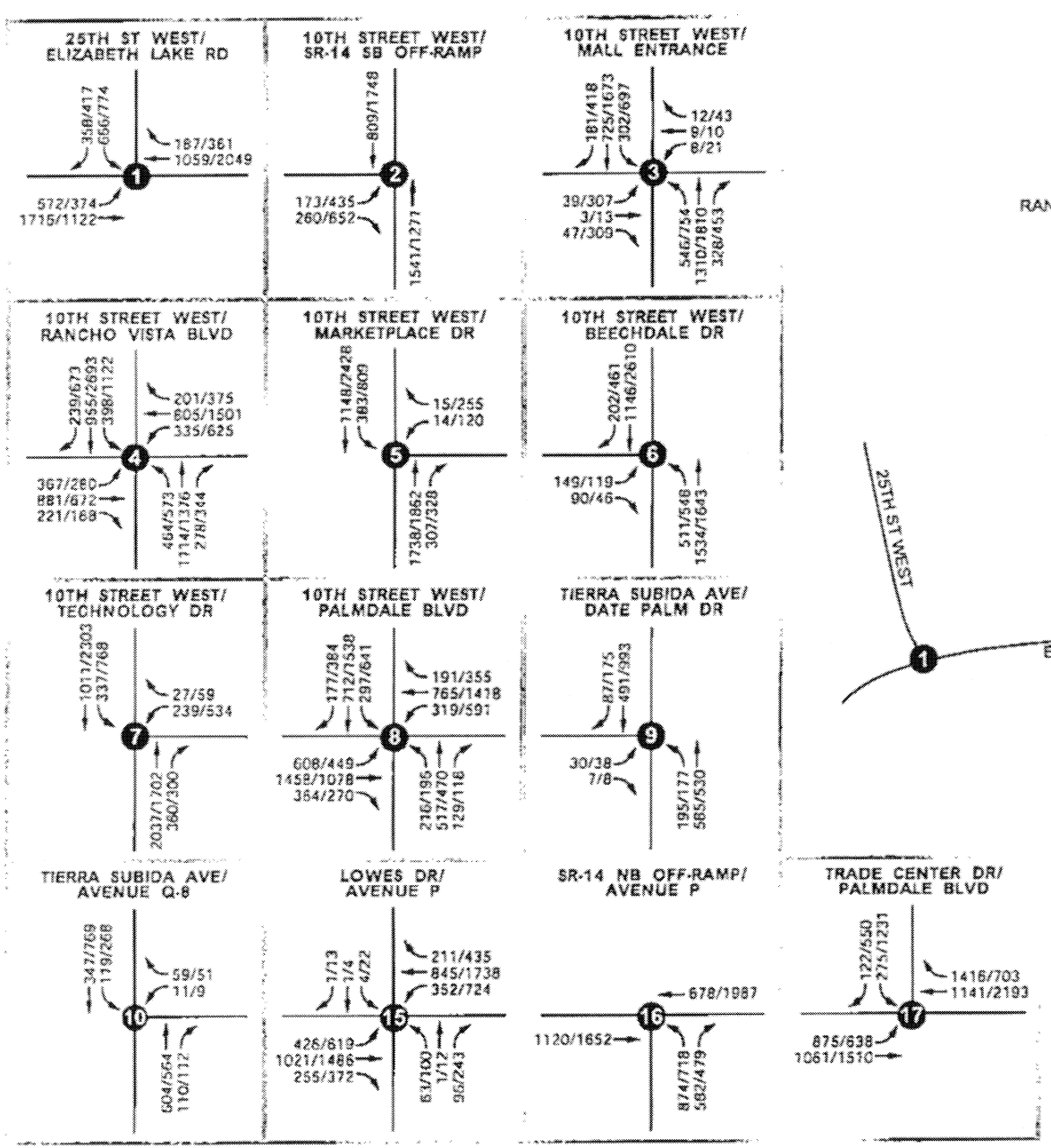
- 10th Street West/SR-14 SB Off-Ramp (signalized);
- 10th Street West/Market Place Drive (signalized);
- 10th Street West/Technology Drive (signalized);
- Tierra Subida Avenue/Date Palm Drive (one-way stop-controlled);
- Tierra Subida Avenue/Avenue Q-8 (one-way stop-controlled);
- SR-14 NB Off-Ramp/Avenue P (signalized);
- Sierra Highway/Palmdale Boulevard (signalized); and
- 30th Street East/Palmdale Boulevard (signalized).

Forecast Year 2020 Without Project Conditions Recommended Improvements

To eliminate the forecast year 2020 without project conditions deficiencies at the sixteen study intersections, the following improvements are recommended:

- **25th Street West/Elizabeth Lake Road** - Restripe the eastbound Elizabeth Lake Road approach from one left-turn lane and two through lanes to consist of two left-turn lanes and two through lanes.

- **10th Street West/Mall Entrance** - Widen the southbound 10th Street West approach from one left-turn lane, three through lanes, and one right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane.



Area 1

Forecast Year 2020 Without Project AM/PM Peak Hour Intersection Volumes

Exhibit 16

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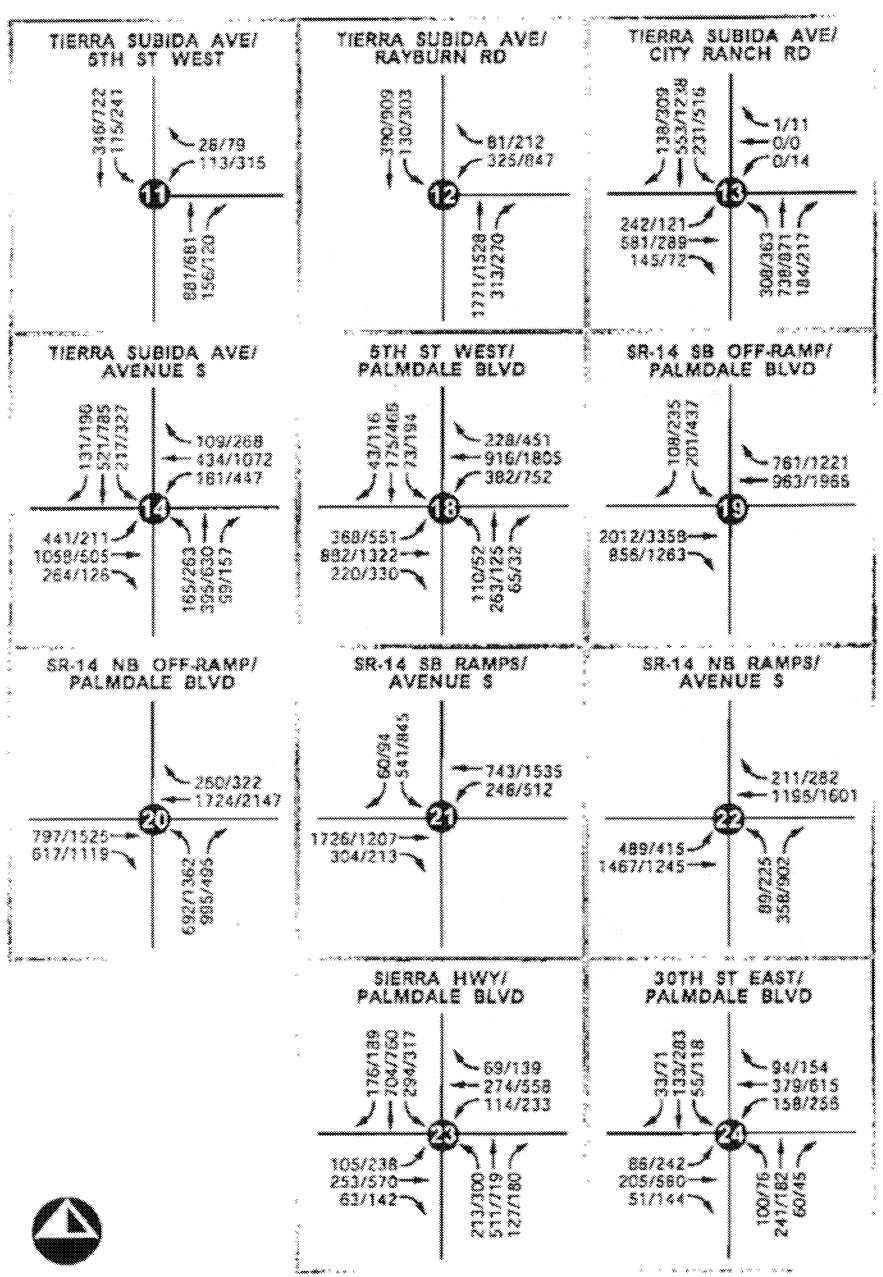

Not to Scale

Area 2

Forecast Year 2020 Without Project AM/PM Peak Hour Intersection Volumes

Exhibit 17

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Table 10

Forecast Year 2020 Without Project Peak Hour LOS

Study Intersection	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS
25th St West/Elizabeth Lake Rd	**28.4 - C**	**66.1 - E**
10th St West/SB SR-14 Off-Ramp	11.2 - B	19.3 - B
10th St West/AV Mall-K Mart Plaza	**19.5 - B**	**76.7 - E**
10th St West/Rancho Vista Blvd	**33.5 - C**	**86.8 - F**
10th St West/Market Place Dr	12.9 - B	46.7 - D
10th St West/Beechdale Dr	**21.0 - C**	**137.7 - F**
10th St West/Technology Dr	19.2 - B	54.0 - D
10th St West/Elizabeth Lake Rd	**66.2 - E**	**161.7 - F**
Tierra Subida Ave/Date Palm Dr	11.9 - B	10.8 - B
Tierra Subida Ave/Ave Q-8	16.0 - C	23.9 - C
Tierra Subida Ave/5th St West	**58.5 - F**	**827.7 - F**
Tierra Subida Ave/Rayburn Rd	**148.6 - F**	**235.6 - F**
Tierra Subida Ave/City Ranch Rd	**OVRFL - F**	**OVRFL - F**
Tierra Subida Ave/Ave S	**941.2 - F**	**OVRFL - F**
Lowes Dr/Rancho Vista Blvd	**21.5 - C**	**55.7 - E**
NB SR-14 Off-Ramp/Ave P	28.7 - C	33.7 - C
Trade Center Dr/Palmdale Blvd	**197.2 - F**	**326.1 - F**
5th St West/Palmdale Blvd	**16.4 - B**	**270.3 - F**
SB SR-14 Off-Ramp/Palmdale Blvd	**10.7 - B**	**105.7 - F**
NB SR-14 Off-Ramp/Palmdale Blvd	**25.5 - C**	**130.3 - F**
SB SR-14 Ramps/Ave S	**79.6 - E**	**180.2 - F**
NB SR-14 Ramps/Ave S	**32.8 - C**	**84.0 - F**
Sierra Hwy/Palmdale Blvd	30.3 - C	40.2 - D
30th St East/Palmdale Blvd	25.0 - C	27.4 - C

Note: Deficient intersection operation shown in bold

- **10th Street West/Rancho Vista Boulevard** - Widen the southbound 10th Street West approach from two left-turn lanes, three through lanes, and one right-turn lane to consist of two left-turn lanes, four through lanes, and one right-turn lane. Widen the westbound Rancho Vista Boulevard approach from two left-turn lanes, three through lanes, and one right-turn lane to consist of two left-turn lanes, four through lanes, and one right-turn lane.

- **10th Street West/Beechdale Drive** - Widen the southbound 10th Street West approach from one through lane and one shared through/right-turn lane to consist of two through lanes and one shared through/right-turn lane.

- **10th Street West/Elizabeth Lake Road** - Widen the northbound 10th Street West approach from one left-turn lane, one through lane, and one shared through/right-turn lane to consist of two left-turn lanes, one through lane, and one shared through/right-turn lane. Widen the southbound 10th Street West approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane. Widen the eastbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane.

- **Tierra Subida Avenue/5th Street West** - Signalize intersection.

- **Tierra Subida Avenue/Rayburn Road** - Widen the northbound Tierra Subida approach from one through lane and one right-turn lane to consist of two through lanes and one right-turn lane. Restripe the westbound Rayburn Road approach from one left-turn lane and one right-turn lane to consist of two left-turn lanes and one right-turn lane.

- **Tierra Subida Avenue/City Ranch Road** - Signalize intersection. Widen the northbound Tierra Subida approach from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane. Widen the southbound Tierra Subida approach from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane. Widen the eastbound City Ranch Road approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

- **Tierra Subida Avenue/Avenue S** - Signalize Intersection. Widen the northbound Tierra Subida Avenue approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane. Widen the southbound Tierra Subida Avenue approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane. Widen the eastbound Avenue S approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, two through lanes, and one right-turn lane. Widen the westbound Avenue S approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, two through lanes, and one right-turn lane.

- **Lowes Drive/Rancho Vista Boulevard** - Modify the eastbound and westbound Avenue P approach phasing from protected plus permitted to permitted plus protected.

- **Trade Center Drive/Palmdale Boulevard** - Widen the southbound Trade Center Drive approach from one left-turn lane and one right-turn lane to consist of two left-

turn lanes and one right-turn lane. Modify signal phasing at the southbound Trade Center Drive approach from permitted left-turn phasing to consist of protected left-turn phasing. Modify the Trade Center Drive/Palmdale Boulevard intersection traffic signal to include southbound Trade Center Drive overlap, which will preclude u-turn movement on eastbound to westbound Palmdale Boulevard. Widen the eastbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of one left-turn lane, three through lanes, and two right-turn lanes. Modify Trade Center Drive/Palmdale Boulevard intersection traffic signal to include westbound Palmdale Boulevard right-turn overlap, which will preclude u-turn movement on southbound to northbound Trade Center Drive.

- **5th Street West/Palmdale Boulevard** - Widen westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane. Modify signal phasing at the 5th Street West/Palmdale Boulevard intersection to include of protected left-turns for the eastbound and westbound approaches.

- **Southbound SR-14 Off-Ramp/Palmdale Boulevard** - Widen the eastbound Palmdale Boulevard approach from one through lane and one shared through/right-turn lane to consist of two through lanes and one right-turn lane.

- **Northbound SR-14 Off-Ramp/Palmdale Boulevard** - Widen the SR-14 northbound Off-Ramp from one left-turn lane and one right-turn lane to consist of two left-turn lanes and one right-turn lane.

- **Southbound SR-14 Ramps/Avenue S** - Restripe the SR-14 southbound Off-Ramp from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane and one shared left-turn/right-turn lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane and one through lane to consist of two left-turn lanes and two through lanes.

- **Northbound SR-14 Ramps/Avenue S** - Modify the eastbound approach from a permitted left-turn phasing to protected left-turn phasing.

Assuming the recommended improvements, Table 11 shows the improved LOS of the study intersections for forecast year 2020 without project conditions; detailed HCM analysis sheets are provided in Appendix B.

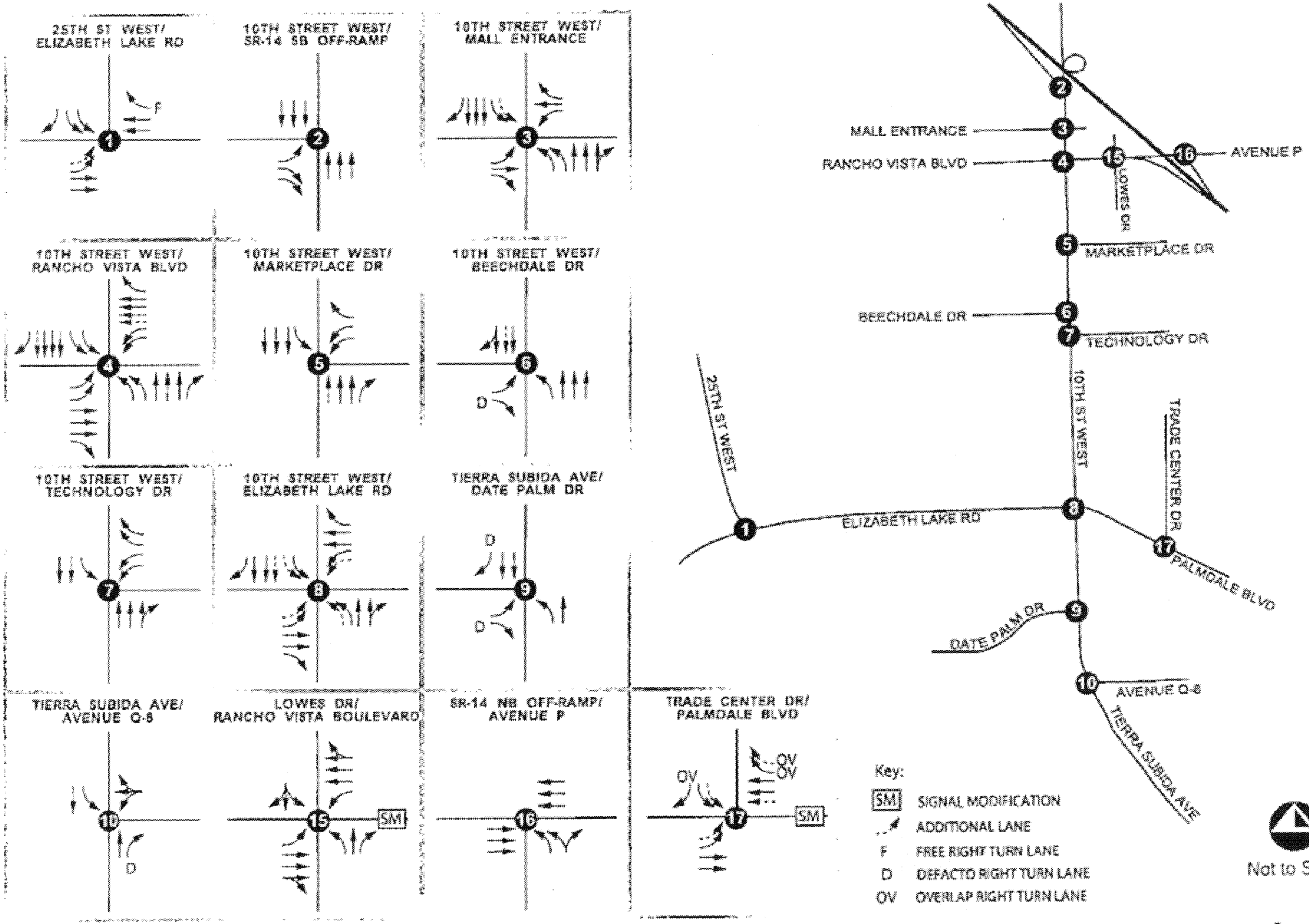
Table 11
Forecast Improved Year 2020 Without Project Peak Hour LOS

Study Intersection	Non-Improved		Improved	
	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS	AM Peak Hour Delay - LOS	PM Peak Hour Delay - LOS
25th St West/Elizabeth Lake Rd	28.4 - C	**66.1 - E**	23.7 - C	40.9 - D
10th St West/AV Mall-K Mart Plaza	19.5 - B	**76.7 - E**	17.0 - B	39.2 - D
10th St West/Rancho Vista Blvd	33.5 - C	**86.8 - F**	33.1 - C	52.2 - D
10th St West/Beechdale Dr	21.0 - C	**137.7 - F**	18.8 - B	52.2 - D
10th St West/Elizabeth Lake Rd	**66.2 - E**	**161.7 - F**	35.8 - D	50.8 - D
Tierra Subida Ave/5th St West	**58.5 - F**	**827.7 - F**	13.8 - B	23.4 - C
Tierra Subida Ave/Rayburn Rd	**148.6 - F**	**235.6 - F**	17.2 - B	36.7 - D
Tierra Subida Ave/City Ranch Rd	**OVRFL - F**	**OVRFL - F**	37.2 - D	34.5 - C
Tierra Subida Ave/Ave S	**941.2 - F**	**OVRFL - F**	36.2 - D	51.2 - D
Lowes Dr/Rancho Vista Blvd	21.5 - C	**55.7 - E**	22.2 - C	53.8 - D
Trade Center Dr/Palmdale Blvd	**197.2 - F**	**326.1 - F**	22.1 - C	50.9 - D
5th St West/Palmdale Blvd	16.4 - B	**270.3 - F**	26.4 - C	53.4 - D
SB SR-14 Off-Ramp/Palmdale Blvd	10.7 - B	**105.7 - F**	9.9 - A	28.8 - C
NB SR-14 Off-Ramp/Palmdale Blvd	25.5 - C	**130.3 - F**	16.7 - B	27.7 - C
SB SR-14 Ramps/Ave S	**79.6 - E**	**180.2 - F**	15.0 - B	36.7 - D
NB SR-14 Ramps/Ave S	32.8 - C	**84.0 - F**	16.3 - B	25.5 - C

Note: Deficient intersection operation shown in bold.

As shown in Table 11, assuming implementation of the recommended improvements, the sixteen 0deficient study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2020 without project conditions.

Exhibits 18 and 19 show the forecast improved year 2020 without project conditions study intersection geometry.



Area 1

Forecast Year 2020 Improved Study Intersection Geometry

Exhibit 18

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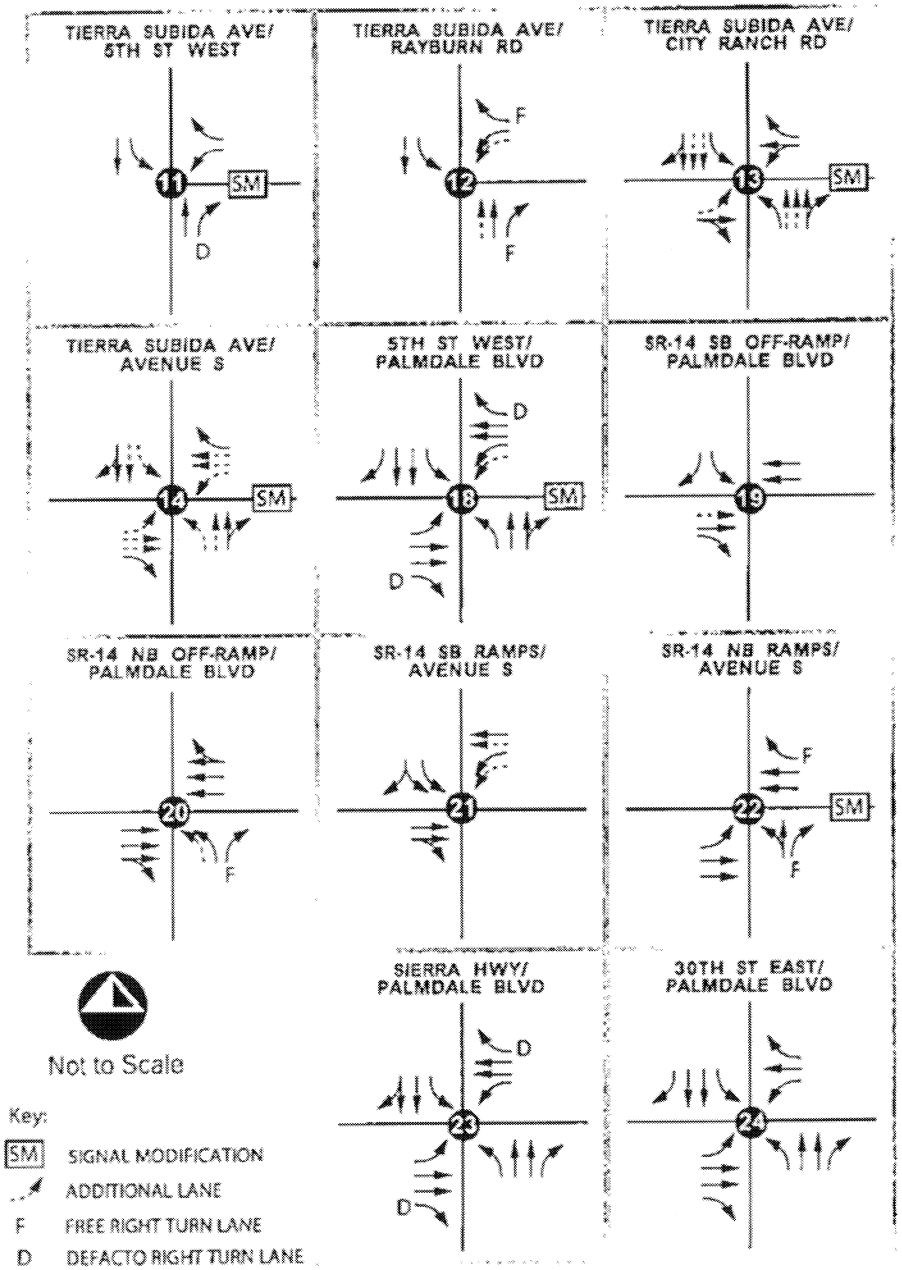

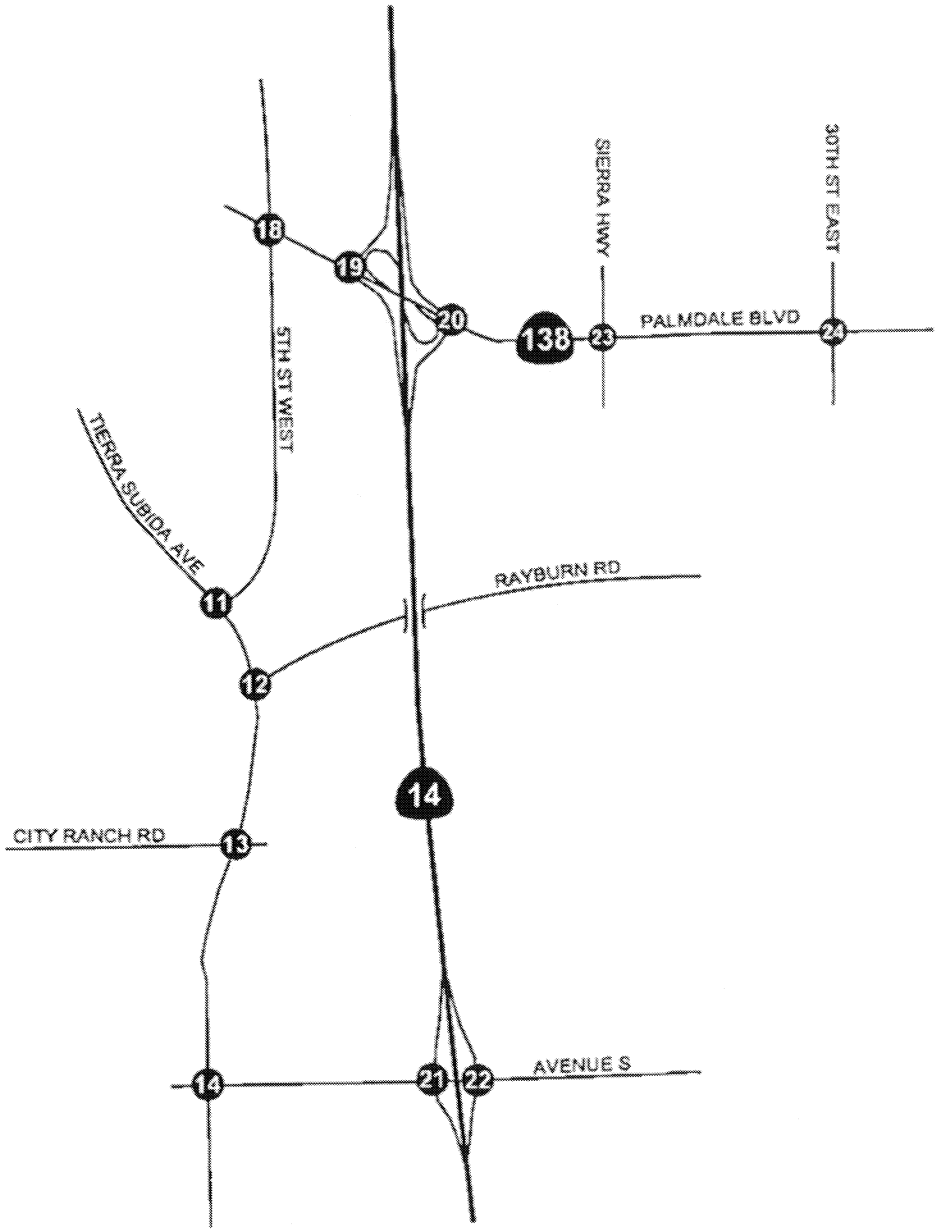

Area 2

Forecast Year 2020 Improved Study Intersection Geometry

Exhibit 19

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FORECAST YEAR 2020 WITH PROJECT CONDITIONS

Based on a comparison of the ITE Trip Generation Rates for uses typical of the existing C-4 Zone and the trips generated by the proposed project, it has been determined that implementation of the proposed project would result in a decrease of trips generated by the site. As stated above, the City of Palmdale has a traffic model to forecast long-range horizon year traffic volumes. Forecast year 2020 traffic volumes (without proposed project) were provided by City of Palmdale staff for use in this analysis. Forecast year 2020 without project conditions assume implementation of uses consistent with the existing zoning. The Commercial Center Zone (C-4) allows for uses such as a regional mall, major retail outlets, office complexes, hotels and convention facilities, entertainment centers, and supportive commercial and service uses.

The proposed project is forecast to generate approximately 9,648 daily trips, which includes approximately 656 a.m. peak hour trips and approximately 889 p.m. peak hour trips. Typical uses permitted by the existing zoning would generate anywhere from 33,827 (regional mall) to 34,915 (retail outlet) daily trips. Thus, implementation of the proposed project would result in a decrease in trips generated by the site.

Forecast Year 2020 With Project Conditions Recommended Improvements

As the magnitude of difference between the trips generated by the proposed project and those uses permitted by existing zoning is diminutive, it is expected that the same conditions would result with implementation of the proposed project as with the existing zoning. Therefore, the same improvements are recommended as those of the Forecast Year 202 Without Project scenario.

LOS ANGELES COUNTY CONGESTION MANAGEMENT PROGRAM

The purpose of the Congestion Management Program (CMP) is to develop a coordinated approach to managing and decreasing traffic congestion by linking the various transportation, land use and air quality planning programs throughout the County. The program is consistent with that of the Southern California Association of Governments (SCAG). The CMP program requires review of significant individual projects, which might on their own impact the CMP transportation system.

CMP Study Area

According to the CMP *(Los Angeles County Metropolitan Transportation Authority, June 2002)*, those proposed developments, which meet the following criteria, shall be evaluated:

- All CMP arterial monitoring intersections, including monitored freeway on- or off-ramp intersections, where the proposed project will add 50 or more trips during either the a.m. or p.m. weekday peak hours (of adjacent street traffic).

- Mainline freeway monitoring locations where the project will add 150 or more trips, in either direction, during either the a.m. or p.m. weekday peak hours.

Utilizing the CMP guidelines the following eight intersections are included in the CMP study area:

- 10th Street West/SR-14 SB Off-Ramp (signalized);
- SR-14 NB Off-Ramp/Avenue P (signalized);
- SR-14 SB Off-Ramp/Palmdale Boulevard (signalized);
- SR-14 NB Off-Ramp/Palmdale Boulevard (signalized);
- SR-14 SB Ramps/Avenue S (signalized);
- SR-14 NB Ramps/Avenue S (signalized);
- Sierra Highway/Palmdale Boulevard (signalized); and
- 30th Street East/Palmdale Boulevard (signalized).

CMP Analysis Methodology

Level of service (LOS) is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection. The *Intersection Capacity Utilization (ICU)* analysis method is utilized in this study to determine the operating LOS of the CMP study intersections.

The ICU analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on corresponding Volume/Capacity (V/C) ratios shown in Table 12.

Table 12
V/C & LOS Ranges

V/C Ratio	LOS
≤ 0.60	A
0.61 - 0.70	B
0.71 - 0.80	C
0.81 - 0.90	D
0.91 - 1.00	E
> 1.00	F

CMP Thresholds of Significance

To determine whether the addition of project-generated trips results in a significant impact at a CMP study facility, and thus requires mitigation, the Los Angeles County CMP utilizes the following threshold of significance:

- A significant project impact occurs when a proposed project increases traffic demand at a CMP study facility by 2% of capacity (V/C ≥ 0.02), causing or worsening LOS F (V/C > 1.00).

CMP LOS ANALYSIS

Forecast Year 2006 With Project Conditions

Forecast year 2006 with proposed project traffic volumes were derived by adding forecast project-generated trips to forecast year 2006 without project traffic volumes. Forecast year 2006 with project conditions assume implementation of improvements recommended to eliminate existing deficiencies and forecast year 2006 without project deficiencies.

This CMP LOS analysis looks only at the 2006 scenario, assuming that the 2006 build-out scenario is a worse case scenario. Accordingly, the 2020 scenario was not conducted because at that time horizon, the proposed project would represent a smaller share of the existing traffic load. Additionally, the proposed project would generate less traffic than that planned for by the General Plan for the 2020 scenario.

Forecast Year 2006 With Project Conditions Peak Hour LOS

Table 14 summarizes the a.m. and p.m. peak hour LOS of the CMP study intersections; detailed ICU analysis sheets are provided in Appendix D.

Table 13
CMP Analysis - Forecast Year 2006 With Project Peak Hour LOS

	Forecast Year 2006 Without Project		Forecast Year 2006 With Project		
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
Study Intersection	V/C - LOS	V/C - LOS	V/C - LOS	V/C - LOS	Significant Impact?
10th St West/SR-14 SB Off-Ramp	0.57 - A	1.00 - F	0.57 - A	1.01 - F	No
SR-14 NB Off-Ramp/Ave P	0.66 - B	0.96 - E	0.67 - B	0.97 - E	No
SR-14 SB Off-Ramp/Palmdale Blvd	0.41 - A	0.77 - C	0.46 - A	0.80 - D	No
SR-14 NB Off-Ramp/Palmdale Blvd	0.30 - A	0.50 - A	0.35 - A	0.55 - A	No
SR-14 SB Ramps/Ave S	0.66 - B	0.82 - D	0.67 - B	0.84 - D	No
SR-14 NB Ramps/Ave S	0.33 - A	0.47 - A	0.34 - A	0.50 - A	No
Sierra Hwy/Palmdale Blvd	**0.89 - D**	**1.15 - F**	**0.95 - E**	**1.20 - F**	**Yes**
30th St East/Palmdale Blvd	0.71 - C	0.84 - D	0.76 - C	0.87 - D	No

Note: Significant impact shown in bold.

As seen Table 13, the addition of project-generated trips at the CMP study intersections does not result in a significant impact according to the Los Angeles County CMP established thresholds of significance for forecast year 2006 with project conditions, with the exception of the following

intersection:

- Sierra Highway/Palmdale Boulevard (p.m. peak hour only).

CONCLUSIONS

All the study intersections are currently operating at an acceptable LOS (LOS D or better) according to City of Palmdale performance criteria.

The study intersections are forecast to operate at an acceptable LOS (LOS D or better) according to City of Palmdale performance criteria for forecast year 2006 without project conditions, with the exception of the following three intersections:

- 10th Street West/Rancho Vista Boulevard (p.m. peak hour only);
- Tierra Subida Avenue/Rayburn Road (p.m. peak hour only); and
- Sierra Highway/Palmdale Boulevard (p.m. peak hour only).

To eliminate the forecast year 2006 without project conditions deficiencies at the three study intersections, the following improvements are recommended:

- **10th Street West/Rancho Vista Boulevard** - Widen southbound 10th Street West approach from two left-turn lanes, two through lanes, and one shared through/right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane; and
- **Tierra Subida Avenue/Rayburn Road** - Signalize intersection.
- **Sierra Highway/Palmdale Boulevard** - Restripe westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of one left-turn lane, two through lanes, and one shared through/right-turn lane.

Assuming implementation of the recommended improvements, the three deficient study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2006 without project conditions.

The proposed project is forecast to generate approximately 9,648 daily trips, which includes approximately 656 a.m. peak hour trips and approximately 889 p.m. peak hour trips.

It should be noted that this analysis assumes a conservative trip generation analysis by not factoring in any onsite trip capture discounts to account for any relation between trips generated by the onsite compatible land uses. For example, as a worst-case scenario, this analysis assumes none of the medical office generated trips are related to either the hospital or senior dwelling units.

The study intersections are forecast to operate at an acceptable LOS (LOS D or better) according to City of Palmdale performance criteria for forecast year 2006 with project conditions, with the exception of the following intersection:

- Tierra Subida Avenue/5th Street West (p.m. peak hour only).

Based on the City of Palmdale thresholds of significance, the addition of project-generated trips is forecast to not result in any significant impacts at the study intersections for forecast year 2006 with

project conditions.

To eliminate the forecast year 2006 with project conditions deficiencies at the Tierra Subida Avenue/5th Street West intersection, the following mitigation measure is recommended:

- **Tierra Subida Avenue/5th Street West** - Widen southbound Tierra Subida Avenue approach from one left-turn lane, and one through lane to consist of one left-turn lane, and two through lanes.

Assuming implementation of the recommended mitigation measure, the deficient Tierra Subida Avenue/5th Street West intersection is forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2006 with project conditions.

The study intersections are forecast to operate at a deficient LOS (LOS E or worse) according to City of Palmdale performance criteria for forecast year 2020 without project conditions, with the exception of the following eight intersections:

- 10th Street West/SR-14 SB Off-Ramp (signalized);
- 10th Street West/Market Place Drive (signalized);
- 10th Street West/Technology Drive (signalized);
- Tierra Subida Avenue/Date Palm Drive (one-way stop-controlled);
- Tierra Subida Avenue/Avenue Q-8 (one-way stop-controlled);
- SR-14 NB Off-Ramp/Avenue P (signalized);
- Sierra Highway/Palmdale Boulevard (signalized); and
- 30th Street East/Palmdale Boulevard (signalized).

To eliminate the forecast year 2020 without project conditions deficiencies at the sixteen study intersections, the following improvements are recommended:

- **25th Street West/Elizabeth Lake Road** - Restripe the eastbound Elizabeth Lake Road approach from one left-turn lane and two through lanes to consist of two left-turn lanes and two through lanes.

- **10th Street West/Mall Entrance** - Widen the southbound 10th Street West approach from one left-turn lane, three through lanes, and one right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane.

- **10th Street West/Rancho Vista Boulevard** - Widen the southbound 10th Street West approach from two left-turn lanes, three through lanes, and one right-turn lane to consist of two left-turn lanes, four through lanes, and one right-turn lane. Widen the westbound Rancho Vista Boulevard approach from two left-turn lanes, three through lanes, and one right-turn lane to consist of two left-turn lanes, four through lanes, and one right-turn lane.

- **10th Street West/Beechdale Drive** - Widen the southbound 10th Street West approach from one through lane and one shared through/right-turn lane to consist of two through lanes and one shared through/right-turn lane.

- **10th Street West/Elizabeth Lake Road** - Widen the northbound 10th Street West approach from one left-turn lane, one through lane, and one shared through/right-turn lane to consist of two left-turn lanes, one through lane, and one shared

through/right-turn lane. Widen the southbound 10th Street West approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, three through lanes, and one right-turn lane. Widen the eastbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane.

- **Tierra Subida Avenue/5th Street West** - Signalize intersection.

- **Tierra Subida Avenue/Rayburn Road** - Widen the northbound Tierra Subida approach from one through lane and one right-turn lane to consist of two through lanes and one right-turn lane. Restripe the westbound Rayburn Road approach from one left-turn lane and one right-turn lane to consist of two left-turn lanes and one right-turn lane.

- **Tierra Subida Avenue/City Ranch Road** - Signalize intersection. Widen the northbound Tierra Subida approach from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane, two through lanes, and one shared through/right-turn lane. Widen the southbound Tierra Subida approach from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane, two through lanes, and one shared through/right-turn lane. Widen the eastbound City Ranch Road approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane and one shared through/right-turn lane.

- **Tierra Subida Avenue/Avenue S** - Signalize Intersection. Widen the northbound Tierra Subida Avenue approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane. Widen the southbound Tierra Subida Avenue approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, one through lane, and one shared through/right-turn lane. Widen the eastbound Avenue S approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, two through lanes, and one right-turn lane. Widen the westbound Avenue S approach from one shared left-turn/through/right-turn lane to consist of one left-turn lane, two through lanes, and one right-turn lane.

- **Lowes Drive/Rancho Vista Boulevard** - Modify the eastbound and westbound Avenue P approach phasing from protected plus permitted to permitted plus protected.

- **Trade Center Drive/Palmdale Boulevard** - Widen the southbound Trade Center Drive approach from one left-turn lane and one right-turn lane to consist of two left-turn lanes and one right-turn lane. Modify signal phasing at the southbound Trade Center Drive approach from permitted left-turn phasing to consist of protected left-turn phasing. Modify the Trade Center Drive/Palmdale Boulevard intersection traffic signal to include southbound Trade Center Drive overlap, which will preclude u-turn movement on eastbound to westbound Palmdale Boulevard. Widen the eastbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn

lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of one left-turn lane, three through lanes, and two right-turn lanes. Modify Trade Center Drive/Palmdale Boulevard intersection traffic signal to include westbound Palmdale Boulevard right-turn overlap, which will preclude u-turn movement on southbound to northbound Trade Center Drive.

- **5th Street West/Palmdale Boulevard** - Widen westbound Palmdale Boulevard approach from one left-turn lane, two through lanes, and one right-turn lane to consist of two left-turn lanes, two through lanes, and one right-turn lane. Modify signal phasing at the 5th Street West/Palmdale Boulevard intersection to include of protected left-turns for the eastbound and westbound approaches.

- **Southbound SR-14 Off-Ramp/Palmdale Boulevard** - Widen the eastbound Palmdale Boulevard approach from one through lane and one shared through/right-turn lane to consist of two through lanes and one right-turn lane.

- **Northbound SR-14 Off-Ramp/Palmdale Boulevard** - Widen the SR-14 northbound Off-Ramp from one left-turn lane and one right-turn lane to consist of two left-turn lanes and one right-turn lane.

- **Southbound SR-14 Ramps/Avenue S** - Restripe the SR-14 southbound Off-Ramp from one left-turn lane and one shared through/right-turn lane to consist of one left-turn lane and one shared left-turn/right-turn lane. Widen the westbound Palmdale Boulevard approach from one left-turn lane and one through lane to consist of two left-turn lanes and two through lanes.

- **Northbound SR-14 Ramps/Avenue S** - Modify the eastbound approach from a permitted left-turn phasing to protected left-turn phasing.

Assuming implementation of the recommended improvements, the sixteen deficient study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the a.m. and p.m. peak hour for forecast year 2020 without project conditions.

The addition of project-generated trips at the CMP study intersections does not result in a significant impact according to the Los Angeles County CMP established thresholds of significance for forecast year 2006 with project conditions, with the exception of the following intersection:

- Sierra Highway/Palmdale Boulevard (p.m. peak hour only).

It should be noted that the City has a Capital Improvement Project (10-year CIP Program) to widen Tierra Subida between Palmdale Boulevard and Avenue S from two lanes to four lanes. Additionally, the City has a project in the 10-year CIP to widen Palmdale Boulevard from four lanes to six lanes between State Route 14 and 30th Street East. This report's recommendations to improve the Tierra Subida Avenue-5th Street and the Palmdale Boulevard-Sierra Highway intersections have already been planned and will be implemented within the next ten years. However, if these improvements are not made by 2006, when this project will be complete, than significant impacts may occur as described herein.

APPENDIX 10.4:
NOISE DATA

Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing 10th Street West south of Technology D		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	17570
Receiver Barrier Dist:	0	Peak Hour Traffic:	1757
Centerline Dist. To Observer:	75	Vehicle Speed:	50
Barrier Near Lane CL Dist:	0	Centerline Separation:	36
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

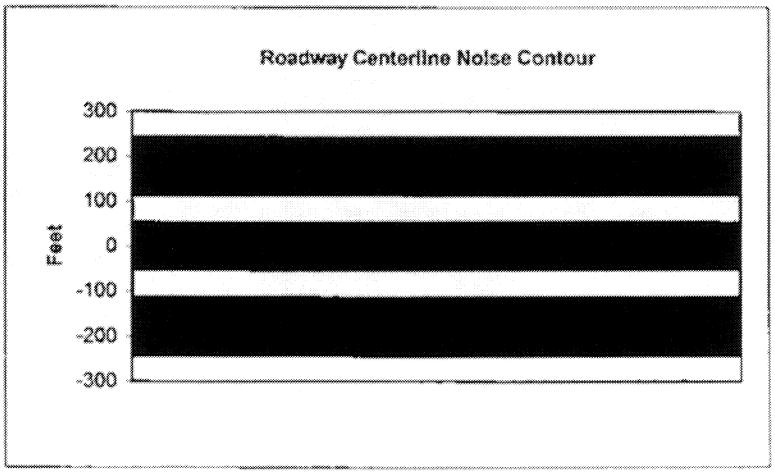
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.3	64.1	62.3	56.2	64.8	65.5
Medium Trucks:	63.0	54.9	48.5	47.0	55.4	55.7
Heavy Trucks:	67.2	55.2	46.3	47.4	56.8	56.9
Vehicle Noise:	**69.5**	**65.2**	**62.6**	**57.3**	**65.9**	**66.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	244
65 dBA	113
70 dBA	52
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj.10th Street West south of Tech		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	75		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	12780
Peak Hour Traffic:	1278
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

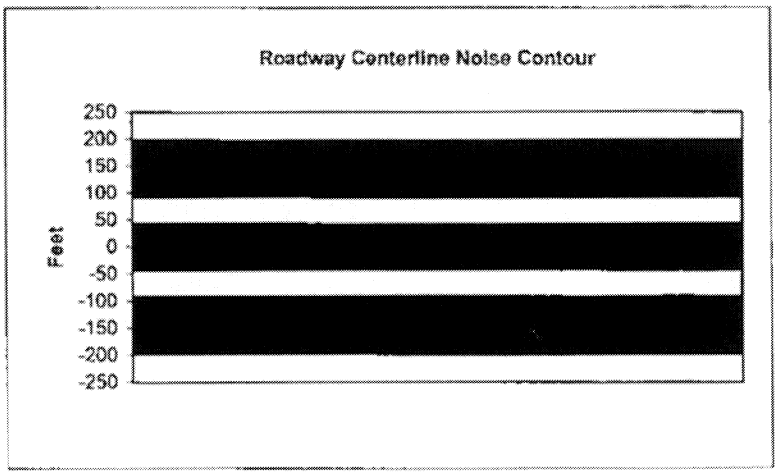
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.9	62.7	60.9	54.8	63.5	64.1
Medium Trucks:	61.6	53.5	47.1	45.6	54.1	54.3
Heavy Trucks:	65.8	53.9	44.9	46.0	55.4	55.5
Vehicle Noise:	**68.1**	**63.8**	**61.2**	**55.9**	**64.5**	**65.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	197
65 dBA	92
70 dBA	42
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj.10th Street West south of Techn		

PROJECT DATA			
Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	75		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	22780
Peak Hour Traffic:	2278
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: **SOFT SITE**

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

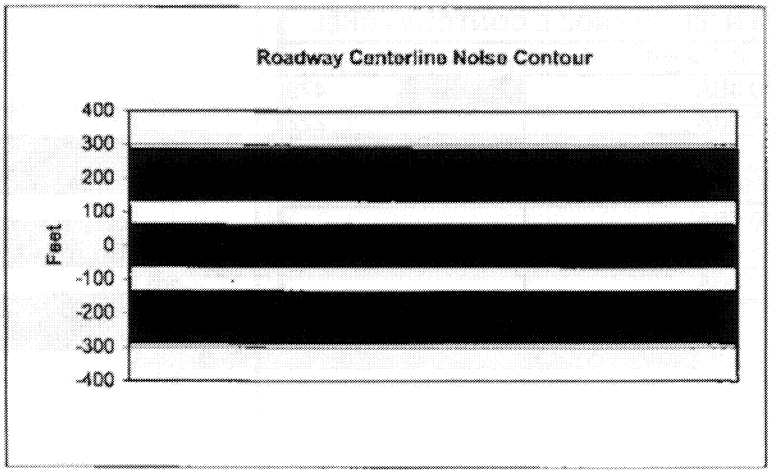
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.4	65.2	63.4	57.3	66.0	66.6
Medium Trucks:	64.1	56.0	49.6	48.1	56.6	56.8
Heavy Trucks:	68.3	56.4	47.4	48.5	57.9	58.1
Vehicle Noise:	**70.6**	**66.3**	**63.7**	**58.4**	**67.0**	**67.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	290
65 dBA	135
70 dBA	62
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. Tierra Subida south of City Rai		

PROJECT DATA			
Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	150		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	8670
Peak Hour Traffic:	867
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS
Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

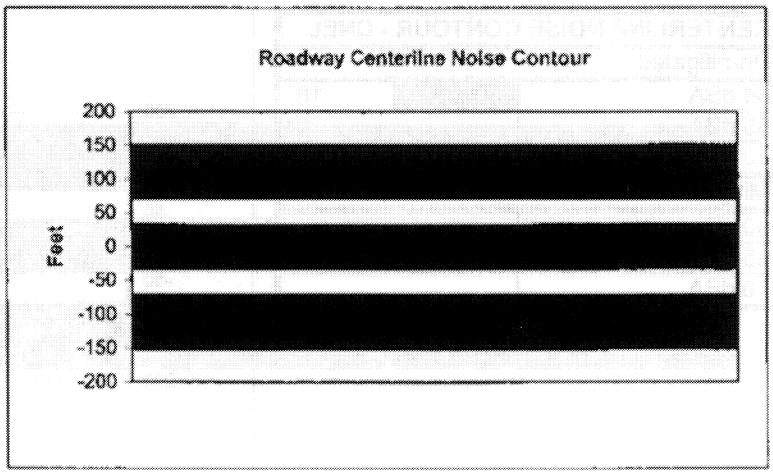
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.3	57.1	55.3	49.2	57.8	58.4
Medium Trucks:	56.0	47.9	41.5	39.9	48.4	48.7
Heavy Trucks:	60.2	48.2	39.3	40.4	49.8	49.9
Vehicle Noise:	**62.5**	**58.2**	**55.6**	**50.3**	**58.9**	**59.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	152
65 dBA	71
70 dBA	33
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/ Proj Tierra Subida south of Date Palm I		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	15420
Receiver Barrier Dist:	0	Peak Hour Traffic:	1542
Centerline Dist. To Observer:	70	Vehicle Speed:	50
Barrier Near Lane CL Dist:	0	Centerline Separation:	36
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

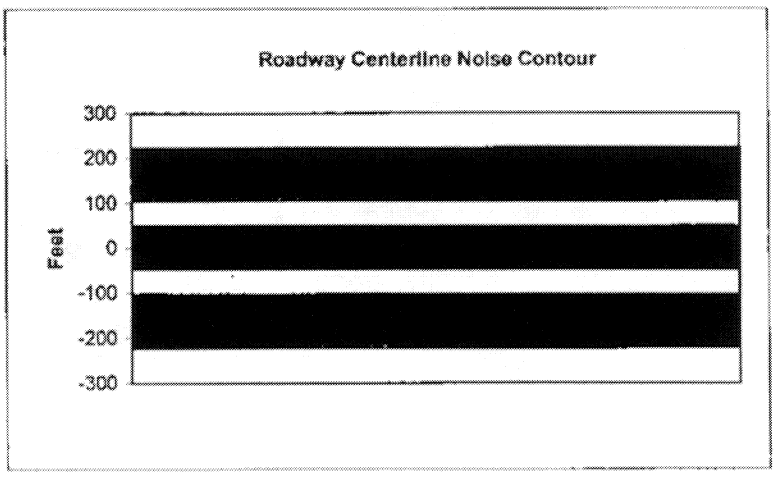
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.1	63.9	62.1	56.0	64.7	65.3
Medium Trucks:	62.8	54.7	48.3	46.8	55.2	55.5
Heavy Trucks:	67.0	55.0	46.1	47.2	56.6	56.7
Vehicle Noise:	**69.3**	**65.0**	**62.4**	**57.1**	**65.7**	**66.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	223
65 dBA	104
70 dBA	48
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj Tierra Subida south of Date Palm		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	70
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	17080
Peak Hour Traffic:	1708
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

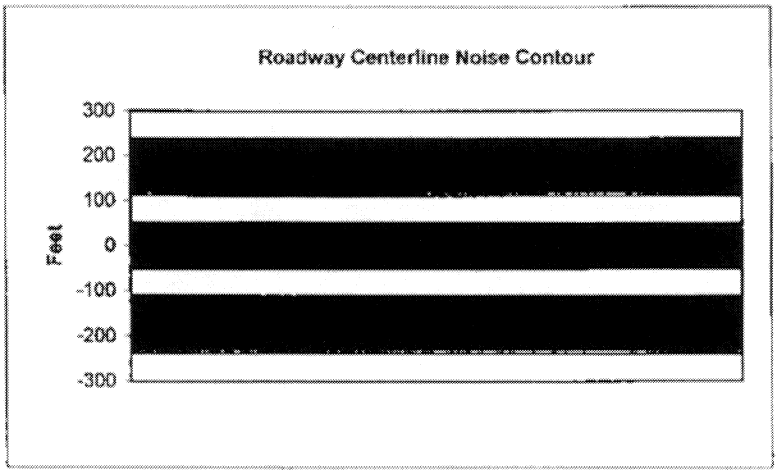
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.5	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	63.2	55.2	48.8	47.2	55.7	55.9
Heavy Trucks:	67.4	55.5	46.5	47.7	57.0	57.2
Vehicle Noise:	**69.8**	**65.4**	**62.9**	**57.5**	**66.1**	**66.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	239
65 dBA	111
70 dBA	52
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Tierra Subida south of City Ranch Drive		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	150		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	7410
Peak Hour Traffic:	741
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

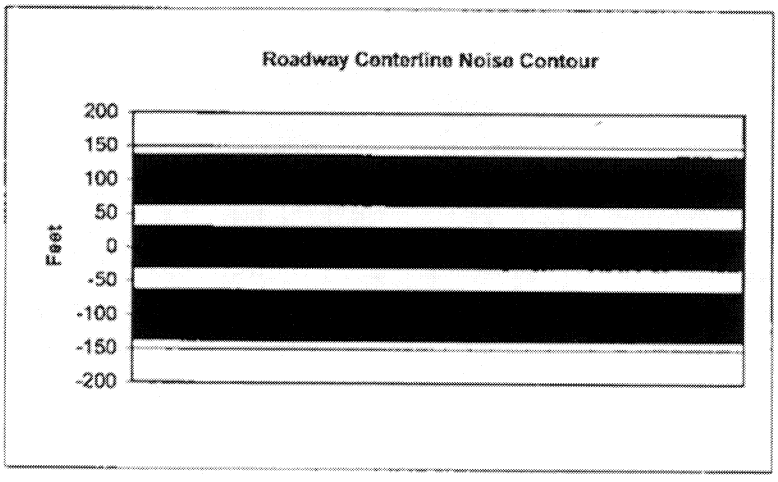
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.6	56.4	54.6	48.5	57.2	57.8
Medium Trucks:	55.3	47.2	40.8	39.3	47.7	48.0
Heavy Trucks:	59.5	47.5	38.6	39.7	49.1	49.2
Vehicle Noise:	**61.8**	**57.5**	**54.9**	**49.6**	**58.2**	**58.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	137
65 dBA	64
70 dBA	30
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. Tierra Subida south of Date Pa		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	70
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	13190
Peak Hour Traffic:	1319
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

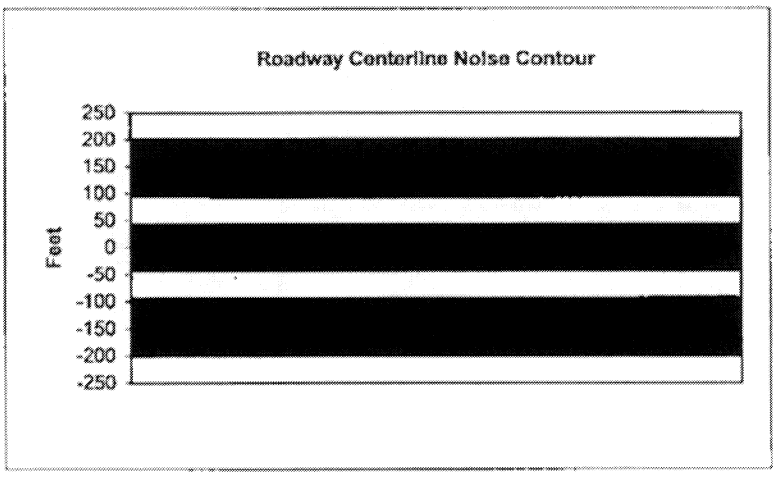
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.4	63.2	61.4	55.3	64.0	64.6
Medium Trucks:	62.1	54.0	47.6	46.1	54.6	54.8
Heavy Trucks:	66.3	54.4	45.4	46.5	55.9	56.1
Vehicle Noise:	**68.6**	**64.3**	**61.7**	**56.4**	**65.0**	**65.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	201
65 dBA	93
70 dBA	43
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj. Tierra Subida south of City Ranc		

PROJECT DATA			
Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	150		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	10000
Peak Hour Traffic:	1000
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: **SOFT SITE**

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

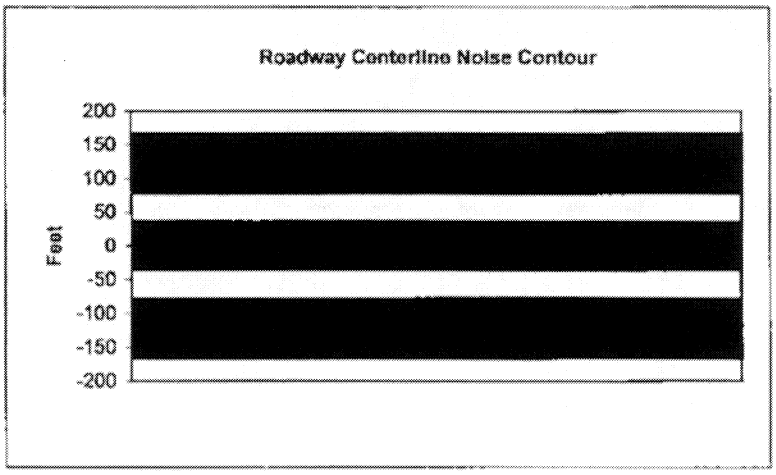
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.9	57.7	55.9	49.8	58.5	59.1
Medium Trucks:	56.6	48.5	42.1	40.6	49.1	49.3
Heavy Trucks:	60.8	48.8	39.9	41.0	50.4	50.5
Vehicle Noise:	**63.1**	**58.8**	**56.2**	**50.9**	**59.5**	**60.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	167
65 dBA	78
70 dBA	36
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj Tierra Subida south of City Ranch		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	27750
Receiver Barrier Dist:	0	Peak Hour Traffic:	2775
Centerline Dist. To Observer:	150	Vehicle Speed:	50
Barrier Near Lane CL Dist:	0	Centerline Separation:	36
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

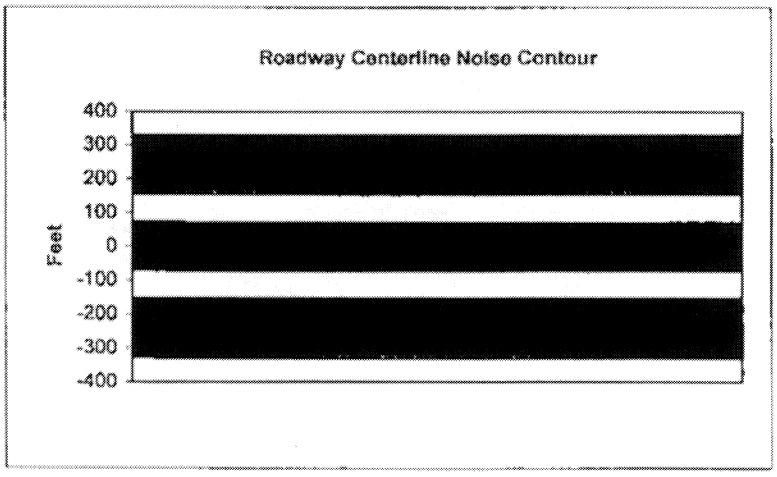
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.3	62.1	60.3	54.2	62.9	63.5
Medium Trucks:	61.0	52.9	46.6	45.0	53.5	53.7
Heavy Trucks:	65.2	53.3	44.3	45.5	54.8	55.0
Vehicle Noise:	**67.6**	**63.2**	**60.6**	**55.3**	**63.9**	**64.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	331
65 dBA	154
70 dBA	71
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Palmdale Boulevard east of Trade Cent		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	100		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	13360
Peak Hour Traffic:	1336
Vehicle Speed:	50
Centerline Separation:	38

NOISE INPUTS

Site conditions: **SOFT SITE**

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

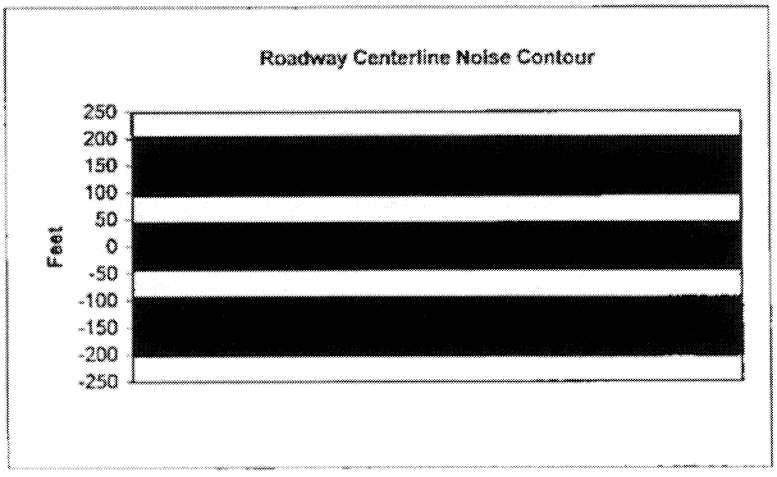
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.5	61.2	59.5	53.4	62.0	62.6
Medium Trucks:	60.1	52.1	45.7	44.1	52.6	52.8
Heavy Trucks:	64.4	52.4	43.4	44.6	54.0	54.1
Vehicle Noise:	**66.7**	**62.3**	**59.8**	**54.4**	**63.1**	**63.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	203
65 dBA	94
70 dBA	44
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. Palmdale Boulevard east of Tr		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	15640
Receiver Barrier Dist:	0	Peak Hour Traffic:	1564
Centerline Dist. To Observer:	100	Vehicle Speed:	50
Barrier Near Lane CL Dist:	0	Centerline Separation:	38
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

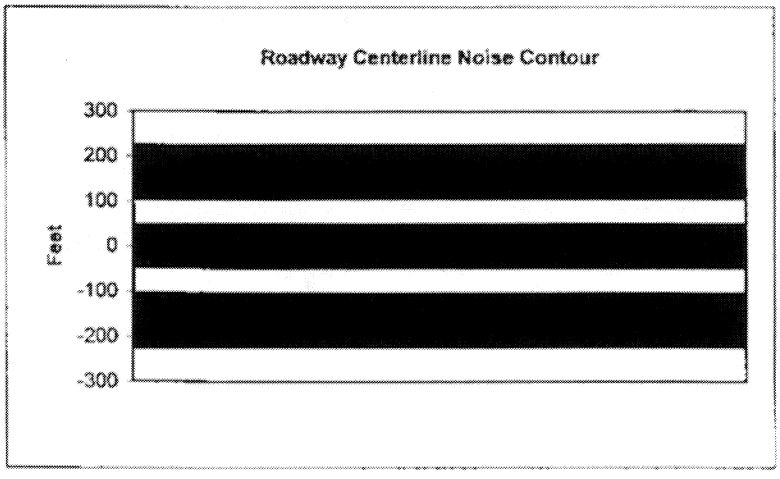
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.1	61.9	60.1	54.0	62.7	63.3
Medium Trucks:	60.8	52.7	46.4	44.8	53.3	53.5
Heavy Trucks:	65.0	53.1	44.1	45.3	54.6	54.8
Vehicle Noise:	**67.4**	**63.0**	**60.4**	**55.1**	**63.7**	**64.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	226
65 dBA	105
70 dBA	49
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj. Palmdale Boulevard east of Trac		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	19640
Peak Hour Traffic:	1964
Vehicle Speed:	50
Centerline Separation:	38

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

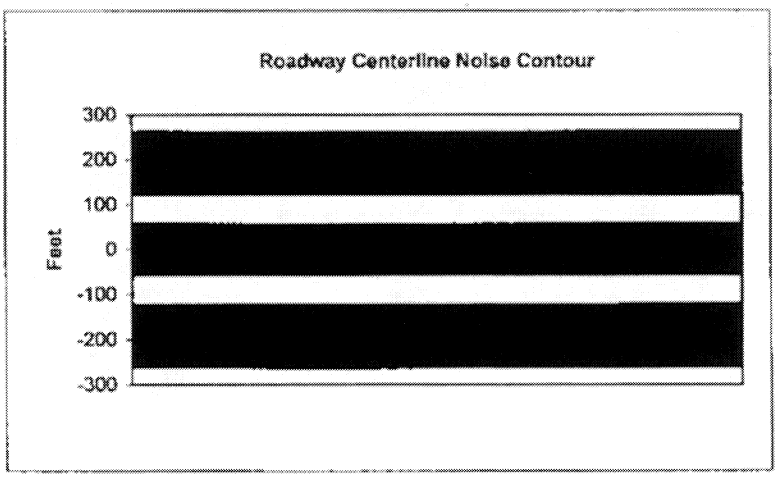
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.1	62.9	61.1	55.0	63.7	64.3
Medium Trucks:	61.8	53.7	47.4	45.8	54.3	54.5
Heavy Trucks:	66.0	54.1	45.1	46.2	55.6	55.8
Vehicle Noise:	**68.3**	**64.0**	**61.4**	**56.1**	**64.7**	**65.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	263
65 dBA	122
70 dBA	57
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj Palmdale Boulevard east of Tradi		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	56370
Peak Hour Traffic:	5637
Vehicle Speed:	50
Centerline Separation:	38

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

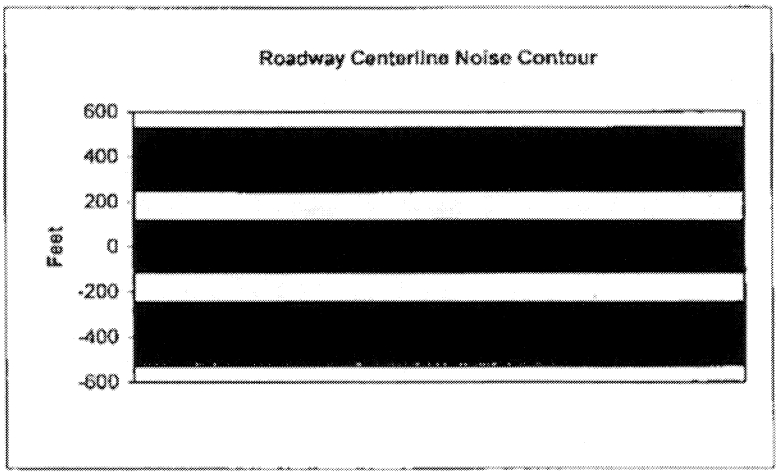
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.7	67.5	65.7	59.6	68.3	68.9
Medium Trucks:	66.4	58.3	51.9	50.4	58.9	59.1
Heavy Trucks:	70.6	58.6	49.7	50.8	60.2	60.3
Vehicle Noise:	**72.9**	**68.6**	**66.0**	**60.7**	**69.3**	**69.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	530
65 dBA	246
70 dBA	114
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Palmdale Boulevard east of Sierra High		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	90
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	32550
Peak Hour Traffic:	3255
Vehicle Speed:	40
Centerline Separation:	38

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

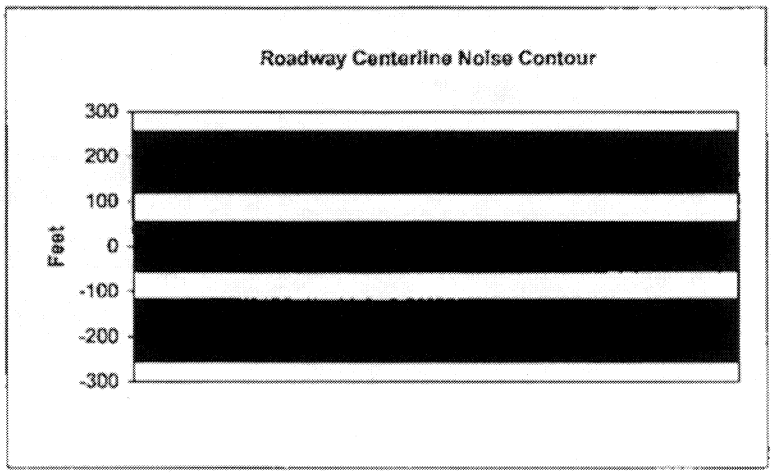
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.1	62.9	61.1	55.0	63.7	64.3
Medium Trucks:	63.1	55.0	48.6	47.1	55.5	55.8
Heavy Trucks:	67.9	56.0	47.0	48.1	57.8	58.0
Vehicle Noise:	**70.3**	**64.5**	**61.6**	**56.6**	**65.2**	**65.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	256
65 dBA	119
70 dBA	55
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj.Palmdale Boulevard east of Sie		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	90
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	38080
Peak Hour Traffic:	3808
Vehicle Speed:	40
Centerline Separation:	38

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

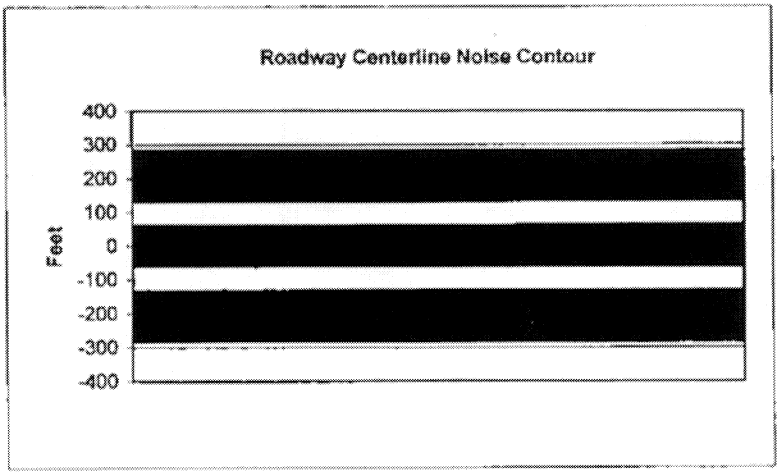
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.8	63.6	61.8	55.7	64.4	65.0
Medium Trucks:	63.8	55.7	49.3	47.7	56.2	56.5
Heavy Trucks:	68.6	56.6	47.7	48.8	58.5	58.7
Vehicle Noise:	**71.0**	**65.2**	**62.2**	**57.3**	**65.9**	**66.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	284
65 dBA	132
70 dBA	61
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj.Palmdale Boulevard east of Sien		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	90
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0

Rt View: 90 Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	39410
Peak Hour Traffic:	3941
Vehicle Speed:	40
Centerline Separation:	38

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

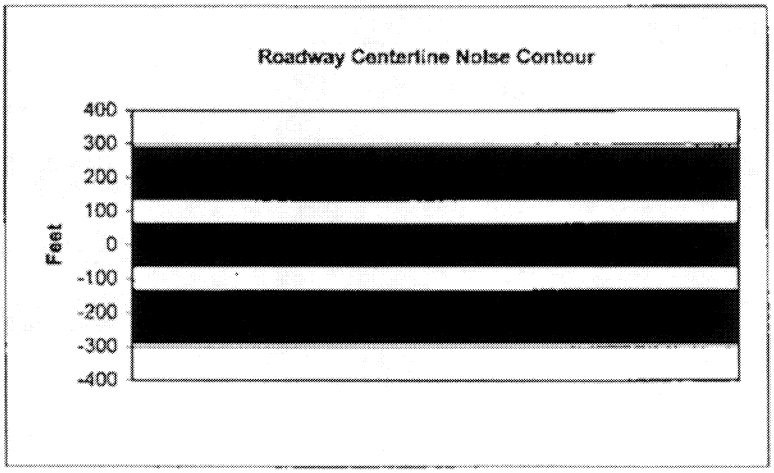
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.0	63.7	62.0	55.8	64.5	65.1
Medium Trucks:	63.9	55.8	49.5	47.9	56.4	56.6
Heavy Trucks:	68.7	56.8	47.8	49.0	58.7	58.8
Vehicle Noise:	**71.1**	**65.3**	**62.4**	**57.4**	**66.0**	**66.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	291
65 dBA	135
70 dBA	63
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj Palmdale Boulevard east of Sierr		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	19970
Receiver Barrier Dist:	0	Peak Hour Traffic:	1997
Centerline Dist. To Observer:	90	Vehicle Speed:	40
Barrier Near Lane CL Dist:	0	Centerline Separation:	38
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

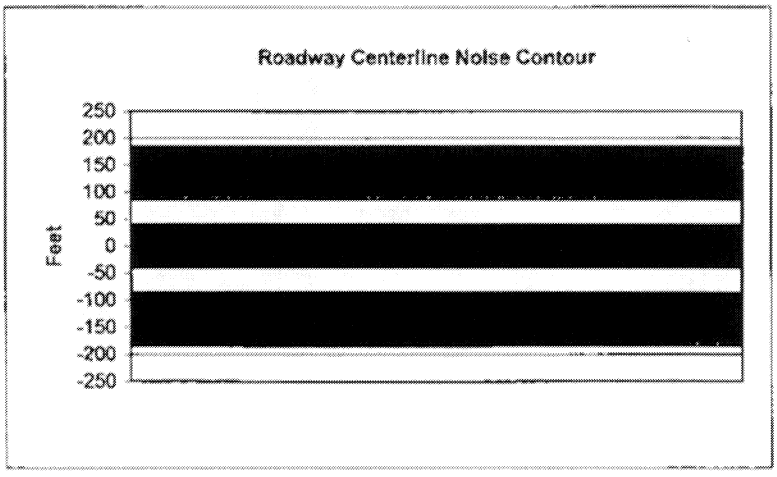
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.0	60.8	59.0	52.9	61.6	62.2
Medium Trucks:	61.0	52.9	46.5	44.9	53.4	53.7
Heavy Trucks:	65.8	53.8	44.9	46.0	55.7	55.9
Vehicle Noise:	**68.2**	**62.4**	**59.4**	**54.5**	**63.1**	**63.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL		
Unmitigated		
60 dBA		185
65 dBA		86
70 dBA		40
Mitigated		
60 dBA		
65 dBA		
70 dBA		



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Palmdale Boulevard west of 30th Street		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	19800
Peak Hour Traffic:	1980
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

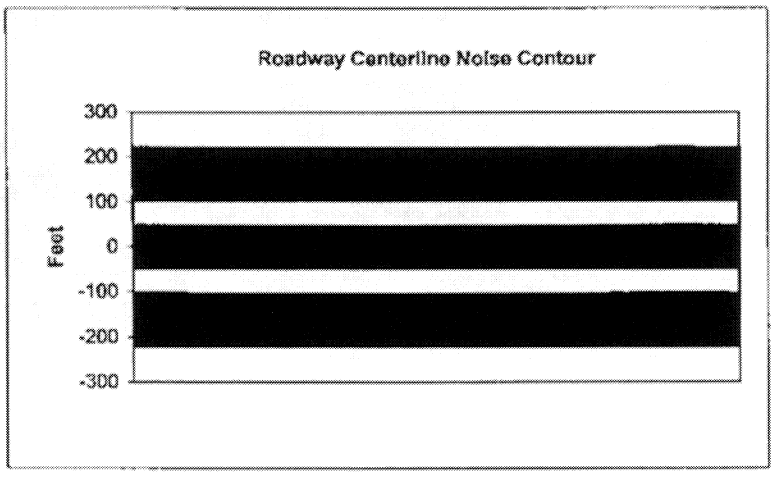
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.9	61.7	59.9	53.8	62.4	63.1
Medium Trucks:	61.2	53.1	46.7	45.2	53.6	53.9
Heavy Trucks:	65.7	53.7	44.8	45.9	55.4	55.6
Vehicle Noise:	**68.0**	**63.0**	**60.3**	**55.1**	**63.7**	**64.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	222
65 dBA	103
70 dBA	48
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. Palmdale Boulevard west of 3C		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	23150
Peak Hour Traffic:	2315
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

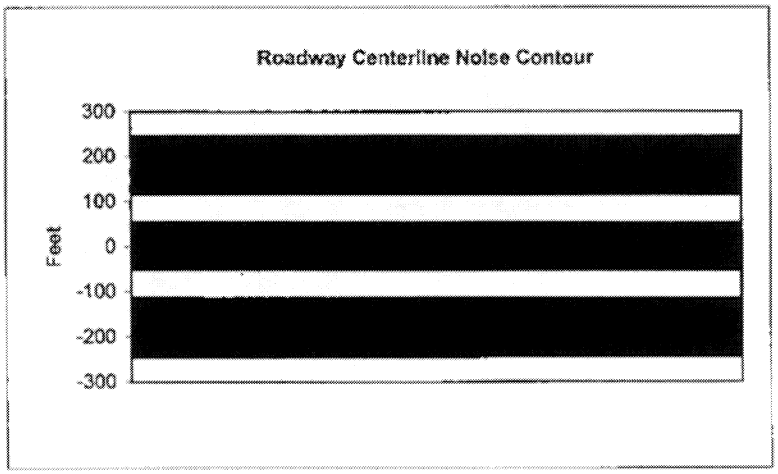
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.6	62.4	60.6	54.5	63.1	63.7
Medium Trucks:	61.8	53.8	47.4	45.8	54.3	54.6
Heavy Trucks:	66.4	54.4	45.4	46.6	56.1	56.3
Vehicle Noise:	**68.7**	**63.7**	**60.9**	**55.8**	**64.4**	**64.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	246
65 dBA	114
70 dBA	53
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj. Palmdale Boulevard west of 30fl		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	24480
Receiver Barrier Dist:	0	Peak Hour Traffic:	2448
Centerline Dist. To Observer:	100	Vehicle Speed:	45
Barrier Near Lane CL Dist:	0	Centerline Separation:	36
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

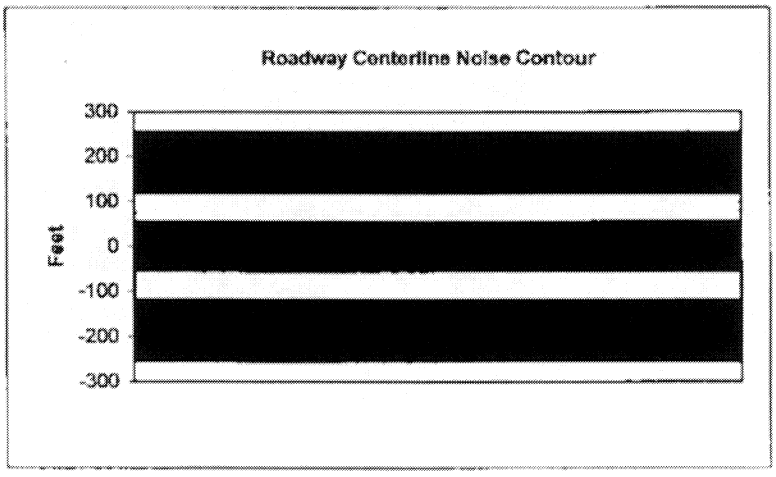
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.8	62.6	60.8	54.7	63.4	64.0
Medium Trucks:	62.1	54.0	47.6	46.1	54.6	54.8
Heavy Trucks:	66.6	54.7	45.7	46.8	56.4	56.5
Vehicle Noise:	**68.9**	**63.9**	**61.2**	**56.0**	**64.6**	**65.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	256
65 dBA	119
70 dBA	55
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj Palmdale Boulevard west of 30th		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	100
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	17280
Peak Hour Traffic:	1728
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions:SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

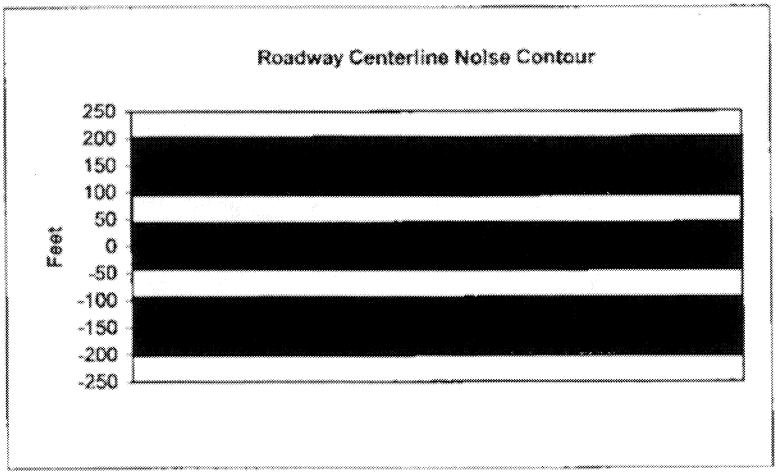
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.3	61.1	59.3	53.2	61.9	62.5
Medium Trucks:	60.6	52.5	46.1	44.6	53.1	53.3
Heavy Trucks:	65.1	53.1	44.2	45.3	54.9	55.0
Vehicle Noise:	**67.4**	**62.4**	**59.7**	**54.5**	**63.1**	**63.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	203
65 dBA	94
70 dBA	44
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Palmdale Boulevard east of 30th Street		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	450
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	17280
Peak Hour Traffic:	1728
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

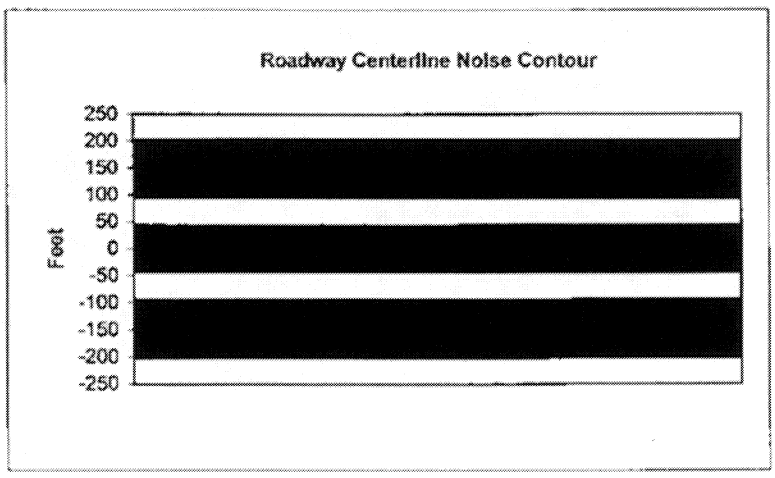
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.3	52.0	50.3	44.2	52.8	53.4
Medium Trucks:	51.5	43.5	37.1	35.5	44.0	44.2
Heavy Trucks:	56.1	44.1	35.1	36.3	45.8	45.9
Vehicle Noise:	**58.4**	**53.3**	**50.6**	**45.5**	**54.1**	**54.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	203
65 dBA	94
70 dBA	44
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj.Palmdale Boulevard east of 30t		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	450		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	20220
Peak Hour Traffic:	2022
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

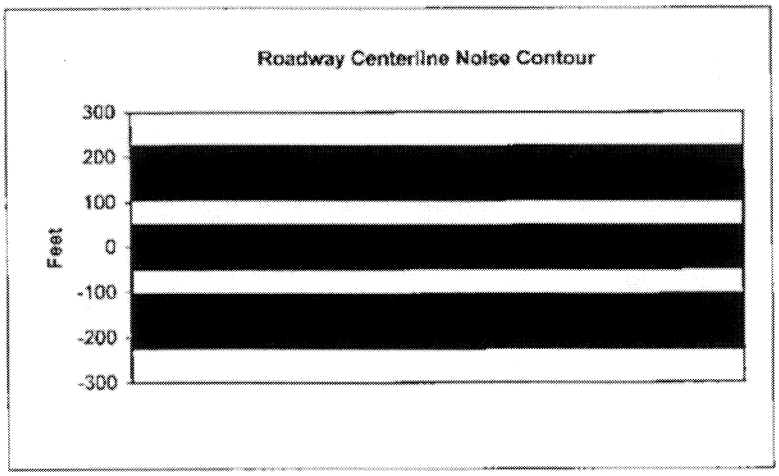
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.9	52.7	50.9	44.8	53.5	54.1
Medium Trucks:	52.2	44.2	37.8	36.2	44.7	44.9
Heavy Trucks:	56.7	44.8	35.8	36.9	46.5	46.6
Vehicle Noise:	**59.1**	**54.0**	**51.3**	**46.1**	**54.7**	**55.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	225
65 dBA	104
70 dBA	48
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj.Palmdale Boulevard east of 30th		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	450
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	20670
Peak Hour Traffic:	2067
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

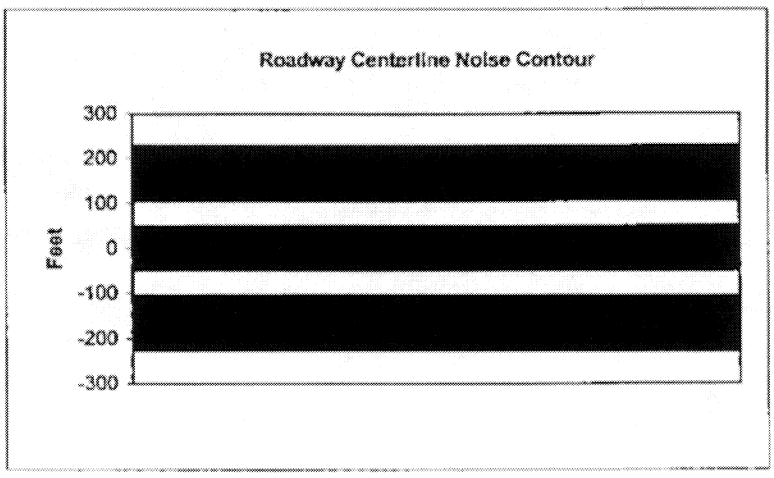
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	44.0	52.8	51.0	44.9	53.6	54.2
Medium Trucks:	52.3	44.2	37.9	36.3	44.8	45.0
Heavy Trucks:	56.8	44.9	35.9	37.0	46.6	46.7
Vehicle Noise:	**59.2**	**54.1**	**51.4**	**46.2**	**54.8**	**55.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	228
65 dBA	106
70 dBA	49
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj Palmdale Boulevard east of 30th		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	450		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	17680
Peak Hour Traffic:	1768
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

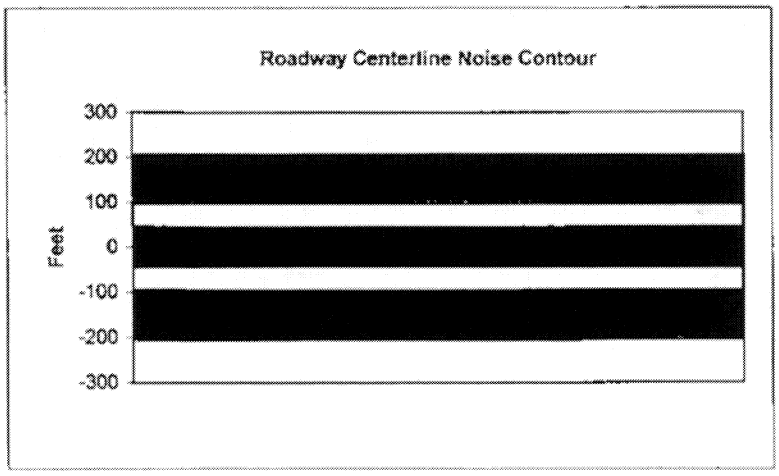
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.4	52.1	50.4	44.3	52.9	53.5
Medium Trucks:	51.6	43.6	37.2	35.6	44.1	44.3
Heavy Trucks:	56.2	44.2	35.2	36.4	45.9	46.0
Vehicle Noise:	**58.5**	**53.4**	**50.7**	**45.6**	**54.2**	**54.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	206
65 dBA	95
70 dBA	44
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Rayburn Avenue east of Tierra Subida		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	95		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	4640
Peak Hour Traffic:	464
Vehicle Speed:	50
Centerline Separation:	24

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

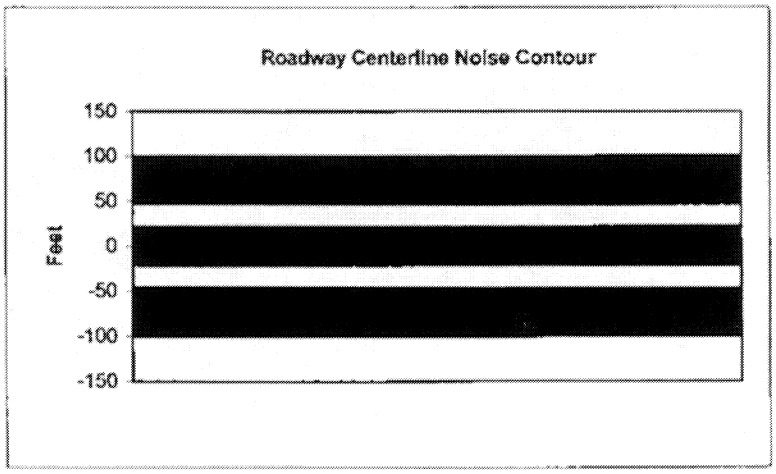
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.5	57.3	55.5	49.4	58.1	58.7
Medium Trucks:	56.2	48.1	41.7	40.2	48.7	48.9
Heavy Trucks:	60.4	48.5	39.5	40.6	50.0	50.1
Vehicle Noise:	**62.7**	**58.4**	**55.8**	**50.5**	**59.1**	**59.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	100
65 dBA	47
70 dBA	22
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. Rayburn Avenue east of Tierra		

PROJECT DATA			
Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	95		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	5420
Peak Hour Traffic:	542
Vehicle Speed:	50
Centerline Separation:	24

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

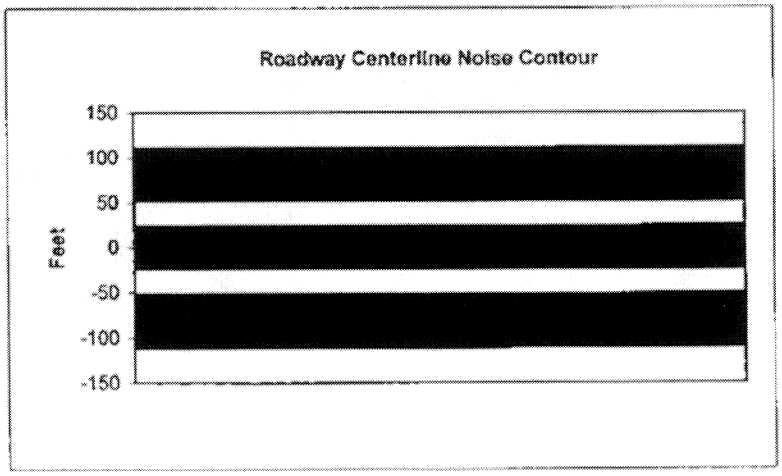
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.2	58.0	56.2	50.1	58.7	59.3
Medium Trucks:	56.9	48.8	42.4	40.8	49.3	49.6
Heavy Trucks:	61.1	49.1	40.2	41.3	50.7	50.8
Vehicle Noise:	**63.4**	**59.1**	**56.5**	**51.2**	**59.8**	**60.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	111
65 dBA	52
70 dBA	24
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj. Rayburn Avenue east of Tierra S		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	95
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	6310
Peak Hour Traffic:	631
Vehicle Speed:	50
Centerline Separation:	24

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

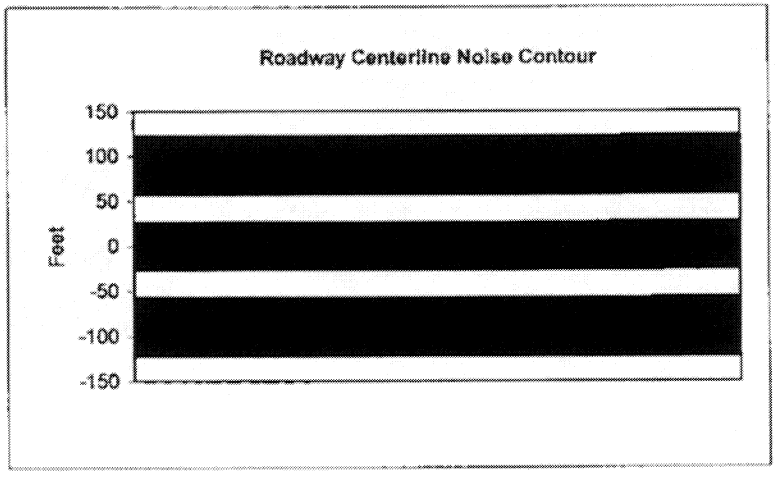
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.8	58.6	56.8	50.7	59.4	60.0
Medium Trucks:	57.5	49.5	43.1	41.5	50.0	50.2
Heavy Trucks:	61.7	49.8	40.8	42.0	51.4	51.5
Vehicle Noise:	**64.1**	**59.7**	**57.2**	**51.8**	**60.4**	**61.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	123
65 dBA	57
70 dBA	27
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj. Rayburn Avenue east of Tierra S		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	16320
Receiver Barrier Dist:	0	Peak Hour Traffic:	1632
Centerline Dist. To Observer:	95	Vehicle Speed:	50
Barrier Near Lane CL Dist:	0	Centerline Separation:	24
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

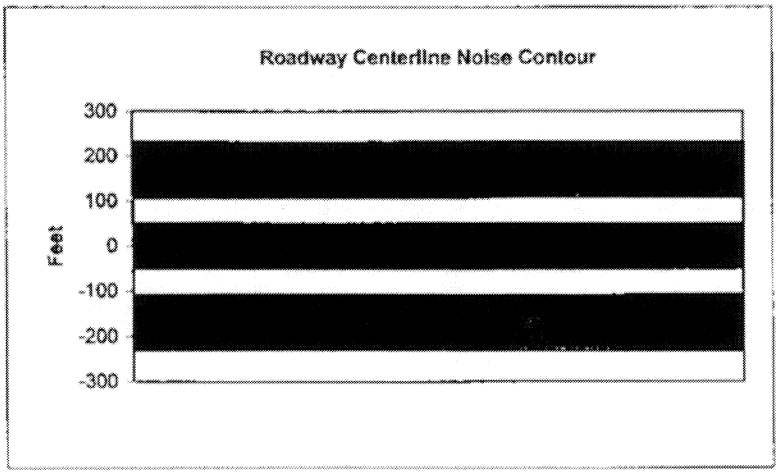
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.0	62.8	61.0	54.9	63.5	64.1
Medium Trucks:	61.6	53.6	47.2	45.6	54.1	54.4
Heavy Trucks:	65.9	53.9	45.0	46.1	55.5	55.6
Vehicle Noise:	**68.2**	**63.8**	**61.3**	**56.0**	**64.6**	**65.1**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	232
65 dBA	108
70 dBA	50
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Ave S east of Tierra Subida		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	7220
Receiver Barrier Dist:	0	Peak Hour Traffic:	722
Centerline Dist. To Observer:	616	Vehicle Speed:	45
Barrier Near Lane CL Dist:	0	Centerline Separation:	24
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

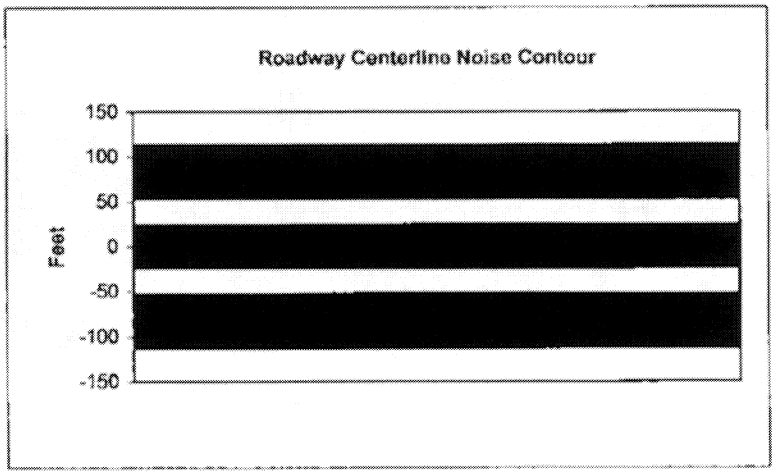
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	37.5	46.3	44.5	38.4	47.1	47.7
Medium Trucks:	45.8	37.8	31.4	29.8	38.3	38.5
Heavy Trucks:	50.3	38.4	29.4	30.6	40.1	40.2
Vehicle Noise:	**52.7**	**47.6**	**44.9**	**39.7**	**48.3**	**48.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	113
65 dBA	53
70 dBA	24
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. Ave S east of Tierra Subida		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	8450
Receiver Barrier Dist:	0	Peak Hour Traffic:	845
Centerline Dist. To Observer:	616	Vehicle Speed:	45
Barrier Near Lane CL Dist:	0	Centerline Separation:	24
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions:	SOFT SITE
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

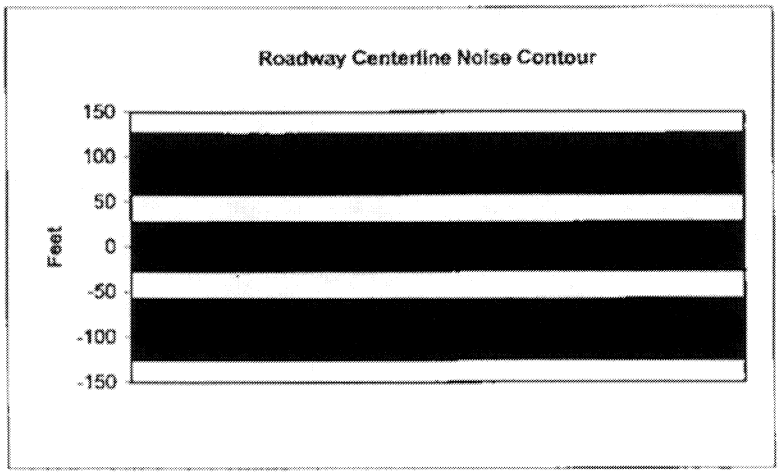
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	38.2	47.0	45.2	39.1	47.8	48.4
Medium Trucks:	46.5	38.4	32.1	30.5	39.0	39.2
Heavy Trucks:	51.0	39.1	30.1	31.2	40.8	40.9
Vehicle Noise:	**53.4**	**48.3**	**45.6**	**40.4**	**49.0**	**49.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	126
65 dBA	58
70 dBA	27
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj. Ave S east of Tierra Subida		

PROJECT DATA			
Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	616		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA	
Road Grade:	0
Average Daily Traffic:	9780
Peak Hour Traffic:	978
Vehicle Speed:	45
Centerline Separation:	24

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

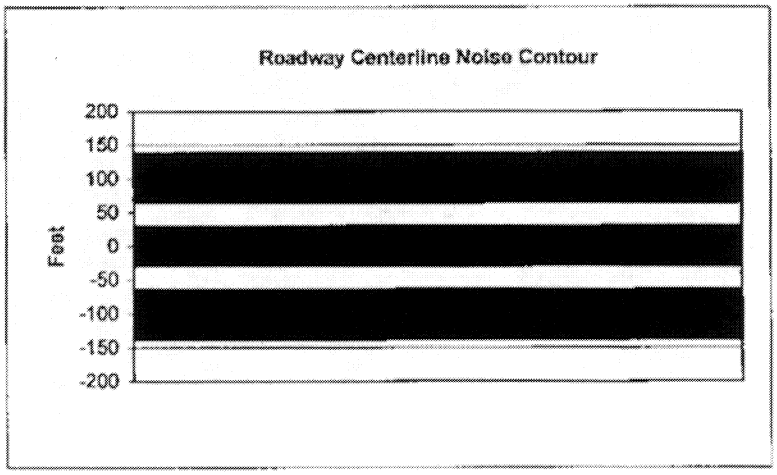
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	38.9	47.6	45.9	39.8	48.4	49.0
Medium Trucks:	47.1	39.1	32.7	31.1	39.6	39.8
Heavy Trucks:	51.7	39.7	30.7	31.9	41.4	41.5
Vehicle Noise:	**54.0**	**48.9**	**46.2**	**41.1**	**49.7**	**50.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	139
65 dBA	64
70 dBA	30
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj. Ave S east of Tierra Subida		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	27760
Receiver Barrier Dist:	0	Peak Hour Traffic:	2776
Centerline Dist. To Observer:	616	Vehicle Speed:	45
Barrier Near Lane CL Dist:	0	Centerline Separation:	24
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

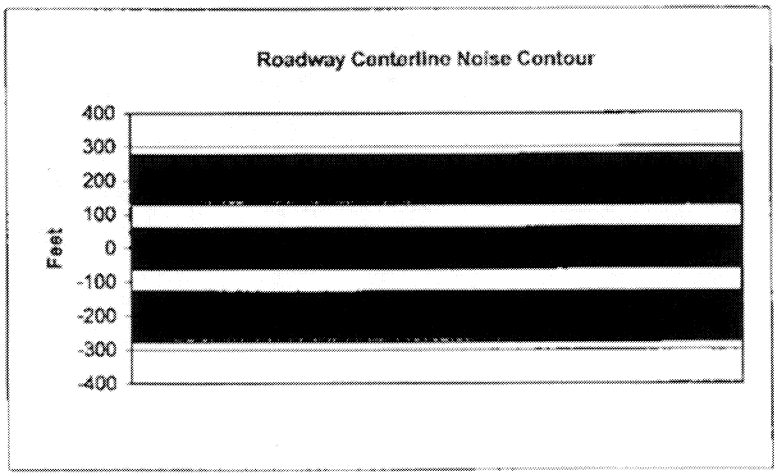
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	43.4	52.2	50.4	44.3	52.9	53.6
Medium Trucks:	51.7	43.6	37.2	35.7	44.1	44.4
Heavy Trucks:	56.2	44.2	35.3	36.4	45.9	46.1
Vehicle Noise:	**58.5**	**53.5**	**50.8**	**45.6**	**54.2**	**54.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	278
65 dBA	129
70 dBA	60
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Sierra Highway south of Palmdale Blvd		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	90		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	11530
Peak Hour Traffic:	1153
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

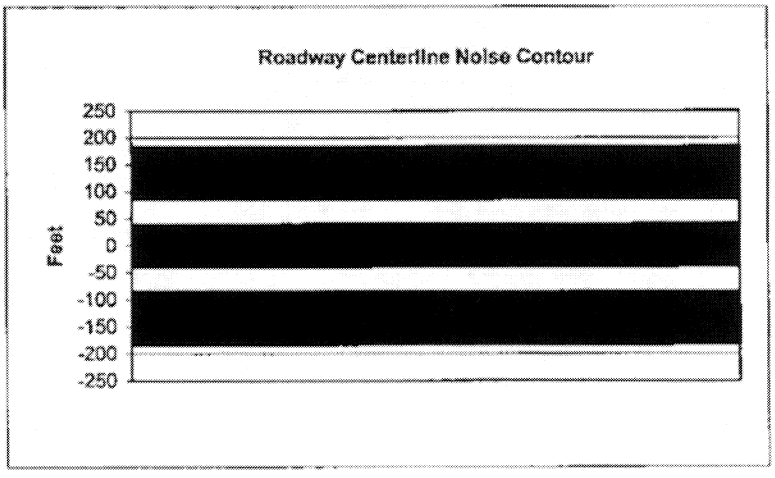
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.5	61.2	59.5	53.4	62.0	62.6
Medium Trucks:	60.1	52.1	45.7	44.1	52.6	52.8
Heavy Trucks:	64.4	52.4	43.4	44.6	54.0	54.1
Vehicle Noise:	**66.7**	**62.3**	**59.8**	**54.4**	**63.1**	**63.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	184
65 dBA	86
70 dBA	40
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. Sierra Highway south of Palmd		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	90		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	13490
Peak Hour Traffic:	1349
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

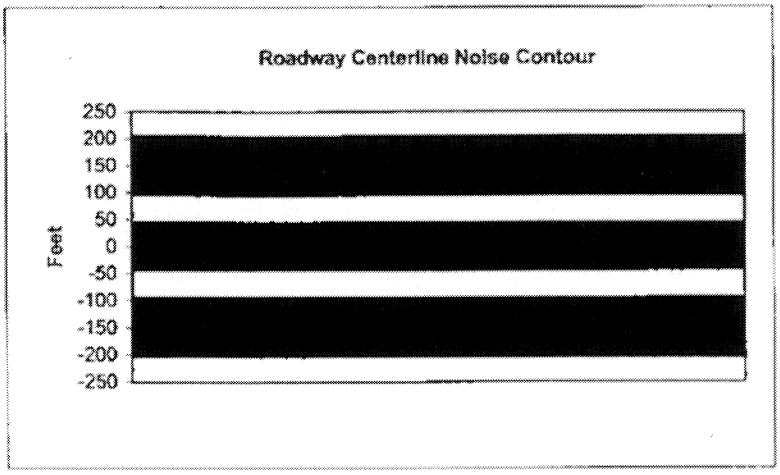
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.1	61.9	60.1	54.0	62.7	63.3
Medium Trucks:	60.8	52.7	46.4	44.8	53.3	53.5
Heavy Trucks:	65.0	53.1	44.1	45.3	54.6	54.8
Vehicle Noise:	**67.4**	**63.0**	**60.4**	**55.1**	**63.7**	**64.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	204
65 dBA	95
70 dBA	44
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj. Sierra Highway south of Palmda		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	90		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	13940
Peak Hour Traffic:	1394
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

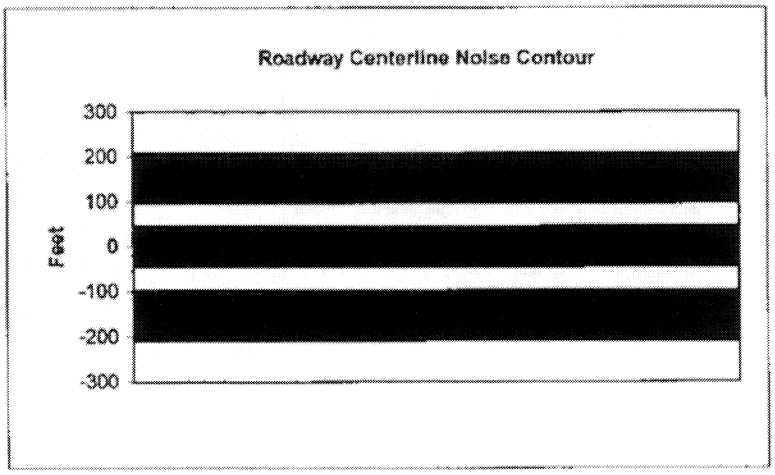
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.3	62.1	60.3	54.2	62.8	63.4
Medium Trucks:	61.0	52.9	46.5	44.9	53.4	53.7
Heavy Trucks:	65.2	53.2	44.3	45.4	54.8	54.9
Vehicle Noise:	**67.5**	**63.2**	**60.6**	**55.3**	**63.9**	**64.4**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	209
65 dBA	97
70 dBA	45
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj. Sierra Highway south of Palmdal		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	90
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	23340
Peak Hour Traffic:	2334
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

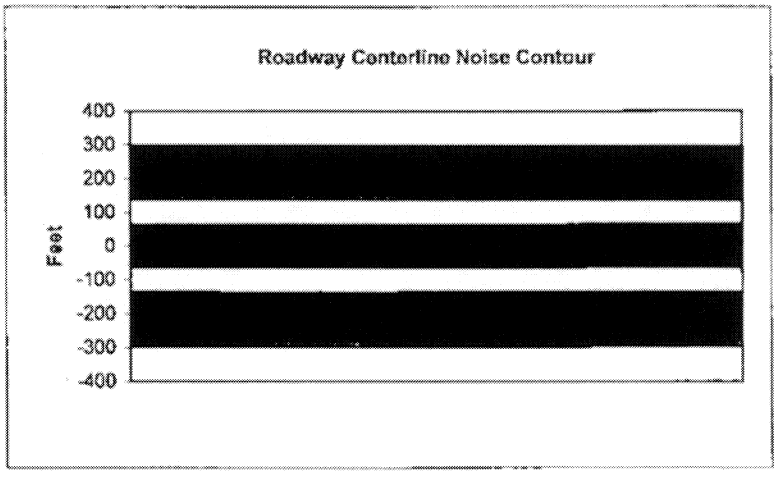
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.5	64.3	62.5	56.4	65.1	65.7
Medium Trucks:	63.2	55.1	48.7	47.2	55.7	55.9
Heavy Trucks:	67.4	55.5	46.5	47.6	57.0	57.2
Vehicle Noise:	**69.7**	**65.4**	**62.8**	**57.5**	**66.1**	**66.6**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	295
65 dBA	137
70 dBA	63
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing 30th Street south of Palmdale Blvd		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	350		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	8960
Peak Hour Traffic:	896
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: **SOFT SITE**

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

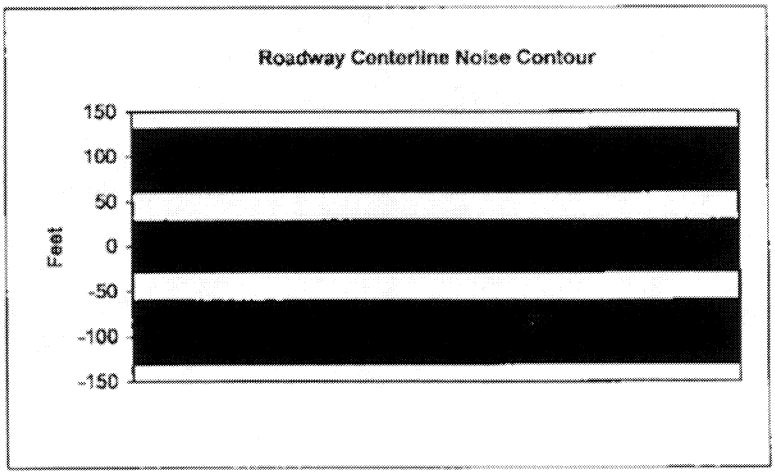
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	42.0	50.8	49.0	42.9	51.5	52.1
Medium Trucks:	50.2	42.2	35.8	34.2	42.7	43.0
Heavy Trucks:	54.8	42.8	33.8	35.0	44.5	44.7
Vehicle Noise:	**57.1**	**52.1**	**49.3**	**44.2**	**52.8**	**53.3**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	131
65 dBA	61
70 dBA	28
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. 30th Street south of Palmdale I		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	350		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	10480
Peak Hour Traffic:	1048
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

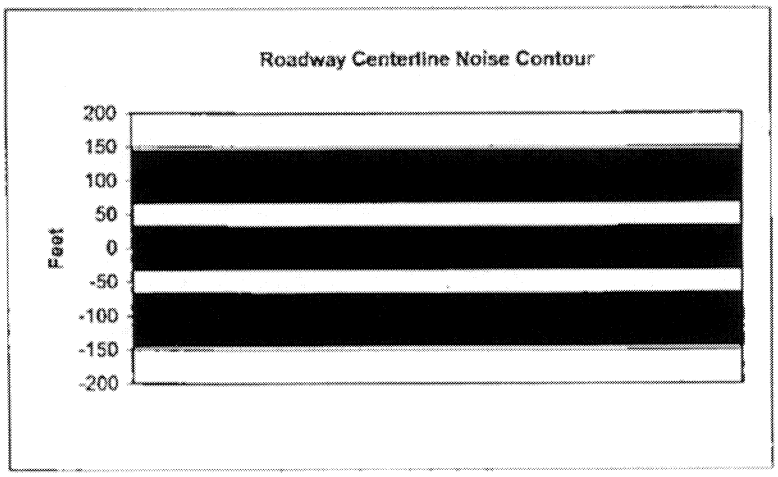
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	42.7	51.4	49.7	43.6	52.2	52.8
Medium Trucks:	50.9	42.9	36.5	34.9	43.4	43.6
Heavy Trucks:	55.4	43.5	34.5	35.7	45.2	45.3
Vehicle Noise:	**57.8**	**52.7**	**50.0**	**44.9**	**53.4**	**54.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	145
65 dBA	67
70 dBA	31
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj. 30th Street south of Palmdale Bl		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	350		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	11100
Peak Hour Traffic:	1110
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

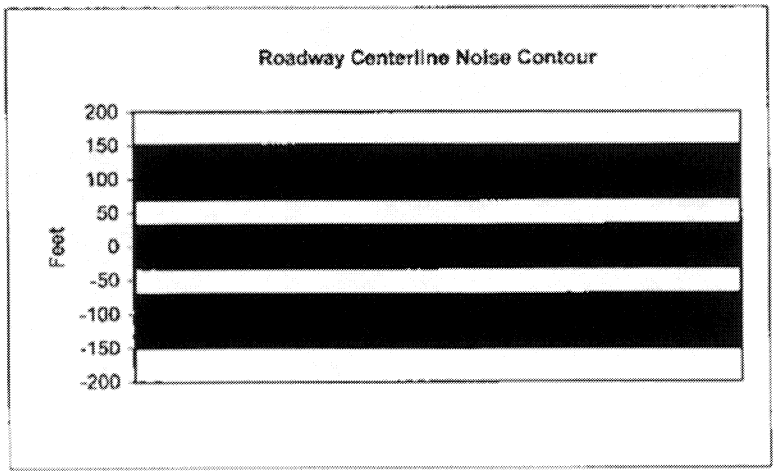
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	42.9	51.7	49.9	43.8	52.5	53.1
Medium Trucks:	51.2	43.1	36.7	35.2	43.7	43.9
Heavy Trucks:	55.7	43.7	34.8	35.9	45.5	45.6
Vehicle Noise:	**58.0**	**53.0**	**50.3**	**45.1**	**53.7**	**54.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	151
65 dBA	70
70 dBA	33
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj. 30th Street south of Palmdale Bl		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	350
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	9860
Peak Hour Traffic:	986
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

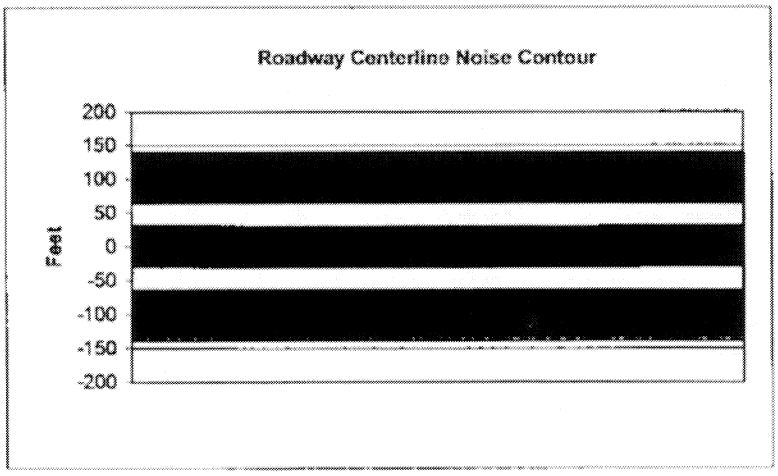
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	42.4	51.2	49.4	43.3	51.9	52.5
Medium Trucks:	50.7	42.6	36.2	34.7	43.1	43.4
Heavy Trucks:	55.2	43.2	34.3	35.4	44.9	45.1
Vehicle Noise:	**57.5**	**52.5**	**49.8**	**44.6**	**53.2**	**53.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	139
65 dBA	65
70 dBA	30
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing 30th Street north of Palmdale Blvd		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	125
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	7980
Peak Hour Traffic:	798
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: **SOFT SITE**

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

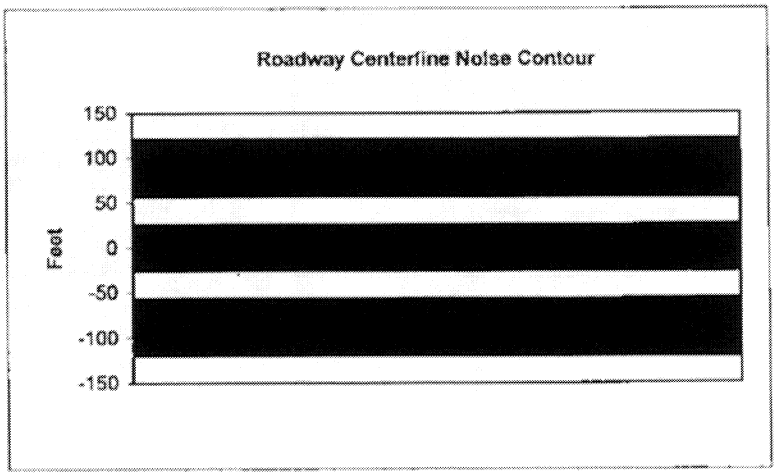
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	47.7	56.4	54.7	48.6	57.2	57.8
Medium Trucks:	55.9	47.9	41.5	39.9	48.4	48.7
Heavy Trucks:	60.5	48.5	39.5	40.7	50.2	50.4
Vehicle Noise:	**62.8**	**57.8**	**55.0**	**49.9**	**58.5**	**59.0**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	121
65 dBA	56
70 dBA	26
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/out Proj. 30th Street north of Palmdale E		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	125		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	9430
Peak Hour Traffic:	943
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

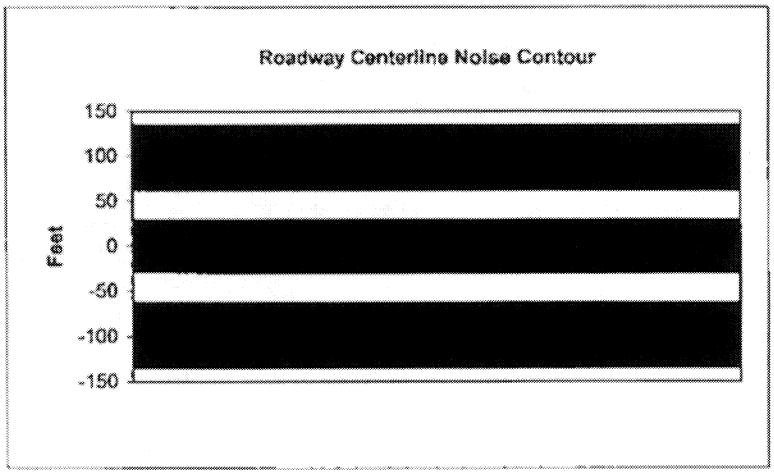
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.4	57.2	55.4	49.3	57.9	58.6
Medium Trucks:	56.7	48.6	42.2	40.7	49.1	49.4
Heavy Trucks:	61.2	49.2	40.3	41.4	50.9	51.1
Vehicle Noise:	**63.5**	**58.5**	**55.8**	**50.6**	**59.2**	**59.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	135
65 dBA	63
70 dBA	29
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Proj. 30th Street north of Palmdale Bl		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	125
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	11810
Peak Hour Traffic:	1181
Vehicle Speed:	45
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

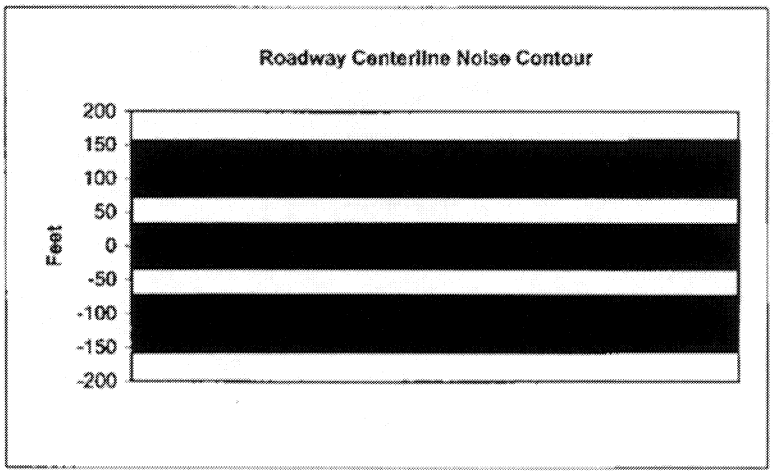
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	49.4	58.2	56.4	50.3	58.9	59.5
Medium Trucks:	57.7	49.6	43.2	41.6	50.1	50.4
Heavy Trucks:	62.2	50.2	41.2	42.4	51.9	52.1
Vehicle Noise:	**64.5**	**59.5**	**56.7**	**51.6**	**60.2**	**60.7**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	157
65 dBA	73
70 dBA	34
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj. 30th Street north of Palmdale Bl\		

PROJECT DATA		SITE DATA	
Centerline Dist to Barrier:	0	Road Grade:	0
Barrier (0=wall, 1= berm):	0	Average Daily Traffic:	9870
Receiver Barrier Dist:	0	Peak Hour Traffic:	987
Centerline Dist. To Observer:	125	Vehicle Speed:	45
Barrier Near Lane CL Dist:	0	Centerline Separation:	36
Barrier Far lane CL Dist:	0	**NOISE INPUTS**	
Pad Elevation:	0.5	Site conditions: SOFT SITE	
Road Elevation:	0	**FLEET MIX**	
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View: 90	Lft View: -90		

NOISE SOURCE ELEVATIONS (Feet)	
Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

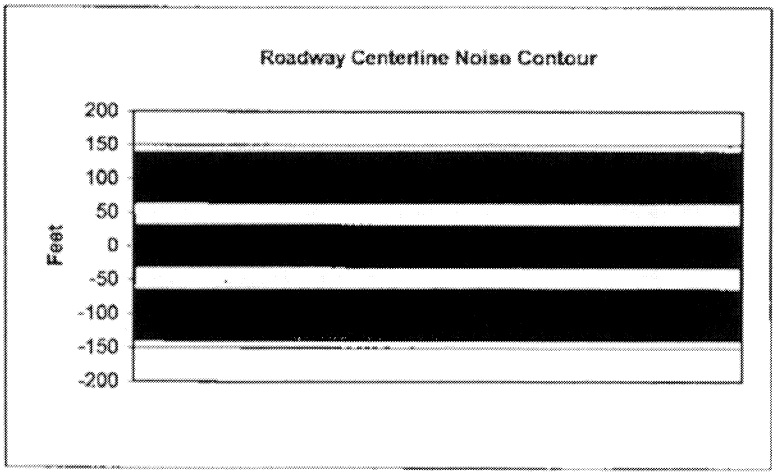
UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.6	57.4	55.6	49.5	58.1	58.8
Medium Trucks:	56.9	48.8	42.4	40.9	49.3	49.6
Heavy Trucks:	61.4	49.4	40.5	41.6	51.1	51.3
Vehicle Noise:	**63.7**	**58.7**	**56.0**	**50.8**	**59.4**	**59.9**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL	
Unmitigated	
60 dBA	140
65 dBA	65
70 dBA	30
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	Existing Ave P East of SR14		

PROJECT DATA

Centerline Dist to Barrier:	0		
Barrier (0=wall, 1= berm):	0		
Receiver Barrier Dist:	0		
Centerline Dist. To Observer:	65		
Barrier Near Lane CL Dist:	0		
Barrier Far lane CL Dist:	0		
Pad Elevation:	0.5		
Road Elevation:	0		
Observer Height (above grade):	5.5		
Barrier Height:	0		
Rt View:	90	Lft View:	-90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	38130
Peak Hour Traffic:	3813
Vehicle Speed:	50
Centerline Separation:	38

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

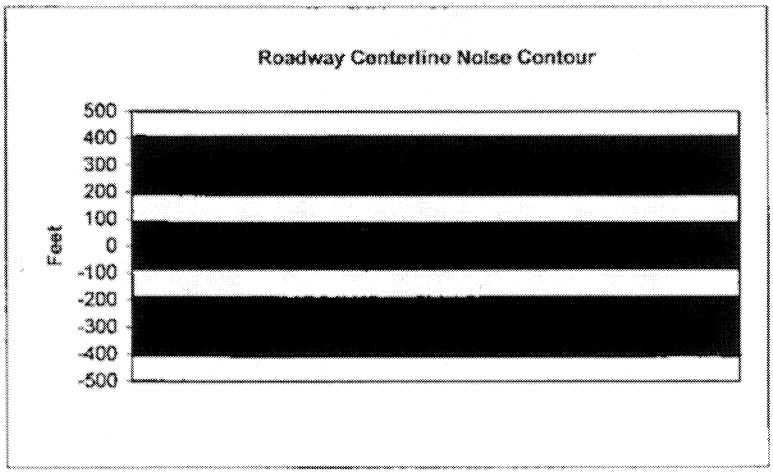
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.4	68.1	66.4	60.3	68.9	69.5
Medium Trucks:	67.0	59.0	52.6	51.0	59.5	59.7
Heavy Trucks:	71.3	59.3	50.3	51.5	60.9	61.0
Vehicle Noise:	**73.6**	**69.2**	**66.7**	**61.4**	**70.0**	**70.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	409
65 dBA	190
70 dBA	88
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 Without Project Ave P East of SR14		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	65
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	44620
Peak Hour Traffic:	4462
Vehicle Speed:	50
Centerline Separation:	38

NOISE INPUTS

Site conditions: **SOFT SITE**

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

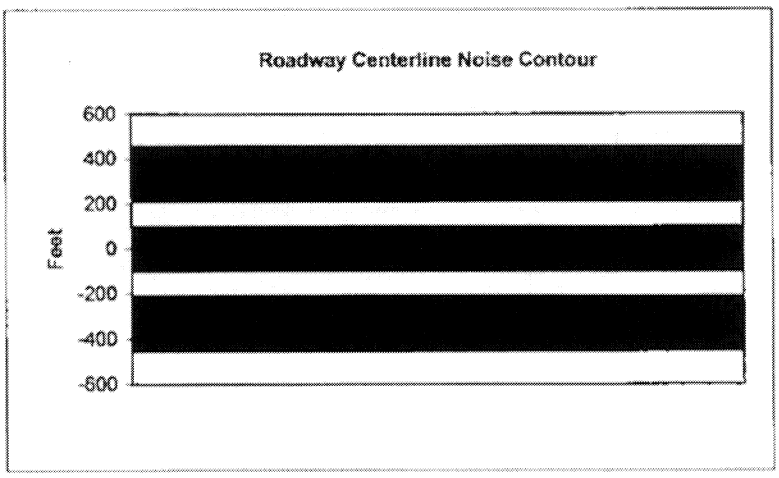
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.0	68.8	67.0	60.9	69.6	70.2
Medium Trucks:	67.7	59.7	53.3	51.7	60.2	60.4
Heavy Trucks:	71.9	60.0	51.0	52.2	61.6	61.7
Vehicle Noise:	**74.3**	**69.9**	**67.4**	**62.0**	**70.6**	**71.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	454
65 dBA	211
70 dBA	98
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 With Project Ave P East of SR14		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	65
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	45510
Peak Hour Traffic:	4551
Vehicle Speed:	50
Centerline Separation:	38

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

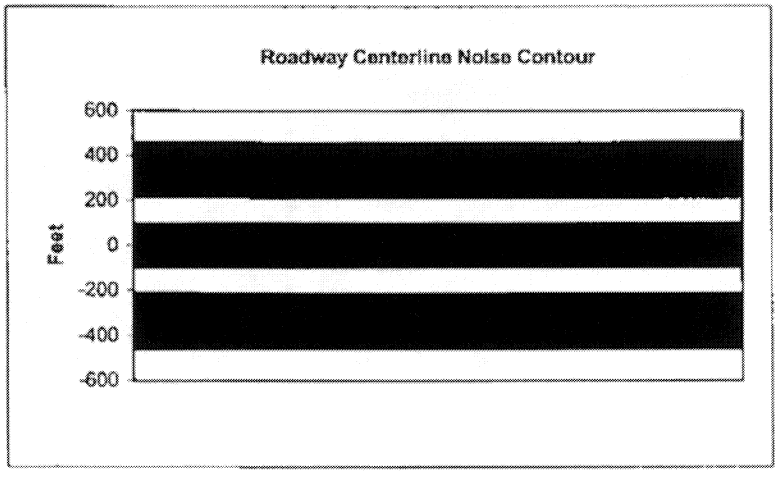
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.1	68.9	67.1	61.0	69.7	70.3
Medium Trucks:	67.8	59.7	53.4	51.8	60.3	60.5
Heavy Trucks:	72.0	60.1	51.1	52.2	61.6	61.8
Vehicle Noise:	**74.4**	**70.0**	**67.4**	**62.1**	**70.7**	**71.2**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	459
65 dBA	213
70 dBA	99
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2020 W/o Proj. Ave P East of SR14		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	65
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	41180
Peak Hour Traffic:	4118
Vehicle Speed:	50
Centerline Separation:	38

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

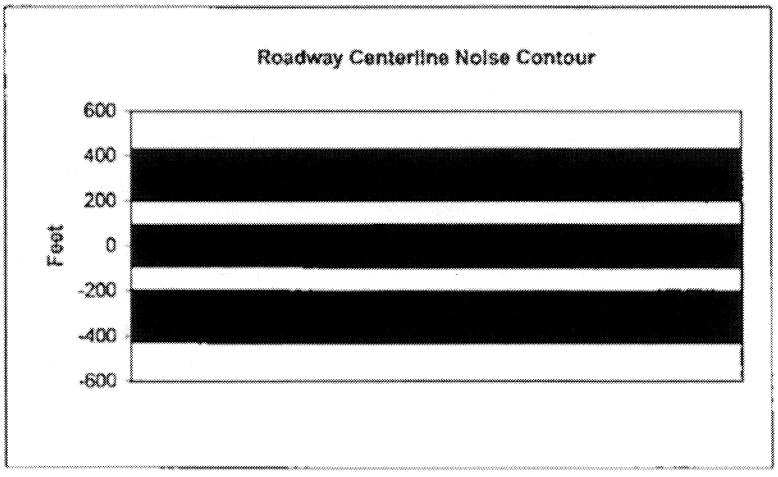
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.7	68.5	66.7	60.6	69.3	69.9
Medium Trucks:	67.4	59.3	52.9	51.4	59.8	60.1
Heavy Trucks:	71.6	59.6	50.7	51.8	61.2	61.3
Vehicle Noise:	**73.9**	**69.6**	**67.0**	**61.7**	**70.3**	**70.8**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	430
65 dBA	200
70 dBA	93
Mitigated	
60 dBA	
65 dBA	
70 dBA	



Federal Highway Administration RD-77-108
Traffic Noise Prediction Model (CALVENO)

Project Name:	Palmdale Medical Center	Scenario:	Existing
Analyst:	Eddie Torres	Job #:	10-102534
Roadway Segment:	2006 W/ Proj @ property line of Senior Housing		

PROJECT DATA

Centerline Dist to Barrier:	0
Barrier (0=wall, 1= berm):	0
Receiver Barrier Dist:	0
Centerline Dist. To Observer:	80
Barrier Near Lane CL Dist:	0
Barrier Far lane CL Dist:	0
Pad Elevation:	0.5
Road Elevation:	0
Observer Height (above grade):	5.5
Barrier Height:	0
Rt View: 90	Lft View: -90

NOISE SOURCE ELEVATIONS (Feet)

Autos:	0
Medium Trucks:	2.3
Heavy Trucks:	8

SITE DATA

Road Grade:	0
Average Daily Traffic:	15420
Peak Hour Traffic:	1542
Vehicle Speed:	50
Centerline Separation:	36

NOISE INPUTS

Site conditions: SOFT SITE

FLEET MIX

Type	Day	Evening	Night
Auto	0.9717	0.9913	0.9719
Med. Truck	0.0201	0.0071	0.0198
Heavy Truck	0.0082	0.0016	0.0083
Daily	0.777	0.127	0.096

UNMITIGATED NOISE LEVELS (No topographic or barrier attenuation)

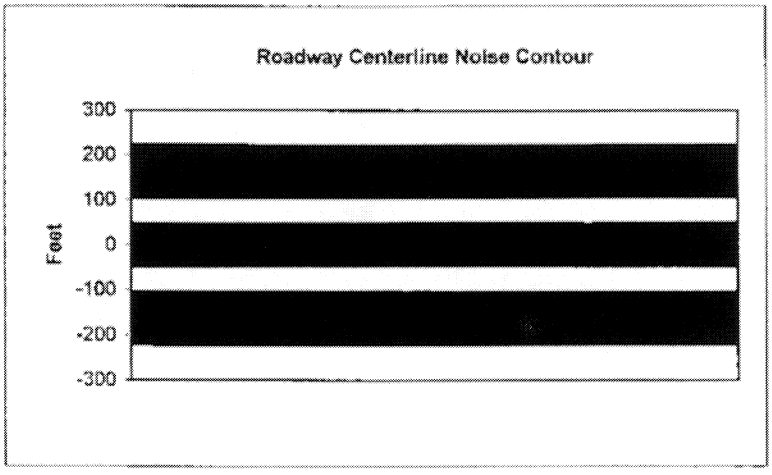
Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.4	63.1	61.4	55.3	63.9	64.5
Medium Trucks:	62.0	54.0	47.6	46.0	54.5	54.7
Heavy Trucks:	66.3	54.3	45.3	46.5	55.9	56.0
Vehicle Noise:	**68.6**	**64.2**	**61.7**	**56.4**	**65.0**	**65.5**

MITIGATED NOISE LEVELS (With topographic or barrier attenuation)

Vehicle Type	Peak Leq	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:						
Medium Trucks:						
Heavy Trucks:						
Vehicle Noise:						

CENTERLINE NOISE CONTOUR - CNEL

Unmitigated	
60 dBA	223
65 dBA	104
70 dBA	48
Mitigated	
60 dBA	
65 dBA	
70 dBA	



********** OUTPUT FROM THE INPUT MODULE **********

*** PROCESSING SETUP SECTION

*** PROCESSING AIRCRAFT SECTION

*** PROCESSING TAKEOFF SECTION

*** PROCESSING LANDING SECTION

*** PROCESSING TAXI SECTION

*** PROCESSING PROCESS SECTION

```
HELIPORT NOISE MODEL - ECHO REPORT


P R O C E S S E S
-----------------

VERIFY

EXECUTE
   METRIC = LDN
   STARTING POINT =    -1200.  -1200.
   STEP =       50.     50.
   SIZE =     11   11
   REPORT
   DETAIL
   METRIC = LDN
   STARTING POINT =      300.    300.
   STEP =       50.     50.
   SIZE =     11   11
   REPORT
   DETAIL

CONTOUR
   LEVELS =  50.00  55.00  60.00  65.00  70.00  75.00  80.00  85.00
   METRIC LDN
   TOLERANCE = 1.00
   REFINEMENT =  4
   WINDOW =   -2000.  -2000.   2000.   2000.
   SAVED AS NEW001
   REPORT
   PLOT
      X AXIS       8.5
      Y AXIS      11.0
      SCALE    1000.0
      USER DEFINED CENTERING    ORIGIN (       .0,       .0)
        1 file(s) copied
        1 file(s) copied
        1 file(s) copied
 *** CALCULATING GRID LOCATIONS




    ------------------------------------------------------------------
        0 WARNING MESSAGES WERE PRODUCED BY THE COMPUTATION MODULE
    ------------------------------------------------------------------
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HELIPORT NOISE MODEL - STANDARD GRID ANALYSIS REPORT

Palmdale Medical Center EIR

HELIPORT - Palmdale Medical Center Helipad

X	Y	LDN	X
-1200.	-1200.	49.6	-1150.
-1100.	-1200.	49.9	-1050.
-1000.	-1200.	50.2	-950.
-900.	-1200.	50.4	-850.
-800.	-1200.	50.7	-750.
-700.	-1200.	51.1	-1200.
-1150.	-1150.	50.0	-1100.
-1050.	-1150.	50.2	-1000.
-950.	-1150.	50.5	-900.
-850.	-1150.	50.8	-800.
-750.	-1150.	51.1	-700.
-1200.	-1100.	50.0	-1150.
-1100.	-1100.	50.3	-1050.
-1000.	-1100.	50.5	-950.
-900.	-1100.	50.8	-850.
-800.	-1100.	51.1	-750.
-700.	-1100.	51.4	-1200.
-1150.	-1050.	50.3	-1100.
-1050.	-1050.	50.6	-1000.
-950.	-1050.	50.9	-900.
-850.	-1050.	51.2	-800.
-750.	-1050.	51.5	-700.
-1200.	-1000.	50.4	-1150.
-1100.	-1000.	50.7	-1050.
-1000.	-1000.	51.0	-950.
-900.	-1000.	51.2	-850.
-800.	-1000.	51.5	-750.
-700.	-1000.	51.8	-1200.
-1150.	-950.	50.8	-1100.
-1050.	-950.	51.0	-1000.
-950.	-950.	51.3	-900.
-850.	-950.	51.6	-800.
-750.	-950.	51.9	-700.
-1200.	-900.	50.8	-1150.
-1100.	-900.	51.1	-1050.
-1000.	-900.	51.3	-950.
-900.	-900.	51.6	-850.
-800.	-900.	51.9	-750.
-700.	-900.	52.2	-1200.
-1150.	-850.	51.1	-1100.

HELIPORT NOISE MODEL - STANDARD GRID ANALYSIS REPORT

Palmdale Medical Center EIR

HELIPORT - Palmdale Medical Center Helipad

X	Y	LDN	X
-1050.	-850.	51.4	-1000.
-950.	-850.	51.7	-900.
-850.	-850.	51.9	-800.
-750.	-850.	52.3	-700.
-1200.	-800.	51.2	-1150.
-1100.	-800.	51.5	-1050.
-1000.	-800.	51.7	-950.
-900.	-800.	52.0	-850.
-800.	-800.	52.3	-750.
-700.	-800.	52.6	-1200.
-1150.	-750.	51.5	-1100.
-1050.	-750.	51.8	-1000.
-950.	-750.	52.1	-900.
-850.	-750.	52.4	-800.
-750.	-750.	52.7	-700.
-1200.	-700.	51.6	-1150.
-1100.	-700.	51.9	-1050.
-1000.	-700.	52.1	-950.
-900.	-700.	52.4	-850.
-800.	-700.	52.8	-750.
-700.	-700.	53.1	

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-1200.
Y =	-1200.
METRIC LDN TOTAL =	49.6

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.3
B206L	AB206L	B206L	0		A	ta3	Po1	79.2
B206L	AB206L	B206L	0		A	ta1	Po1	79.2
B206L	AB206L	B206L	0		A	ta1	Po1	79.2
B206L	TB206L	B206L	1		T	td3	Po1	79.2
B206L	TB206L	B206L	1		T	td4	Po1	78.3
B206L	TB206L	B206L	1		T	td2	Po1	74.3
B206L	TB206L	B206L	1		T	td1	Po1	73.1
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	70.2

PEAK LEVEL = 84.3

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	0	4	1	0	0	0
NUMBER OF OPERATIONS	DAY -	1	0	0	0	0	4	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	0	4	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-1150.
Y =	-1200.
METRIC LDN TOTAL =	49.8

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.3
B206L	TB206L	B206L	1		T	td3	Pol	79.5
B206L	AB206L	B206L	0		A	ta1	Pol	79.4
B206L	AB206L	B206L	0		A	ta1	Pol	79.4
B206L	AB206L	B206L	0		A	ta3	Pol	79.4
B206L	TB206L	B206L	1		T	td4	Pol	78.4
B206L	TB206L	B206L	1		T	td2	Pol	74.5
B206L	TB206L	B206L	1		T	td1	Pol	73.2
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	70.5

PEAK LEVEL = 84.3

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	0	4	1	0	0	0
NUMBER OF OPERATIONS	DAY -	1	0	0	0	0	4	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	0	4	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-1100.
Y =	-1200.
METRIC LDN TOTAL =	49.9

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.3
B206L	TB206L	B206L	1		T	td3	Pol	79.8
B206L	AB206L	B206L	0		A	ta1	Pol	79.7
B206L	AB206L	B206L	0		A	ta1	Pol	79.7
B206L	AB206L	B206L	0		A	ta3	Pol	79.5
B206L	TB206L	B206L	1		T	td4	Pol	78.4
B206L	TB206L	B206L	1		T	td2	Pol	74.7
B206L	TB206L	B206L	1		T	td1	Pol	73.4
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	70.7

PEAK LEVEL = 84.3

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	0	4	1	0	0	0
NUMBER OF OPERATIONS	DAY -	1	0	0	0	0	4	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	0	4	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-1050.
Y =	-1200.
METRIC LDN TOTAL =	50.0

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.3
B206L	TB206L	B206L	1		T	td3	Po1	80.1
B206L	AB206L	B206L	0		A	ta1	Po1	80.0
B206L	AB206L	B206L	0		A	ta1	Po1	80.0
B206L	AB206L	B206L	0		A	ta3	Po1	79.6
B206L	TB206L	B206L	1		T	td4	Po1	78.4
B206L	TB206L	B206L	1		T	td2	Po1	75.0
B206L	TB206L	B206L	1		T	td1	Po1	73.6
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	71.0

PEAK LEVEL = 84.3

		DECIBELS BELOW 85								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	3	1	1	0	0	0
NUMBER OF OPERATIONS	DAY -	1	0	0	0	3	1	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	3	1	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X = -1000. Y = -1200.

METRIC LDN TOTAL = 50.2

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.3
B206L	TB206L	B206L	1		T	td3	Pol	80.4
B206L	AB206L	B206L	0		A	ta1	Pol	80.3
B206L	AB206L	B206L	0		A	ta1	Pol	80.3
B206L	AB206L	B206L	0		A	ta3	Pol	79.8
B206L	TB206L	B206L	1		T	td4	Pol	78.4
B206L	TB206L	B206L	1		T	td2	Pol	75.2
B206L	TB206L	B206L	1		T	td1	Pol	73.8
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	71.2

PEAK LEVEL = 84.3

		DECIBELS BELOW 85								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	3	1	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	0	3	1	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	3	1	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-950.
Y =	-1200.
METRIC LDN TOTAL =	50.3

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.2
B206L	TB206L	B206L	1		T	td3	Po1	80.7
B206L	AB206L	B206L	0		A	ta1	Po1	80.6
B206L	AB206L	B206L	0		A	ta1	Po1	80.6
B206L	AB206L	B206L	0		A	ta3	Po1	79.9
B206L	TB206L	B206L	1		T	td4	Po1	78.4
B206L	TB206L	B206L	1		T	td2	Po1	75.4
B206L	TB206L	B206L	1		T	td1	Po1	73.9
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	71.5

PEAK LEVEL = 84.2

		DECIBELS BELOW 85								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	3	1	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	0	3	1	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	3	1	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-900.
Y =	-1200.
METRIC LDN TOTAL =	50.4

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.2
B206L	TB206L	B206L	1		T	td3	Pol	81.0
B206L	AB206L	B206L	0		A	ta1	Pol	80.8
B206L	AB206L	B206L	0		A	ta1	Pol	80.8
B206L	AB206L	B206L	0		A	ta3	Pol	80.0
B206L	TB206L	B206L	1		T	td4	Pol	78.4
B206L	TB206L	B206L	1		T	td2	Pol	75.5
B206L	TB206L	B206L	1		T	td1	Pol	74.1
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	71.7

PEAK LEVEL = 84.2

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	4	0	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	0	4	0	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	4	0	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-850.
Y =	-1200.
METRIC LDN	TOTAL = 50.6

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.2
B206L	TB206L	B206L	1		T	td3	Po1	81.3
B206L	AB206L	B206L	0		A	ta1	Po1	81.1
B206L	AB206L	B206L	0		A	ta1	Po1	81.1
B206L	AB206L	B206L	0		A	ta3	Po1	80.2
B206L	TB206L	B206L	1		T	td4	Po1	78.4
B206L	TB206L	B206L	1		T	td2	Po1	75.7
B206L	TB206L	B206L	1		T	td1	Po1	74.3
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	72.0

PEAK LEVEL = 84.2

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	3	1	0	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	3	1	0	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	3	1	0	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-800.
Y =	-1200.
METRIC LDN	
TOTAL =	50.7

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.1
B206L	TB206L	B206L	1		T	td3	Po1	81.6
B206L	AB206L	B206L	0		A	ta1	Po1	81.4
B206L	AB206L	B206L	0		A	ta1	Po1	81.4
B206L	AB206L	B206L	0		A	ta3	Po1	80.3
B206L	TB206L	B206L	1		T	td4	Po1	78.4
B206L	TB206L	B206L	1		T	td2	Po1	75.9
B206L	TB206L	B206L	1		T	td1	Po1	74.5
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	72.3

PEAK LEVEL = 84.1

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	3	1	0	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	3	1	0	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	3	1	0	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X = -750. Y = -1200.

METRIC LDN TOTAL = 50.9

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.1
B206L	TB206L	B206L	1		T	td3	Pol	81.9
B206L	AB206L	B206L	0		A	ta1	Pol	81.7
B206L	AB206L	B206L	0		A	ta1	Pol	81.7
B206L	AB206L	B206L	0		A	ta3	Pol	80.4
B206L	TB206L	B206L	1		T	td4	Pol	78.4
B206L	TB206L	B206L	1		T	td2	Pol	76.1
B206L	TB206L	B206L	1		T	td1	Pol	74.7
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	72.5

PEAK LEVEL = 84.1

		DECIBELS BELOW 85								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	3	1	0	1	0	1	0
NUMBER OF OPERATIONS	DAY -	1	0	0	3	1	0	1	0	1	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	3	1	0	1	0	1	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X = -700. Y = -1200.

METRIC LDN TOTAL = 51.1

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.0
B206L	TB206L	B206L	1		T	td3	Po1	82.2
B206L	AB206L	B206L	0		A	ta1	Po1	82.0
B206L	AB206L	B206L	0		A	ta1	Po1	82.0
B206L	AB206L	B206L	0		A	ta3	Po1	80.5
B206L	TB206L	B206L	1		T	td4	Po1	78.4
B206L	TB206L	B206L	1		T	td2	Po1	76.3
B206L	TB206L	B206L	1		T	td1	Po1	74.9
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	72.8

PEAK LEVEL = 84.0

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	1	2	1	0	1	0	1	0
NUMBER OF OPERATIONS	DAY -	1	0	1	2	1	0	1	0	1	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	1	2	1	0	1	0	1	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

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I                                I
I X =   -1200.      Y =   -1150. I
I                                I
I METRIC LDN       TOTAL =  49.8 I
I                                I
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AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.6
B206L	AB206L	B206L	0		A	ta3	Po1	79.4
B206L	AB206L	B206L	0		A	ta1	Po1	79.2
B206L	AB206L	B206L	0		A	ta1	Po1	79.2
B206L	TB206L	B206L	1		T	td3	Po1	79.2
B206L	TB206L	B206L	1		T	td4	Po1	78.8
B206L	TB206L	B206L	1		T	td2	Po1	74.5
B206L	TB206L	B206L	1		T	td1	Po1	73.3
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	70.4

PEAK LEVEL = 84.6

DECIBELS BELOW 85

		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	0	4	1	0	0	0
NUMBER OF OPERATIONS	DAY -	1	0	0	0	0	4	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	0	4	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X = -1150.	Y = -1150.	
METRIC LDN	TOTAL = 50.0	

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.6
B206L	AB206L	B206L	0		A	ta3	Pol	79.5
B206L	AB206L	B206L	0		A	ta1	Pol	79.5
B206L	AB206L	B206L	0		A	ta1	Pol	79.5
B206L	TB206L	B206L	1		T	td3	Pol	79.5
B206L	TB206L	B206L	1		T	td4	Pol	78.8
B206L	TB206L	B206L	1		T	td2	Pol	74.7
B206L	TB206L	B206L	1		T	td1	Pol	73.5
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	70.7

PEAK LEVEL = 84.6

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	0	4	1	0	0	0
NUMBER OF OPERATIONS	DAY -	1	0	0	0	0	4	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	0	4	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X = -1100. Y = -1150.

METRIC LDN TOTAL = 50.1

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.6
B206L	TB206L	B206L	1		T	td3	Pol	79.8
B206L	AB206L	B206L	0		A	ta1	Pol	79.7
B206L	AB206L	B206L	0		A	ta1	Pol	79.7
B206L	AB206L	B206L	0		A	ta3	Pol	79.7
B206L	TB206L	B206L	1		T	td4	Pol	78.8
B206L	TB206L	B206L	1		T	td2	Pol	74.9
B206L	TB206L	B206L	1		T	td1	Pol	73.6
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	70.9

PEAK LEVEL = 84.6

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	0	4	1	0	0	0
NUMBER OF OPERATIONS	DAY -	1	0	0	0	0	4	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	0	4	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-1050.
Y =	-1150.
METRIC LDN TOTAL =	50.2

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.5
B206L	TB206L	B206L	1		T	td3	Po1	80.1
B206L	AB206L	B206L	0		A	ta1	Po1	80.0
B206L	AB206L	B206L	0		A	ta1	Po1	80.0
B206L	AB206L	B206L	0		A	ta3	Po1	79.8
B206L	TB206L	B206L	1		T	td4	Po1	78.9
B206L	TB206L	B206L	1		T	td2	Po1	75.1
B206L	TB206L	B206L	1		T	td1	Po1	73.8
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	71.2

PEAK LEVEL = 84.5

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	3	1	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	0	3	1	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	3	1	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-1000.
Y =	-1150.
METRIC LDN TOTAL =	50.4

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.5
B206L	TB206L	B206L	1		T	td3	Po1	80.4
B206L	AB206L	B206L	0		A	ta1	Po1	80.3
B206L	AB206L	B206L	0		A	ta1	Po1	80.3
B206L	AB206L	B206L	0		A	ta3	Po1	80.0
B206L	TB206L	B206L	1		T	td4	Po1	78.9
B206L	TB206L	B206L	1		T	td2	Po1	75.3
B206L	TB206L	B206L	1		T	td1	Po1	74.0
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	71.5

PEAK LEVEL = 84.5

		DECIBELS BELOW 85								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	3	1	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	0	3	1	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	3	1	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-950.
Y =	-1150.
METRIC LDN TOTAL =	50.5

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.5
B206L	TB206L	B206L	1		T	td3	Pol	80.7
B206L	AB206L	B206L	0		A	ta1	Pol	80.6
B206L	AB206L	B206L	0		A	ta1	Pol	80.6
B206L	AB206L	B206L	0		A	ta3	Pol	80.1
B206L	TB206L	B206L	1		T	td4	Pol	78.9
B206L	TB206L	B206L	1		T	td2	Pol	75.5
B206L	TB206L	B206L	1		T	td1	Pol	74.2
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	71.7

PEAK LEVEL = 84.5

		DECIBELS BELOW 85									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	4	0	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	0	4	0	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	4	0	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-900.
Y =	-1150.
METRIC LDN TOTAL =	50.6

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.5
B206L	TB206L	B206L	1		T	td3	Po1	81.0
B206L	AB206L	B206L	0		A	ta1	Po1	80.9
B206L	AB206L	B206L	0		A	ta1	Po1	80.9
B206L	AB206L	B206L	0		A	ta3	Po1	80.3
B206L	TB206L	B206L	1		T	td4	Po1	78.9
B206L	TB206L	B206L	1		T	td2	Po1	75.8
B206L	TB206L	B206L	1		T	td1	Po1	74.4
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	72.0

PEAK LEVEL = 84.5

		DECIBELS BELOW 85								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	0	4	0	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	0	4	0	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	0	4	0	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-850.
Y =	-1150.
METRIC LDN TOTAL =	50.8

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Pol	84.4
B206L	TB206L	B206L	1		T	td3	Pol	81.3
B206L	AB206L	B206L	0		A	ta1	Pol	81.1
B206L	AB206L	B206L	0		A	ta1	Pol	81.1
B206L	AB206L	B206L	0		A	ta3	Pol	80.4
B206L	TB206L	B206L	1		T	td4	Pol	78.9
B206L	TB206L	B206L	1		T	td2	Pol	76.0
B206L	TB206L	B206L	1		T	td1	Pol	74.6
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	72.3

PEAK LEVEL = 84.4

		DECIBELS BELOW 85								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	0	0	3	1	0	1	0	0	1
NUMBER OF OPERATIONS	DAY -	1	0	0	3	1	0	1	0	0	1
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	0	0	3	1	0	1	0	0	1

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	-800.
Y =	-1150.
METRIC LDN TOTAL =	50.9

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta2	Po1	84.4
B206L	TB206L	B206L	1		T	td3	Po1	81.6
B206L	AB206L	B206L	0		A	ta1	Po1	81.4
B206L	AB206L	B206L	0		A	ta1	Po1	81.4
B206L	AB206L	B206L	0		A	ta3	Po1	80.5
B206L	TB206L	B206L	1		T	td4	Po1	78.9
B206L	TB206L	B206L	1		T	td2	Po1	76.2
B206L	TB206L	B206L	1		T	td1	Po1	74.8
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	72.6

PEAK LEVEL = 84.4

	DECIBELS BELOW 85									
	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS -	1	0	0	3	1	0	1	0	1	0
NUMBER OF OPERATIONS DAY -	1	0	0	3	1	0	1	0	1	0
EVENING -	0	0	0	0	0	0	0	0	0	0
NIGHT -	1	0	0	3	1	0	1	0	1	0

*** CALCULATING GRID LOCATIONS

0 WARNING MESSAGES WERE PRODUCED BY THE COMPUTATION MODULE

HELIPORT NOISE MODEL - STANDARD GRID ANALYSIS REPORT

Palmdale Medical Center EIR

HELIPORT - Palmdale Medical Center Helipad

X	Y	LDN	X
300.	300.	57.9	350.
400.	300.	56.6	450.
500.	300.	55.5	550.
600.	300.	54.6	650.
700.	300.	53.9	750.
800.	300.	53.2	300.
350.	350.	56.7	400.
450.	350.	55.6	500.
550.	350.	54.7	600.
650.	350.	54.0	700.
750.	350.	53.3	800.
300.	400.	56.6	350.
400.	400.	55.7	450.
500.	400.	54.8	550.
600.	400.	54.1	650.
700.	400.	53.4	750.
800.	400.	52.8	300.
350.	450.	55.6	400.
450.	450.	54.8	500.
550.	450.	54.1	600.
650.	450.	53.5	700.
750.	450.	52.9	800.
300.	500.	55.5	350.
400.	500.	54.8	450.
500.	500.	54.1	550.
600.	500.	53.5	650.
700.	500.	52.9	750.
800.	500.	52.4	300.
350.	550.	54.7	400.
450.	550.	54.1	500.
550.	550.	53.5	600.
650.	550.	52.9	700.
750.	550.	52.4	800.
300.	600.	54.6	350.
400.	600.	54.1	450.
500.	600.	53.5	550.
600.	600.	53.0	650.
700.	600.	52.4	750.
800.	600.	52.0	300.
350.	650.	54.0	400.

HELIPORT NOISE MODEL - STANDARD GRID ANALYSIS REPORT

Palmdale Medical Center EIR

HELIPORT - Palmdale Medical Center Helipad

X	Y	LDN	X
450.	650.	53.5	500.
550.	650.	53.0	600.
650.	650.	52.5	700.
750.	650.	52.0	800.
300.	700.	53.9	350.
400.	700.	53.5	450.
500.	700.	53.0	550.
600.	700.	52.5	650.
700.	700.	52.0	750.
800.	700.	51.5	300.
350.	750.	53.4	400.
450.	750.	53.0	500.
550.	750.	52.5	600.
650.	750.	52.0	700.
750.	750.	51.5	800.
300.	800.	53.3	350.
400.	800.	52.9	450.
500.	800.	52.5	550.
600.	800.	52.0	650.
700.	800.	51.5	750.
800.	800.	51.0	

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	300.	Y = 300.
METRIC LDN	TOTAL =	57.9

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta1	Po1	89.0
B206L	AB206L	B206L	0		A	ta1	Po1	89.0
B206L	AB206L	B206L	0		A	ta3	Po1	88.2
B206L	TB206L	B206L	1		T	td2	Po1	87.8
B206L	TB206L	B206L	1		T	td1	Po1	87.4
B206L	AB206L	B206L	0		A	ta2	Po1	87.4
B206L	TB206L	B206L	1		T	td3	Po1	85.9
B206L	TB206L	B206L	1		T	td4	Po1	85.7
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	82.6

PEAK LEVEL = 89.0

		DECIBELS BELOW 89								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	3	3	0	2	0	0	1	0	0	0
NUMBER OF OPERATIONS	DAY -	3	3	0	2	0	0	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	3	3	0	2	0	0	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	350.
Y =	300.
METRIC LDN TOTAL =	57.2

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta1	Po1	88.3
B206L	AB206L	B206L	0		A	ta1	Po1	88.3
B206L	AB206L	B206L	0		A	ta3	Po1	87.4
B206L	TB206L	B206L	1		T	td2	Po1	87.4
B206L	TB206L	B206L	1		T	td1	Po1	86.7
B206L	AB206L	B206L	0		A	ta2	Po1	86.6
B206L	TB206L	B206L	1		T	td3	Po1	85.2
B206L	TB206L	B206L	1		T	td4	Po1	85.0
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	82.1

PEAK LEVEL = 88.3

		DECIBELS BELOW 89								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	2	2	2	1	1	0	1	0	0	0
NUMBER OF OPERATIONS	DAY -	2	2	2	1	1	0	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	2	2	2	1	1	0	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	400.	Y = 300.
METRIC LDN	TOTAL =	56.6

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta1	Po1	87.7
B206L	AB206L	B206L	0		A	ta1	Po1	87.7
B206L	TB206L	B206L	1		T	td2	Po1	87.1
B206L	AB206L	B206L	0		A	ta3	Po1	86.7
B206L	TB206L	B206L	1		T	td1	Po1	86.1
B206L	AB206L	B206L	0		A	ta2	Po1	85.8
B206L	TB206L	B206L	1		T	td3	Po1	84.5
B206L	TB206L	B206L	1		T	td4	Po1	84.2
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	81.5

PEAK LEVEL = 87.7

		DECIBELS BELOW 88								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	3	2	1	2	0	0	1	0	0	0
NUMBER OF OPERATIONS	DAY -	3	2	1	2	0	0	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	3	2	1	2	0	0	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	450.
Y =	300.
METRIC LDN TOTAL =	56.0

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta1	Pol	87.2
B206L	AB206L	B206L	0		A	ta1	Pol	87.2
B206L	TB206L	B206L	1		T	td2	Pol	86.7
B206L	AB206L	B206L	0		A	ta3	Pol	86.0
B206L	TB206L	B206L	1		T	td1	Pol	85.4
B206L	AB206L	B206L	0		A	ta2	Pol	85.0
B206L	TB206L	B206L	1		T	td3	Pol	83.9
B206L	TB206L	B206L	1		T	td4	Pol	83.5
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	81.0

PEAK LEVEL = 87.2

		DECIBELS BELOW 88									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	2	1	3	0	2	0	0	1	0	0
NUMBER OF OPERATIONS	DAY -	2	1	3	0	2	0	0	1	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	2	1	3	0	2	0	0	1	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	800.
Y =	300.
METRIC LDN TOTAL =	53.2

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	TB206L	B206L	1		T	td2	Pol	85.9
B206L	AB206L	B206L	0		A	ta1	Pol	84.5
B206L	AB206L	B206L	0		A	ta1	Pol	84.5
B206L	AB206L	B206L	0		A	ta3	Pol	82.3
B206L	TB206L	B206L	1		T	td1	Pol	81.8
B206L	AB206L	B206L	0		A	ta2	Pol	81.2
B206L	TB206L	B206L	1		T	td3	Pol	80.5
B206L	TB206L	B206L	1		T	td4	Pol	79.8
B206L	GB206L	B206L	2	GB206L	G	tx1	Pol	77.5

PEAK LEVEL = 85.9

		DECIBELS BELOW 86								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	2	0	1	2	1	1	0	1	0
NUMBER OF OPERATIONS	DAY -	1	2	0	1	2	1	1	0	1	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	2	0	1	2	1	1	0	1	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	300.
Y =	350.
METRIC LDN TOTAL =	57.2

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta1	Po1	88.3
B206L	AB206L	B206L	0		A	ta1	Po1	88.3
B206L	AB206L	B206L	0		A	ta3	Po1	87.6
B206L	TB206L	B206L	1		T	td1	Po1	87.1
B206L	TB206L	B206L	1		T	td2	Po1	87.1
B206L	AB206L	B206L	0		A	ta2	Po1	86.6
B206L	TB206L	B206L	1		T	td3	Po1	85.1
B206L	TB206L	B206L	1		T	td4	Po1	85.0
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	81.6

PEAK LEVEL = 88.3

		DECIBELS BELOW 89									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	2	3	1	2	0	0	0	1	0	0
NUMBER OF OPERATIONS	DAY -	2	3	1	2	0	0	0	1	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	2	3	1	2	0	0	0	1	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	550.
Y =	350.
METRIC LDN TOTAL =	54.7

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	AB206L	B206L	0		A	ta1	Po1	85.9
B206L	AB206L	B206L	0		A	ta1	Po1	85.9
B206L	TB206L	B206L	1		T	td2	Po1	85.7
B206L	AB206L	B206L	0		A	ta3	Po1	84.6
B206L	TB206L	B206L	1		T	td1	Po1	84.1
B206L	AB206L	B206L	0		A	ta2	Po1	83.4
B206L	TB206L	B206L	1		T	td3	Po1	82.4
B206L	TB206L	B206L	1		T	td4	Po1	82.0
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	79.4

PEAK LEVEL = 85.9

		DECIBELS BELOW 86									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	3	2	1	1	1	0	1	0	0	0
NUMBER OF OPERATIONS	DAY -	3	2	1	1	1	0	1	0	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	3	2	1	1	1	0	1	0	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X = 600. Y = 350.

METRIC LDN TOTAL = 54.3

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	TB206L	B206L	1		T	td2	Po1	85.6
B206L	AB206L	B206L	0		A	ta1	Po1	85.6
B206L	AB206L	B206L	0		A	ta1	Po1	85.6
B206L	AB206L	B206L	0		A	ta3	Po1	84.1
B206L	TB206L	B206L	1		T	td1	Po1	83.6
B206L	AB206L	B206L	0		A	ta2	Po1	82.9
B206L	TB206L	B206L	1		T	td3	Po1	81.9
B206L	TB206L	B206L	1		T	td4	Po1	81.5
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	79.0

PEAK LEVEL = 85.6

		DECIBELS BELOW 86								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	3	1	1	1	2	0	0	1	0	0
NUMBER OF OPERATIONS	DAY -	3	1	1	1	2	0	0	1	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	3	1	1	1	2	0	0	1	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

X =	650.
Y =	350.
METRIC LDN TOTAL =	54.0

AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	TB206L	B206L	1		T	td2	Po1	85.6
B206L	AB206L	B206L	0		A	ta1	Po1	85.2
B206L	AB206L	B206L	0		A	ta1	Po1	85.2
B206L	AB206L	B206L	0		A	ta3	Po1	83.6
B206L	TB206L	B206L	1		T	td1	Po1	83.1
B206L	AB206L	B206L	0		A	ta2	Po1	82.4
B206L	TB206L	B206L	1		T	td3	Po1	81.5
B206L	TB206L	B206L	1		T	td4	Po1	81.0
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	78.5

PEAK LEVEL = 85.6

		DECIBELS BELOW 86								
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	3	0	2	1	1	1	0	1	0	0
NUMBER OF OPERATIONS	DAY -	3	0	2	1	1	1	0	1	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	3	0	2	1	1	1	0	1	0	0

HELIPORT NOISE MODEL - DETAILED GRID ANALYSIS REPORT

```
I                                I
I X =      700.      Y =     350. I
I                                I
I METRIC LDN       TOTAL =  53.6 I
I                                I
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AIRCRAFT	PROFILE	NOISE CURVE	STAGE	TAXI APPROACH	FLIGHT TYPE	TRACK	HELIPAD	SEL
B206L	TB206L	B206L	1		T	td2	Po1	85.6
B206L	AB206L	B206L	0		A	ta1	Po1	84.9
B206L	AB206L	B206L	0		A	ta1	Po1	84.9
B206L	AB206L	B206L	0		A	ta3	Po1	83.1
B206L	TB206L	B206L	1		T	td1	Po1	82.6
B206L	AB206L	B206L	0		A	ta2	Po1	81.9
B206L	TB206L	B206L	1		T	td3	Po1	81.0
B206L	TB206L	B206L	1		T	td4	Po1	80.5
B206L	GB206L	B206L	2	GB206L	G	tx1	Po1	78.1

PEAK LEVEL = 85.6

DECIBELS BELOW 86

		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
NUMBER OF FLIGHTS	-	1	2	1	1	2	1	0	1	0	0
NUMBER OF OPERATIONS	DAY -	1	2	1	1	2	1	0	1	0	0
	EVENING -	0	0	0	0	0	0	0	0	0	0
	NIGHT -	1	2	1	1	2	1	0	1	0	0

*** CALCULATING GRID LOCATIONS

CASE: BANDWIDTH	MIN. LEVEL	MAX. LEVEL	MIN. REF.	MAX. REF.	TOLERANCE
10.0	50.0	85.0	3	4	1.00

REFINEMENT LEVEL	RECTANGLES TOTAL	SKIP	REF	SPLIT	NEW	POINTS	TRIANGLES
3	16	0	0	16	64	289	
4	64	0	43	21	84	280	
							1056

RECTANGLE ENVELOPING MAP MOSAIC.
LOW LEFT & UPPER RIGHT CORNERS

XMIN= -.200000E+04 YMIN= -.200000E+04
XMAX= .200000E+04 YMAX= .200000E+04

0 WARNING MESSAGES WERE PRODUCED BY THE COMPUTATION MODULE

Palmdale Medical Center EIR
Palmdale Medical Center Helipad

METRIC
NAME

LDN

CONTOUR LEVEL	CONTOUR AREA (SQ. MILES)
50.00	.35
55.00	.09
60.00	.02
65.00	.01
70.00	.00
75.00	.00
80.00	.00
85.00	.00

0 WARNING MESSAGES WERE PRODUCED BY THE CONTOUR MODULE

HELIPORT NOISE MODEL - CONTOUR ANALYSIS REPORT

C O N T O U R - NEW001

Palmdale Medical Center EIR
HELIPORT - Palmdale Medical Center Helipad
LEVEL = 50.0 DB AREA = .35 METRIC = LDN

ISLAND	PNT	X	Y	PNT	X	Y	PNT
1	1	-672.	2000.	2	-750.	1798.	3
	4	-768.	1750.	5	-778.	1722.	6
	7	-895.	1395.	8	-952.	1250.	9
	10	-1053.	1053.	11	-1080.	1000.	12
	13	-1230.	750.	14	-1238.	738.	15
	16	-1250.	722.	17	-1281.	689.	18
	19	-1483.	483.	20	-1500.	468.	21
	22	-1624.	374.	23	-1625.	373.	24
	25	-1750.	297.	26	-1778.	278.	27
	28	-1875.	247.	29	-1974.	224.	30
2	1	1140.	-2000.	2	1174.	-1826.	3
	4	1200.	-1700.	5	1235.	-1500.	6
	7	1279.	-1279.	8	1285.	-1250.	9
	10	1348.	-1000.	11	1383.	-883.	12
	13	1500.	-512.	14	1503.	-503.	15
	16	1508.	-492.	17	1614.	-250.	18
	19	1649.	0.	20	1611.	111.	21
	22	1500.	288.	23	1401.	401.	24
	25	1250.	566.	26	1168.	668.	27
	28	1000.	845.	29	931.	931.	30
	31	750.	1110.	32	684.	1184.	33
	34	616.	1250.	35	524.	1363.	36
	37	457.	1457.	38	426.	1500.	39
	40	355.	1605.	41	345.	1625.	42
	43	280.	1750.	44	269.	1769.	45
	46	242.	1875.	47	220.	1970.	48
3	1	-360.	-2000.	2	-375.	-1973.	3
	4	-500.	-1888.	5	-513.	-1868.	6
	7	-627.	-1689.	8	-651.	-1651.	9
	10	-754.	-1500.	11	-812.	-1453.	12
	13	-866.	-1399.	14	-887.	-1387.	15
	16	-1000.	-1250.	17	-1000.	-1250.	18
	19	-1250.	-1086.	20	-1424.	-1000.	21
	22	-1500.	-964.	23	-1562.	-938.	24
	25	-1828.	-828.	26	-2000.	-750.	27

HELIPORT NOISE MODEL - CONTOUR ANALYSIS REPORT

C O N T O U R - NEW001

Palmdale Medical Center EIR
HELIPORT - Palmdale Medical Center Helipad
LEVEL = 55.0 DB AREA = .09 METRIC = LDN

ISLAND	PNT	X	Y	PNT	X	Y	PNT
1	1	500.	-697.	2	528.	-639.	3
	4	590.	-500.	5	625.	-410.	6
	7	639.	-375.	8	644.	-356.	9
	10	714.	-214.	11	750.	-173.	12
	13	844.	-94.	14	870.	0.	15
	16	750.	122.	17	746.	125.	18
	19	625.	215.	20	584.	250.	21
	22	500.	370.	23	497.	375.	24
	25	375.	498.	26	372.	500.	27
	28	250.	586.	29	238.	625.	30
	31	211.	750.	32	204.	796.	33
	34	182.	932.	35	125.	957.	36
	37	62.	1062.	38	52.	1125.	39
	40	18.	1250.	41	16.	1266.	42
	43	-34.	1284.	44	-38.	1250.	45
	46	-85.	1125.	47	-94.	1094.	48
	49	-125.	1000.	50	-202.	952.	51
	52	-232.	768.	53	-236.	750.	54
	55	-250.	684.	56	-308.	625.	57
	58	-375.	568.	59	-430.	500.	60
	61	-500.	407.	62	-523.	375.	63
	64	-591.	250.	65	-625.	239.	66
	67	-750.	212.	68	-795.	205.	69
	70	-932.	182.	71	-956.	125.	72
	73	-1063.	63.	74	-1125.	53.	75
	76	-1125.	-98.	77	-1105.	-105.	78
	79	-1000.	-156.	80	-965.	-215.	81
	82	-764.	-250.	83	-757.	-257.	84
	85	-648.	-375.	86	-635.	-385.	87
	88	-501.	-500.	89	-501.	-501.	90
	91	-495.	-505.	92	-375.	-602.	93
	94	-334.	-625.	95	-250.	-678.	96
	97	-239.	-750.	98	-238.	-762.	99
	100	-214.	-964.	101	-125.	-992.	102
	103	-99.	-1099.	104	-96.	-1125.	105
	106	-72.	-1250.	107	-69.	-1319.	108
	109	-48.	-1452.	110	-45.	-1500.	111
	112	-27.	-1625.	113	-5.	-1745.	114

HELIPORT NOISE MODEL - CONTOUR ANALYSIS REPORT

C O N T O U R - NEW001 (CONT.)

Palmdale Medical Center EIR
HELIPORT - Palmdale Medical Center Helipad
LEVEL = 55.0 DB AREA = .09 METRIC = LDN

ISLAND	PNT	X	Y	PNT	X	Y	PNT
1	115	-5.	-1755.	116	0.	-1788.	117
	118	162.	-1706.	119	194.	-1694.	120
	121	243.	-1500.	122	244.	-1494.	123
	124	260.	-1375.	125	283.	-1283.	126
	127	317.	-1183.	128	337.	-1125.	129
	130	375.	-1038.	131	386.	-1000.	132
	133	430.	-875.	134	461.	-789.	135
	136	485.	-735.	137	500.	-697.	
2	1	57.	-2000.	2	115.	-1885.	3
	4	-13.	-1987.	5	-11.	-2000.	

HELIPORT NOISE MODEL - CONTOUR ANALYSIS REPORT

C O N T O U R - NEW001

Palmdale Medical Center EIR
HELIPORT - Palmdale Medical Center Helipad
LEVEL = 60.0 DB AREA = .02 METRIC = LDN

ISLAND	PNT	X	Y	PNT	X	Y	PNT
1	1	0.	665.	2	-25.	625.	3
	4	-84.	500.	5	-125.	396.	6
	7	-135.	375.	8	-152.	348.	9
	10	-236.	236.	11	-250.	219.	12
	13	-375.	142.	14	-386.	136.	15
	16	-500.	91.	17	-570.	70.	18
	19	-673.	0.	20	-625.	-32.	21
	22	-500.	-91.	23	-417.	-125.	24
	25	-375.	-146.	26	-310.	-190.	27
	28	-243.	-243.	29	-237.	-250.	30
	31	-183.	-375.	32	-167.	-417.	33
	34	-127.	-623.	35	-127.	-625.	36
	37	-125.	-639.	38	-79.	-750.	39
	40	-7.	-875.	41	0.	-886.	42
	43	60.	-810.	44	79.	-750.	45
	46	126.	-626.	47	127.	-625.	48
	49	156.	-500.	50	168.	-459.	51
	52	207.	-413.	53	230.	-355.	54
	55	320.	-320.	56	339.	-250.	57
	58	361.	-181.	59	384.	-134.	60
	61	427.	-52.	62	500.	-16.	63
	64	520.	0.	65	509.	9.	

APPENDIX 10.5:
GEOLOGICAL REPORT

REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED MEDICAL OFFICE BUILDINGS

SOUTHEAST OF THE INTERSECTION OF TIERRA SUBIDA AVENUE AND WEST PALMDALE BOULEVARD
PALMDALE, CALIFORNIA

Prepared for:

UNIVERSAL HEALTH SERVICES, INC.

Las Vegas, Nevada

RECEIVED
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PLANNING DEPT
CASE #
CUP 03-09

May 6, 2003

Project 4953-03-1101

MACTEC

MACTEC

May 6, 2003

Mr. Pat Brietigam
Universal Health Services, Inc.
5400 South Rainbow Boulevard
Las Vegas, Nevada 89118

Subject: **Report of Geotechnical Investigation**
Proposed Medical Office Buildings
Palmdale Medical Center
Southeast of the Intersection of Tierra Subida Ave. and West Palmdale Blvd.
Palmdale, California 93551
MACTEC Project 4953-03-1101

Dear Mr. Brietigam:

We are pleased to submit the results of our geotechnical investigation for the proposed medical office buildings on the campus of the future Palmdale Medical Center to be constructed in Palmdale, California. This investigation was conducted in general accordance with our proposal dated March 14, 2003, which was authorized on March 24, 2003.

The scope of our services was planned with Messrs. James Mitchell and Noel Barrick of HKS, Inc. who also advised us of the general structural features of the proposed buildings.

The results of our investigation and design recommendations are presented in this report. Please note that you or your representative should submit copies of this report to the appropriate governmental agencies for their review and approval prior to obtaining a building permit.

MACTEC Engineering and Consulting, Inc.
200 Citadel Drive • Los Angeles, CA 90040
323-889-5300 • Fax: 323-721-6700

It has been a pleasure to be of professional service to you. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

MACTEC Engineering and Consulting of Georgia, Inc.
f/k/a Law/Crandall, A Division of Law Engineering and Environmental Services, Inc.

Mark A. Murphy
Staff Engineer

REGISTERED PROFESSIONAL ENGINEER
MARK A. MURPHY
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STATE OF CALIFORNIA

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(4 copies submitted)

Attachments

cc: (3) HKS, Inc.
Attn: Mr. Noel Barrick
Mr. James Mitchell

REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED MEDICAL OFFICE BUILDINGS

SOUTHEAST OF THE INTERSECTION OF TIERRA SUBIDA AVENUE AND WEST PALMDALE BOULEVARD
PALMDALE, CALIFORNIA

Prepared for:

UNIVERSAL HEALTH SERVICES, INC.

Las Vegas, Nevada

MACTEC Engineering and Consulting
f/k/a Law/Crandall, A Division of Law Engineering and Environmental Services, Inc.

Los Angeles, California

May 6, 2003

Project 4953-03-1101

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EXECUTIVE SUMMARY

We have completed our geotechnical investigation for the proposed medical office buildings (MOBs) to be constructed on the future campus of Palmdale Medical Center in Palmdale, California. Our subsurface explorations, engineering analyses, and foundation design recommendations are summarized below.

The natural soils at the site consist predominantly of medium dense silty sand to depths ranging from approximately 15 to 25 feet below ground surface (bgs). Deeper soils are predominantly dense to very dense silty sand and sand with occasional silt layers. The upper silty sand soils at the site are susceptible to hydro-consolidation and would become weaker and more compressible when wet. Fill soils were not encountered in our borings.

If the remedial grading recommendations in this report are implemented and proper drainage systems are installed to drain surface water away from the foundations, the proposed MOBs may be supported on shallow spread footings and the floor slabs may be supported on grade. Remedial grading consists of removing the upper 5 feet of the existing site soils (or 3 feet below bottom of footings, whichever is deeper) and replacing with properly compacted fill.

Alternatively, the proposed MOBs may be supported on drilled cast-in-place concrete piles extending into the dense natural soils. The building floor slabs may be structurally supported or supported on grade over a minimum of two feet of properly compacted fill.

1.0 SCOPE

This report provides geotechnical design information for the proposed medical office buildings (MOBs) to be constructed on the future campus of the Palmdale Medical Center in Palmdale, California. The location of the site is shown on Figure 1, Site Location Map. The locations of the proposed structures and our exploration borings are shown on Figure 2, Plot Plan.

This investigation was authorized to determine the characteristics of the soils at the site of the proposed structures, and to provide recommendations for foundation design, for floor slab and paving support, for design of retaining walls and walls below grade, and grading for the development. We were to evaluate the existing soil and ground-water conditions at the site, including the corrosion potential of the soils, and develop recommendations for the following:

- A feasible foundation system design along with the necessary design parameters;
- Estimated settlement for the anticipated loads;
- Evaluation of the liquefaction potential of the soils underlying the site;
- Seismic coefficients and seismic zonation based on the current California Building Code;
- Subgrade preparation and floor slab support;
- Design of retaining walls and walls below grade;
- Design of asphalt concrete and portland cement concrete paving; and
- Grading, including site preparation, excavation, the placing of compacted fill, and quality control measures relating to earthwork.

The assessment of general site environmental conditions for the presence of contaminants in the soils and ground water of the site was beyond the scope of this investigation.

Our recommendations are based on the results of our field explorations, laboratory tests, and appropriate engineering analyses. The results of our subsurface explorations and laboratory tests are presented in the Appendix.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for Universal Health Services, Inc. and their design consultants to be used solely in the design of the proposed medical office buildings. The report has not been prepared for use by other parties, and may not contain sufficient information for purpose of other parties or other uses.

2.0 PROJECT DESCRIPTION

Universal Health Services plans to construct a new medical center in Palmdale, California, at the site shown on Figure 1 (Latitude 34.58 degrees N, Longitude 118.14 degrees W). The proposed structures are currently planned at the locations shown on Figure 2. Building locations have not yet been finalized. Accordingly, we request that we be provided with the finalized site plan when available to verify that the recommendations presented in this report remain applicable.

The initial phase of the proposed project will consist of the construction of a main hospital building and the northwest MOB, a large surface parking lot, driveways, and landscaping. Future phases are planned to include the construction of an additional MOB and possible additions to the main hospital building. This report addresses the proposed MOBs. The hospital building is addressed in a separate report.

The main hospital building will be connected to the second floor of the northwest MOB via an overhead walkway.

Maximum dead-plus-live column loads for the proposed MOBs are estimated to be about 250 kips. No basement levels are planned.

3.0 SITE CONDITIONS

The future campus of Palmdale Medical Center is located southeast of the intersection of Tierra Subida Avenue and West Palmdale Boulevard. The ground surface at the site of the proposed medical center campus has a mild slope, with an elevation drop of approximately 25 feet from the southwestern limits of the planned hospital to the northeastern limits.

The site of the proposed medical center campus is currently unimproved and vacant land. Various underground utilities may cross the site.

4.0 EXPLORATIONS AND LABORATORY TESTS

To explore the subsurface conditions beneath the proposed medical center campus, 17 borings were drilled to depths of 5 to 71 feet below the existing grade at the locations shown on Figure 2. Two of our borings were drilled near the locations of the proposed MOBs. Details of the explorations and the logs of the borings are presented in the Appendix.

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to determine the pertinent engineering properties of the foundation soils. The following tests were performed:

- Moisture content and dry density determinations;
- Atterberg Limits;
- Direct shear;
- Consolidation;
- Compaction; and
- California Bearing Ratio (CBR).

All testing was performed in general accordance with applicable ASTM specifications. Details of the laboratory testing program are presented the Appendix.

5.0 SOIL CONDITIONS

Fill soils were not encountered in our borings. However, fill soils may exist in unexplored areas. The natural soils at the site consist of medium dense to dense silty sand with a few thin loose layers to a depth of approximately 25 feet below ground surface (bgs). Deeper soils are generally dense to very dense. The soils down to about 15 feet bgs are susceptible to hydro-consolidation and would become weaker and more compressible when wet.

Ground water was not encountered within the depths explored.

Results of soil corrosivity tests indicate that the on-site soils are moderately corrosive to ferrous metals and exposure of concrete to sulfate attack is considered negligible. The test results are presented in the Appendix.

6.0 LIQUEFACTION AND SEISMICALLY-INDUCED SETTLEMENT POTENTIAL

Liquefaction potential is greatest where the ground water level is shallow, and submerged loose, fine sands occur within a depth of about 15 meters (50 feet) or less. Liquefaction potential decreases as grain size and clay and gravel content increase. As ground acceleration and shaking duration increase during an earthquake, liquefaction potential increases.

According to the County of Los Angeles Seismic Safety Element (1990), the City of Palmdale Safety Element (1993), and the California Geological Survey (2003), the site is not within an area identified as having a potential for liquefaction. Based on ground-water level measurements in nearby wells, ground water is at a depth greater than 15 meters. Therefore, the potential for liquefaction and the associated ground deformation beneath the site is considered to be low.

Seismically-induced settlement is often caused by loose to medium-dense granular soils densified during ground shaking. Uniform settlement beneath a given structure would cause minimal damage; however, because of variations in distribution, density, and confining conditions of the soils, seismically-induced settlement is generally non-uniform and can cause serious structural damage. Dry and partially saturated soils as well as saturated granular soils are subject to seismically-induced settlement. Generally, differential settlements induced by ground failures such as liquefaction, flow slides, and surface ruptures would be much more severe than those caused by densification alone.

To evaluate the potential for seismically-induced settlement at the project site during the Design Basis Earthquake (DBE), the magnitude-7.5-adjusted peak ground accelerations (PGAs) corresponding to the DBE, which are defined as the events with a 10% probability of exceedance in 50 years was computed. The magnitude-7.5-adjusted PGA of the DBE was computed probabilistically using FRISKSP, Version 3.01b with the average ground motion from the attenuation relations discussed in Abrahamson & Silva (1997) and Sadigh (1997). The DBE liquefaction PGA for the subject site was calculated as 0.75g. The calculated value shows very good agreement with mapped values of magnitude-7.5-adjusted PGAs for the subject site published in the literature (California Geological Survey, 2003).

The seismically-induced settlement due to the DBE is estimated to range from about ½ inch to 1 inch across the site with a maximum differential settlement of less than 1 inch in 300 feet.

7.0 RECOMMENDATIONS

7.1 GENERAL

The existing soils at the site are not considered suitable for support of the proposed MOBs on spread footings. With the possible introduction of additional moisture into the subsurface, which can occur due to water impoundment from improper drainage, rainfall, pipe leaks, or irrigation, significant settlement could occur if spread footings and concrete slabs-on-grade are placed directly on the existing site soils.

To mitigate the potential for unacceptable settlement, we recommend that remedial grading be performed to install at least 3 feet of properly compacted fill below footings. The upper 5 feet of the existing site soils (or 3 feet below bottom of footings, whichever is deeper) should be removed and replaced with properly compacted fill. The lateral extent of removal and replacement should equal the removal depth below footings. As an alternative to remedial grading, the proposed hospital building may be supported on drilled cast-in-place concrete piles extending into the dense natural soils. Drilled cast-in-place pile foundations may also be necessary to provide uplift resistance.

If at least the upper two feet of the existing soils below planned floor slabs are excavated and replaced with properly compacted fill, the floor slabs and other concrete slabs and walks may be supported on grade. The building floor slabs may also be structurally supported.

We also recommend that the building structures be placed up-gradient within the site and that provisions for positive surface drainage away from the foundations be incorporated into the site grading plans. Impoundment of stormwater run-off within the construction area should not be permitted within the immediate vicinity of the foundation construction area. We also recommend avoiding the placement of planters, underground water pipes, or any other source of additional water to the subsurface soils in the immediate vicinity of the foundations.

If possible, we recommend that planter and landscaped areas be placed at least 15 feet away from the MOBs. Hardscape with proper surface drainage should be provided within the 15-foot strip. If planter or lawn areas adjacent to buildings are desired, these areas should have impermeable bottoms. In addition, we recommend pressure testing of utility lines prior to backfilling to detect leaks and eliminate leaks due to poor workmanship or material defects. In fact, to substantially reduce the risk of leaky utilities saturating the subsurface materials, all fluid-conveying utilities, except for sewer lines, could be installed above ground.

7.2 SHALLOW FOUNDATIONS

Bearing Value

Spread footings at least 12 inches wide carried at least 2 feet below the lowest adjacent grade or floor level and established in properly compacted fill soils may be designed to impose a net dead-plus-live load pressure of 3,000 pounds per square foot.

A one-third increase may be used for wind or seismic loads. The recommended bearing value is a net value, and the weight of concrete in the footings can be taken as 50 pounds per cubic foot; the weight of soil backfill can be neglected when determining the downward loads.

Footings for minor structures (loading dock walls, minor retaining walls, and free-standing walls) that are structurally separate from the structures may be designed to impose a net dead-plus-live load pressure of 1,500 pounds per square foot at a depth of 1½ feet below the lowest adjacent grade. Such footings should be underlain by at least 2 feet of properly compacted fill soils.

Settlement

Based on the maximum column loads provided to us, we estimate the static settlement of the proposed building, supported on spread footings in the manner recommended, will be on the order of ¾ inch. Differential static settlement between adjacent columns is expected to be on the order of ¼ inch. At least half of the estimated static settlement is expected to occur during construction.

In addition to the estimated static settlement, the hospital building should be designed to accommodate the seismic settlement discussed in Section 6.0, Liquefaction and Seismically-Induced Settlement.

Structural connections between the main hospital building and the northwest MOB should be designed to accommodate both the static and seismic settlement.

Lateral Resistance

Lateral loads may be resisted by soil friction and by the passive resistance of the soils. A coefficient of friction of 0.5 may be used between the footings and the floor slab and the supporting soils. The passive resistance of properly compacted fill soils may be assumed to be equal to the pressure developed by a fluid with a density of 300 pounds per cubic foot. A one-third increase in the passive value may be used for wind or seismic loads. The frictional resistance and the passive resistance of the soils can be combined without reduction in determining the total lateral resistance.

7.3 DEEP FOUNDATIONS

Downdrag loads may develop on deep foundations due to settlement of hydro-collapsible soils and due to seismically-induced settlement. (We have assumed that the proposed development may introduce increased moisture to soils as deep as about 15 feet bgs.) In deriving the capacities of drilled cast-in-place concrete piles, we have neglected the resistance of the upper 15 feet. In addition, downdrag loads must be added to the column loads before determining the required pile lengths. The downward capacities of 24-, 30-, and 36-inch-diameter drilled cast-in-place concrete piles are presented as a function of penetration below pile cap on Figure 3, Downward Drilled Pile Capacities. The upward capacities of 24-, 30-, and 36-inch diameter drilled cast-in-place concrete piles are presented as a function of penetration below pile cap on Figure 4, Upward Drilled Pile Capacities. Downdrag loads for these piles are presented in a following section.

To the develop the full lateral pile capacity presented in the following section on lateral loads, the piles should be at least as long as necessary to reach the depth to zero moment.

A one-third increase in the pile capacities may be used for wind or seismic loads. The capacities presented are based on the strength of the natural soils; the compressive and tensile strengths of the pile sections should be checked to verify the structural capacity of the piles. Piles in groups, if needed, should be spaced at least 3 diameters on centers. If the piles are so spaced, no reduction in the axial capacities of the piles need be considered due to group action.

Settlement

We estimate the static settlement of the proposed hospital building, supported on cast-in-place drilled concrete piles, as recommended above, to be less than ½ inch and the differential settlement between adjacent columns to be less than ¼ inch.

In addition to the estimated static settlement, the hospital building should be designed to accommodate the seismic settlement discussed in Section 6.0, Liquefaction and Seismically-Induced Settlement.

Structural connections between the main hospital building and the northwest MOB should be designed to accommodate both the static and seismic settlement.

Lateral Loads

We have computed the lateral capacities of the piles using the computer program LPILE by ENSOFT, Inc. Resistance of the soils adjacent to 24-, 30-, 36-inch-diameter drilled piles are shown in the following tables for top of pile deflections of ¼ and ½ inch. These resistances have been calculated assuming both free- and fixed-head pile conditions. The lateral resistance of other sizes of piles may be assumed to be proportional to the pile diameter.

Pile Diameter (inches)	¼-inch Groundline Deflection					
	Free Head			Fixed Head		
	Lateral Load (kips)	Maximum Induced Moment (foot-kips)	Depth to Zero Moment (feet)	Lateral Load (kips)	Maximum Induced Moment (foot-kips)	Depth to Zero Moment (feet)
24	30	116	19	80	363	22
30	44	199	23	115	621	25
36	59	309	25	155	963	29

Pile Diameter (inches)	½-inch Groundline Deflection					
	Free Head			Fixed Head		
	Lateral Load (kips)	Maximum Induced Moment (foot-kips)	Depth to Zero Moment (feet)	Lateral Load (kips)	Maximum Induced Moment (foot-kips)	Depth to Zero Moment (feet)
24	59	232	19	154	715	22
30	87	397	23	226	1235	25
36	118	617	25	308	1921	29

For piles in groups spaced at least 3 pile diameters on centers, no reduction in the lateral capacity need be considered for the first row of piles. For subsequent rows in the direction parallel to loading, piles in groups spaced closer than 8 pile diameters on centers will have a reduction in lateral capacity due to group effects. In the direction parallel to loading, the lateral capacity of piles in groups, except for the first pile, spaced at 3 pile diameters on centers may be assumed to be reduced by ¾. The reduction of lateral capacity in the direction parallel to loading for other pile spacings may be interpolated.

The passive resistance of properly compacted fill soils against pile caps and grade beams may be assumed to be equal to the pressure developed by a fluid with a density of 300 pounds per cubic foot. A one-third increase in the passive value may be used when considering wind or seismic loads.

The resistance of the piles and the passive resistance of the soils against pile caps and grade beams may be combined without reduction in determining the total lateral resistance.

Downdrag Loads

As previously stated, due to the presence of soils susceptible to hydro-collapsible and seismically-induced settlement, downdrag loads may develop on the piles. The downdrag loads presented in the table below should be added to the column loads before determining the required pile lengths. Downdrag loads for other pile sizes may be assumed to be proportional to the diameter.

Pile Diameter (in.)	Downdrag Load (kips)
24	80
30	100
36	120

Installation

All drilled pile excavations should be observed by personnel of our firm. Piles spaced less than 8 feet on centers should be drilled and filled alternately, with the concrete permitted to set at least eight hours before drilling an adjacent hole. Pile excavations should be filled with concrete as soon after drilling and inspection as possible; the holes should not be left open overnight. The concrete should be placed with special equipment so that the concrete is not allowed to fall freely more than 5 feet and to prevent concrete from striking the walls of the excavations.

We did not observe severe caving or raveling in our 16-inch-diameter bucket-auger borings. However, due to the presence of loose to medium dense granular soils beneath the site, larger diameter drilled shafts may require special provisions such as slowing drilling rates to reduce vibration or the injection of water to help prevent caving of shaft side walls. Shell casing or drilling mud will probably not be necessary. Only competent drilling contractors with experience in the installation of drilled cast-in-place piles in similar soil conditions should be considered for the pile construction. We suggest requesting the piling contractor to submit a list of similar projects along with references for each project.

7.4 SITE COEFFICIENT AND SEISMIC ZONATION

The site coefficient, S, can be determined as established in the Earthquake Regulations under Section 1629A of the California Building Code (CBC), 2001 edition, for seismic design of the proposed structures. Based on a review of the local soil and geologic conditions, the site may be classified as Soil Profile S_D, as specified in the code. The site is located within CBC Seismic Zone 4.

The site is near the Mojave segment of the San Andreas fault, which has been determined to be a Type A seismic source by the California Division of Mines and Geology (now the California Geological Survey). According to Map M-30 (ICBO, 1998), used to determine near source factors, the proposed structures are located at a distance of less than 2 kilometers from the Mojave segment of the San Andreas fault zone. At this distance from a seismic source Type A, the near source factors, N_a and N_v are to be taken as 1.5 and 2.0 respectively, according to Tables 16A-S and 16A-T of the 2001 CBC.

7.5 FLOOR SLAB SUPPORT ON GRADE

If the subgrade is prepared as recommended in Section 7.8, Grading, the building floor slabs may be supported on grade.

Construction activities and exposure to the environment can cause deterioration of the prepared subgrade. Therefore, we recommend our that our field representative observe the condition of the final subgrade soils immediately prior to slab-on-grade construction, and, if necessary, perform further density and moisture content tests to determine the suitability of the final prepared subgrade.

If vinyl or other moisture-sensitive floor covering is planned, we recommend that the floor slab in those areas be underlain by a capillary break consisting of a vapor-retarding membrane over a 4-inch-thick layer of gravel. A 2-inch-thick layer of sand should be placed between the gravel and the membrane to decrease the possibility of damage to the membrane. We suggest the following gradation for the gravel:

Sieve Size	Percent Passing
¾"	90–100
No. 4	0–10
No. 100	0–3

A low-slump concrete should be used to minimize possible curling of the slab. A 2-inch-thick layer of coarse sand can be placed over the vapor retarding membrane to reduce slab curling. If this sand bedding is used, care should be taken during the placement of the concrete to prevent displacement of the sand. The concrete slab should be allowed to cure properly before placing vinyl or other moisture-sensitive floor covering.

7.6 RETAINING WALLS AND WALLS BELOW GRADE

Lateral Earth Pressure

For design of cantilevered retaining walls, where the surface of the backfill is level, it can be assumed that drained soils will exert a lateral pressure equal to that developed by a fluid with a density of 30 pounds per cubic foot. In addition to the recommended earth pressure, the walls should be designed to resist any applicable surcharges due to foundation, storage, or traffic loads.

In addition to the recommended earth pressures, walls adjacent to areas subject to vehicular traffic should be designed to resist a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot surcharge behind the walls due to normal vehicular traffic. If the traffic is kept back at least 10 feet from the walls, the traffic surcharge can be neglected.

Seismic Lateral Earth Pressure

In addition to the above-mentioned lateral earth pressures, retaining walls and walls below grade with more than 6 feet of unbalanced earth (where the difference in height of retained soil from one side of the building to the other is greater than 6 feet) should be designed to support a seismic active earth pressure in addition to the lateral earth pressure given above. The recommended seismic active pressure distribution on the wall is illustrated in the following diagram with the maximum pressure equal to 35H in pounds per square foot for the DBE, where H is the wall height in feet.

8.0 BASIS FOR RECOMMENDATIONS

The recommendations provided in this report are based upon our understanding of the described project information and on our interpretation of the data collected during our current and previous subsurface explorations. We have made our recommendations based upon experience with similar subsurface conditions under similar loading conditions. The recommendations apply to the specific project discussed in this report; therefore, any change in the structure configuration, loads, location, or the site grades should be provided to us so that we can review our conclusions and recommendations and make any necessary modifications.

The recommendations provided in this report are also based upon the assumption that the necessary geotechnical observations and testing during construction will be performed by representatives of our firm. The field observation services are considered a continuation of the geotechnical investigation and essential to verify that the actual soil conditions are as expected. This also provides for the procedure whereby the client can be advised of unexpected or changed conditions that would require modifications of our original recommendations. In addition, the presence of our representative at the site provides the client with an independent professional opinion regarding the geotechnically related construction procedures. If another firm is retained for the geotechnical observation services, our professional responsibility and liability would be limited to the extent that we would not be the geotechnical engineer of record.

9.0 BIBLIOGRAPHY

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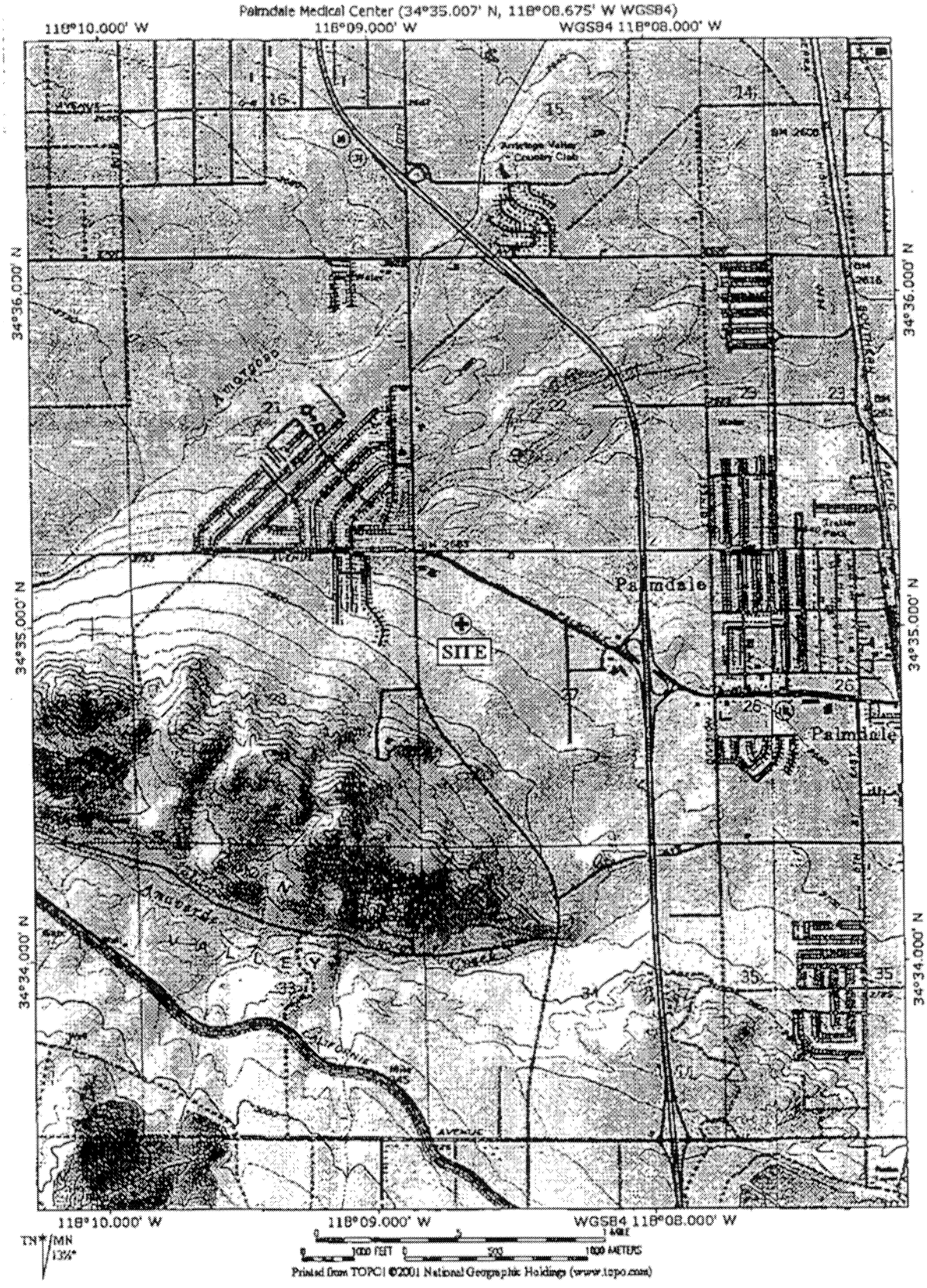
Sadigh, K., Chang, C.-Y., Egan, J.A., Makdisi, F., Youngs, R.R. (1997). Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data. *Seismological Research Letters*, 68(1): 180-189.

FIGURES

JOB 4953-03-1101 DATE 4/24/03 F.T. ____ DR. Tedd O.E. M.Murphy CHKD ____



SITE LOCATION MAP

MACTEC

FIGURE 1

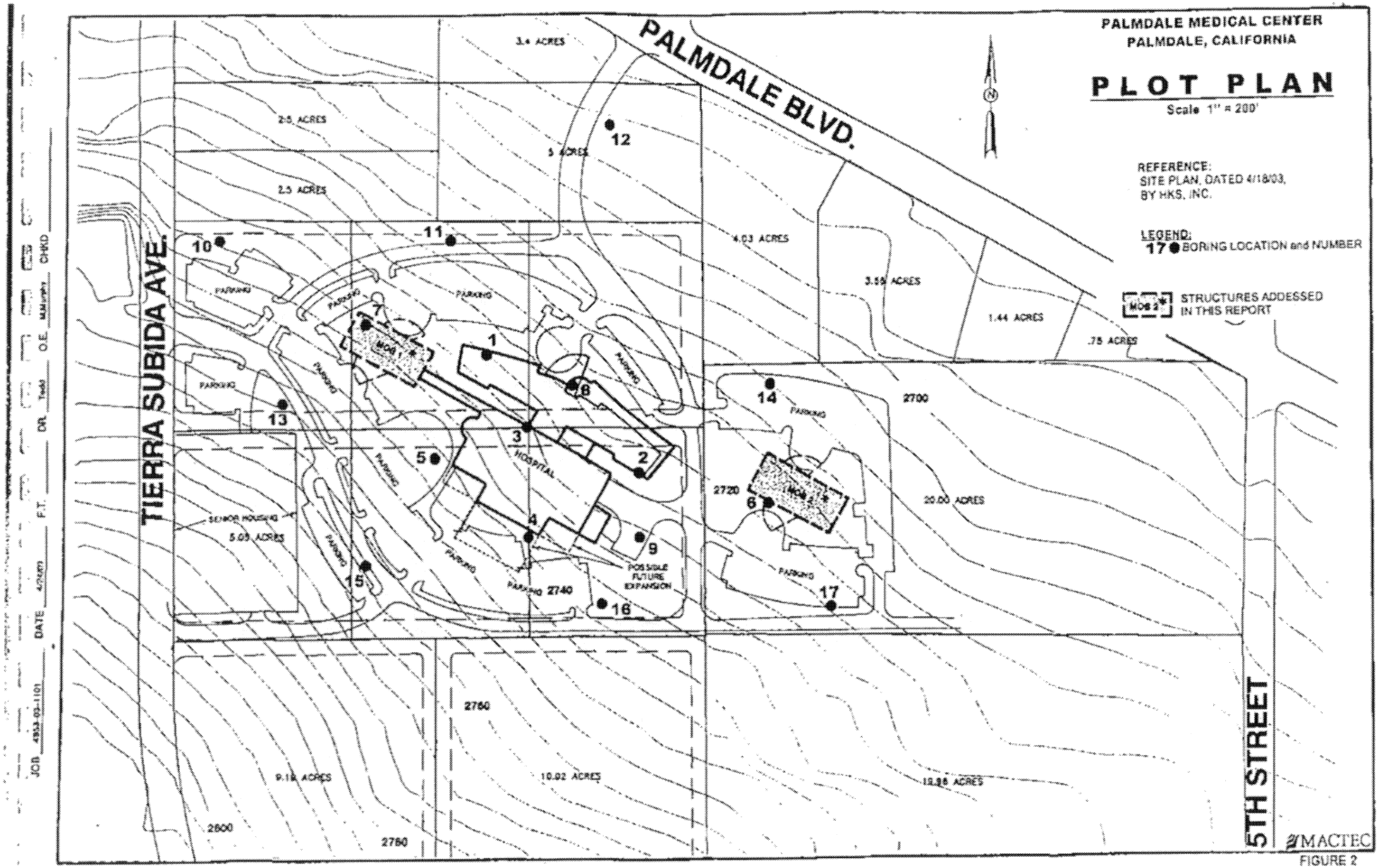
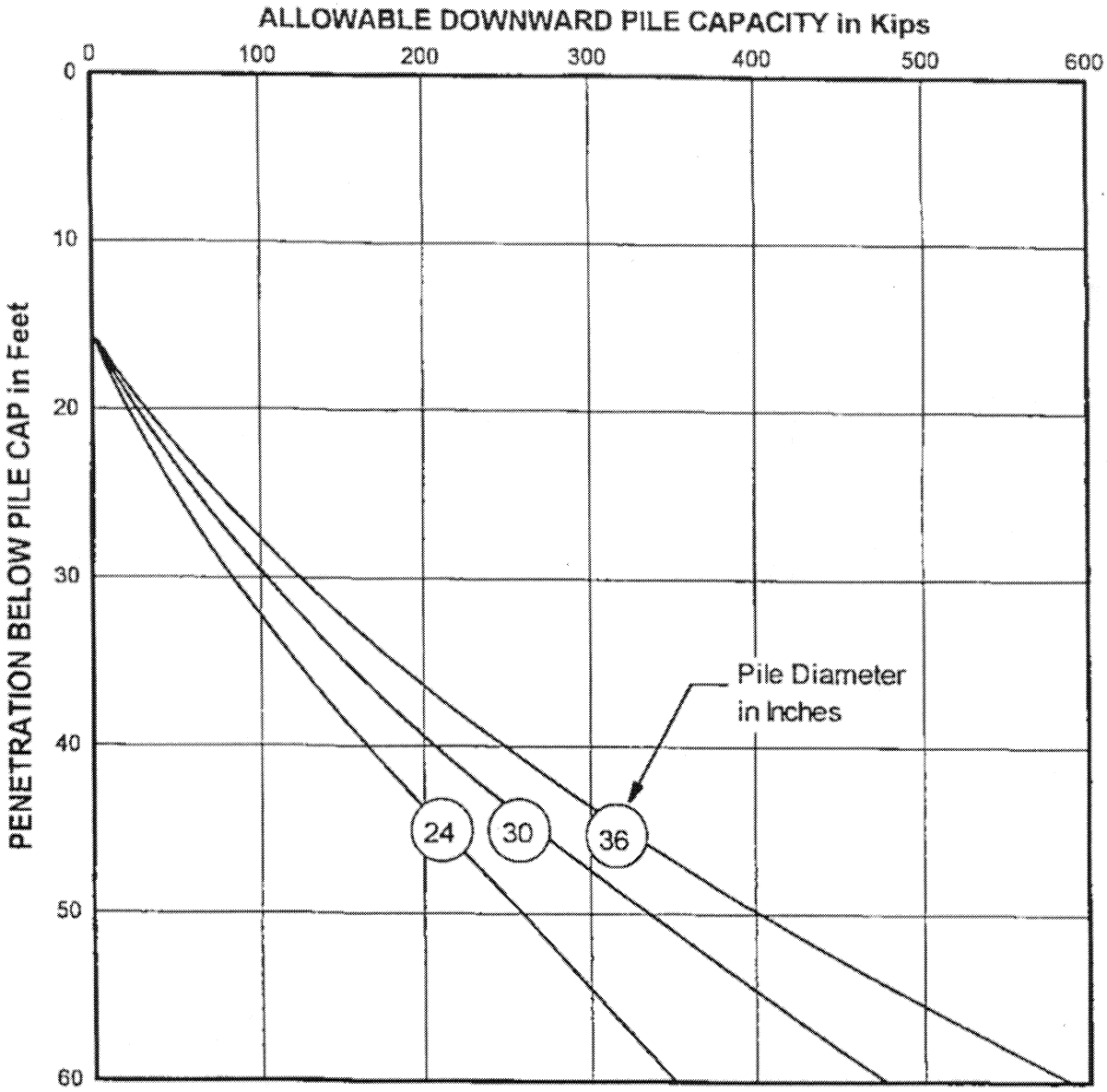

PALMDALE MEDICAL CENTER
PALMDALE, CALIFORNIA
PLOT PLAN
Scale 1" = 200'
REFERENCE:
SITE PLAN, DATED 4/18/03,
BY HKS, INC.
LEGEND:
17 BORING LOCATION and NUMBER
STRUCTURES ADDESSED IN THIS REPORT
PALMDALE BLVD.
TIERRA SUBIDA AVE.
5TH STREET
HOSPITAL
POSSIBLE FUTURE EXPANSION
SENIOR HOUSING
PARKING
3.4 ACRES
2.5 ACRES
5 ACRES
4.03 ACRES
3.55 ACRES
1.44 ACRES
.75 ACRES
20.00 ACRES
5.05 ACRES
9.18 ACRES
10.02 ACRES
2700
2720
2740
2760
2800
MACTEC

FIGURE 2

JOB 4953-03-1101 DATE 4/21/03 DR JA CE MM CHKD MM



NOTES:

(1) The indicated values refer to the total of dead plus live loads; a one-third increase may be used when considering wind or seismic loads. Downdrag loads should be added to the total dead plus live loads; see Section 7.3.

(2) Piles in groups should be spaced a minimum of 3 diameters on centers, and should be drilled and filled alternately with the concrete permitted to set at least 8 hours before drilling an adjacent hole.

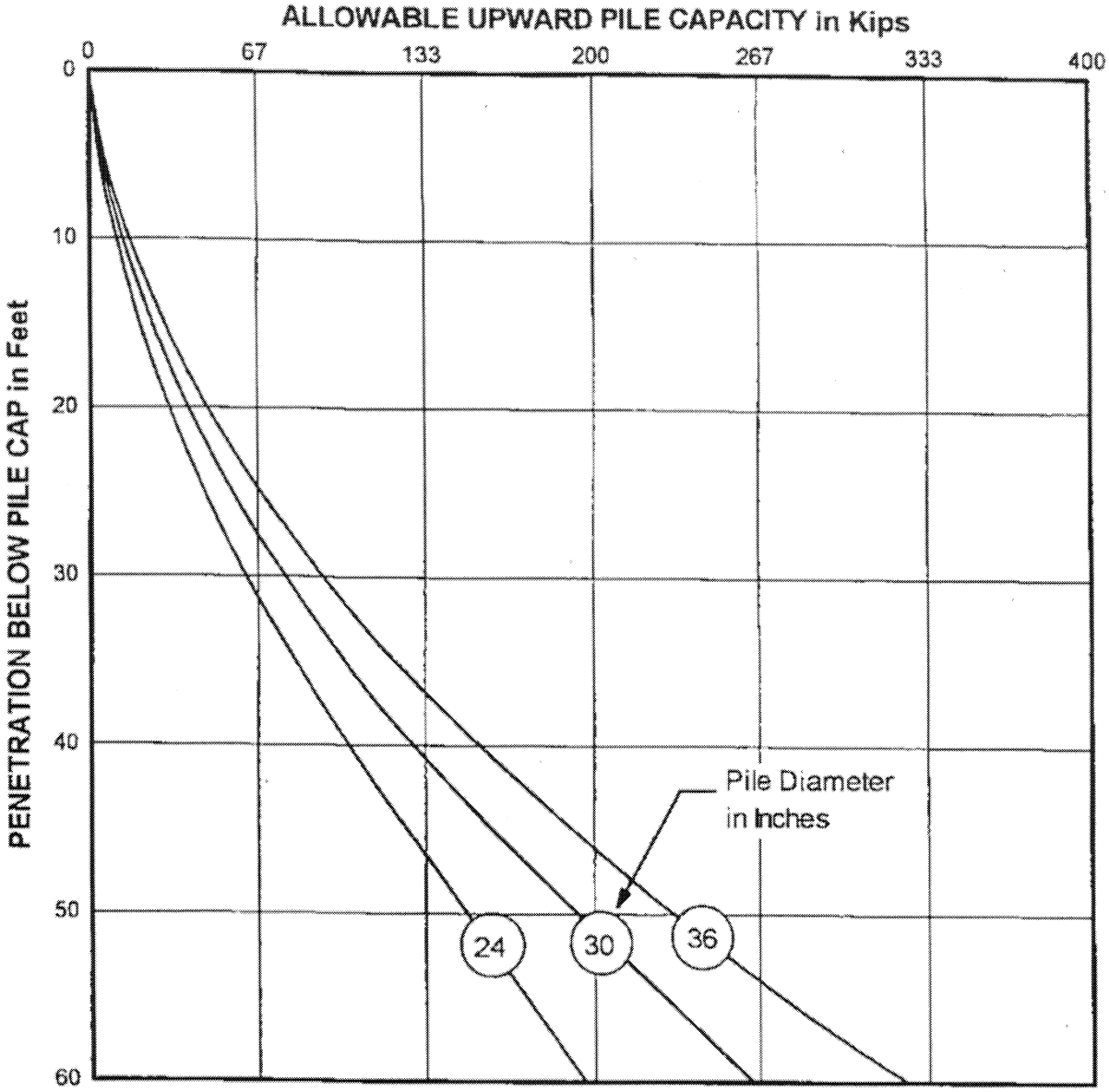
(3) The indicated values are based on the strength of the soils; the actual pile capacities may be limited to lesser values by the strength of the piles.

DOWNWARD DRILLED PILE CAPACITIES

MACTEC

FIGURE 3

JOB 4953-03-1101 DATE 4/21/03 DR JA OE MM CHKD MM



NOTES:

(1) The indicated values refer to the total of dead plus live loads; a one-third increase may be used when considering wind or seismic loads.

(2) Piles in groups should be spaced a minimum of 3 diameters on centers, and should be drilled and filled alternately with the concrete permitted to set at least 8 hours before drilling an adjacent hole.

(3) The indicated values are based on the strength of the soils; the actual pile capacities may be limited to lesser values by the strength of the piles.

UPWARD DRILLED PILE CAPACITIES

MACTEC

FIGURE 4

APPENDIX

EXPLORATIONS AND LABORATORY TESTS

APPENDIX

EXPLORATIONS AND LABORATORY TESTS

EXPLORATIONS

The soil conditions beneath the site were explored by drilling 17 borings at the locations shown on Figure 2. Two of our borings were drilled near the locations of the proposed MOBs. The borings were drilled to depths of 5 to 71 feet below the existing grade using a combination of 8-inch-diameter hollow stem auger-type and 16-inch diameter bucket-type drilling equipment.

The soils encountered were logged by our field technician, and undisturbed and bulk samples were obtained for laboratory inspection and testing. The logs of the borings are presented on Figures A-1.1 through A-1.17; the depths at which undisturbed samples were obtained are indicated to the left of the boring logs. The number of blows required to drive the Crandall sampler 12 inches using the specified hammer weight and drop is indicated on the logs. In addition to obtaining undisturbed samples, standard penetration tests (SPT) were performed in four of the borings; the results of the tests are indicated on the logs. The soils are classified in the accordance with the Unified Soil Classification System described on Figure A-2.

LABORATORY TESTS

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to evaluate their engineering properties.

The field moisture content and dry density of the soils encountered were determined by performing tests on the undisturbed samples. The results of the tests are presented to the left of the boring logs.

Direct shear tests were performed on selected undisturbed samples to determine the strength of the soils. The tests were performed at field moisture content and after soaking to near-saturated moisture content and at various surcharge pressures. Remolded samples, compacted to 90% and 95% of the maximum dry density obtainable by the ASTM Designation D1557-91 method of compaction, were tested at optimum moisture content and after soaking to near-saturated moisture content. The peak values determined from the direct shear tests are presented on Figures A-3.1 and A-3.2, Direct Shear Test Data.

Confined consolidation tests were performed on selected undisturbed samples to determine the compressibility of the soils. Water was added to the samples during the tests to illustrate the effect of moisture on the compressibility. The results of the tests are presented on Figures A-4.1 through A-4.5, Consolidation Test Data.

The optimum moisture content and maximum dry density of the upper soils were determined by performing a compaction test on three samples obtained from the upper soils. The test was performed in accordance with the ASTM Designation D1557-91 method of compaction. After completion of the compaction test, a California Bearing Ratio test was performed on one of the sample in accordance with the ASTM Designation D1883-94 method. The results of the tests are presented on Figure A-5, Compaction and C.B.R. Test Data.

To determine the particle size distribution of the soils and to aid in classifying the soils, mechanical analyses were performed on one sample. The results of the mechanical analyses are presented on Figure A-6, Particle Size Distribution.

We retained M.J. Schiff & Associates to perform soil corrosivity tests on samples of the on-site soils. The results of the tests are presented on Figure A-7.

BORING 1

DATE DRILLED: March 31, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 2,724**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
							SM	SILTY SAND - medium dense, slightly moist, light medium brown, fine to medium sand, trace small gravel and coarse sand
			3.0	118	19			
2720			2.7	106	18			
	5							
			4.1	118	20			26% passing No. 200 sieve
			1.0	101	15			becomes dry
2715								
	10		1.9	116	17			
2710		23						
	15							
			4.9	107	14			becomes slightly moist, light brown, fine to coarse sand, trace gravel
2705								
	20	11						18% passing No. 200 sieve
			15.8	113	47			dense, moist, few small gravel
2700								
	25	19						moist, brown, fine to medium sand with trace coarse sand
2695			15.3	116	21			48% passing No. 200 sieve
	30						SP-SM	POORLY GRADED SAND with Silt - very dense, moist, light brown, fine to medium sand with trace coarse sand, trace small gravel 11.9% passing No. 200 sieve
		57						
2690							SM	SILTY SAND - dense, moist, light brown, fine to coarse sand, trace small gravel
	35		11.9	115	51			
							SP-SM	POORLY GRADED SAND with Silt - very dense, light brown, fine to coarse sand
		64						
2685							SM	SILTY SAND - dense, moist, reddish brown, little clay
	40							

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: SB
Checked By: JA

B12SOIL CRANDALL 31101.GPJ LAW CRAN.GDT 4/25/03

Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.1a

BORING 1 (Continued)

DATE DRILLED: March 31, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 2,724**

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	
			10.1	126	63		
2680		45					44% passing No. 200 sieve
	45						layer of Well-Graded Sand
			9.7	116	54		becomes very dense, slightly moist
2675							
	50	68					
2670			9.2	117	71		becomes dense
	55						
		47					layer of sandy silt 61% passing No. 200 sieve
2665							
	60						becomes very dense, moist, hard drilling below 60½'
			10.2	106	50/8"		
2660							
	65	50 for 5"					light gray with siltier seams
2655							
	70		4.0	116	50/6"		becomes slightly moist
2650							
	75						
2645							
	80						

End of Boring at 71' due to hard drilling conditions.

NOTES:

Water not encountered.
Bottom at 63' after auger removed.
Hole backfilled with soil cuttings and tamped.

* Number of blows required to drive Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

** Elevations are based on topographic survey provided by HKS, inc.; see Figure 1.

Field Tech: AR
Prepared By: SB
Checked By: JA

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

B12SOIL CRANDALL 31101.GPJ LAW CRAN.GDT 4/25/03

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.1b

BORING 2

DATE DRILLED: March 31, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 2,722**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
2720	0		4.6	105	8	⊠	SM	SILTY SAND - loose, slightly moist, light brown, trace small gravel, fine to medium sand with occasional coarse sand
								27% passing No. 200 sieve
			2.5	109	14	⊠		
	5		2.4	115	13	⊠		
2715			5.8	109	21	⊠		becomes medium dense
	10		16.3	107	18	⊠		
2710		9				⊠	SP-SM	POORLY GRADED SAND with Silt - loose, slightly moist, light brown, fine to medium sand with occasional coarse, trace small gravel
								10% passing No. 200 sieve
	15		6.9	120	50/8"	⊠		becomes very dense
2705							SM	SILTY SAND - dense, moist, light brown, fine to medium sand with occasional coarse sand
	20	45				⊠		
2700			10.7	118	60	⊠		becomes moist
	25	49				⊠		
2695			5.1	121	74	⊠		becomes slightly moist
	30							layer of Poorly Graded Sand
								layer of Sandy Silt, hard, moist, reddish brown
2690		50 for 6"				⊠	SM	SILTY SAND - dense, moist, light brown, fine to medium sand
	35		5.4	105	87	⊠	SP	POORLY GRADED SAND - very dense, slightly moist, light brown, fine to coarse sand
2685		50 for 5"				⊠		
	40							

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: SB
Checked By: JA

B:\SOIL CRANDALL 3\101.GPJ LAW CRAN.GDT 4/25/03

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Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.2a

BORING 3

DATE DRILLED: April 1, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,728 **

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT** (blows/ft)	SAMPLE LOC.		
				1		SM	SILTY SAND - loose, slightly moist, light brown, fine to medium sand with occasional coarse, trace gravel, few rootlets
2725		5.5	117	4			becomes medium dense
	5	0.5	115	2			layer of sandy silty clay, medium stiff, dry
2720		4.6	115	4			
	10	6.6	117	4			silter layer
2715		5.1	119	6			
	15						
2710							
	20	7.8	119	8			few gravel
2705							
	25	9.5	122	25			becomes very dense
2700							
	30	3.8	117	25		SP	POORLY GRADED SAND - dense, slightly moist, light brown, fine to coarse sand, few small gravel
2695							
	35	4.5	126	26			4.6% passing No. 200 sieve layers of Well-Graded Sand
2690							
	40	5.5	122	29			

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: SB
Checked By: JA

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Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.3a

B1SOIL CRANDALL 11101.OPJ LAW CRAN ODT 4/25/03

BORING 3 (Continued)

DATE DRILLED: April 1, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,728 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.
2685	45	13.1	120	21	SM
2680	50	14.5	116	18	ML
2675	55				
2670	60				
2665	65				
2660	70				
2655	75				
2650	80				

SILTY SAND - dense, moist, reddish brown, fine to medium sand with occasional course

SANDY SILT -very stiff, moist, reddish brown, very fine sand

End of Boring at 50'.

NOTES:

Water not encountered.
No caving or raveling.
Hole backfilled with soil cuttings and tamped.

*** Number of blows required to drive Crandall sampler 12 inches using a kelly bar hammer falling 12 inches.
Hammer weight between depth 0' to 25': 1590 pounds
Hammer weight below 25' : 765 pounds

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

B1 SGT_CRANDALL 31101 GPJ LAW CRANDT 4/25/03

Palmdale Medical Center Palmdale, California	MACTEC	LOG OF BORING Project: 4953-03-1101 Figure: A-1.3b

BORING 4

DATE DRILLED: April 1, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,738 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT** (blows/ft)	SAMPLE LOC.		
2735	5	4.5	111	1		SM	SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand with occasional gravel
		4.3	117	2			coarser sand
		0.5	112	3			becomes dry
2730		2.8	110	3			becomes slightly moist
	10	5.4	110	3			
2725							
	15	8.7	112	2			
2720							
	20	9.4	123	8			becomes medium dense
2715							
	25	12.0	112	6			becomes moist
2710							
	30	8.8	123	21			becomes dense, slightly moist
2705							
	35	4.1	120	29		SP	POORLY GRADED SAND - dense, slightly moist, light brownish gray, few gravel
2700							
	40	3.8	119	26			

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: SB
Checked By: JA

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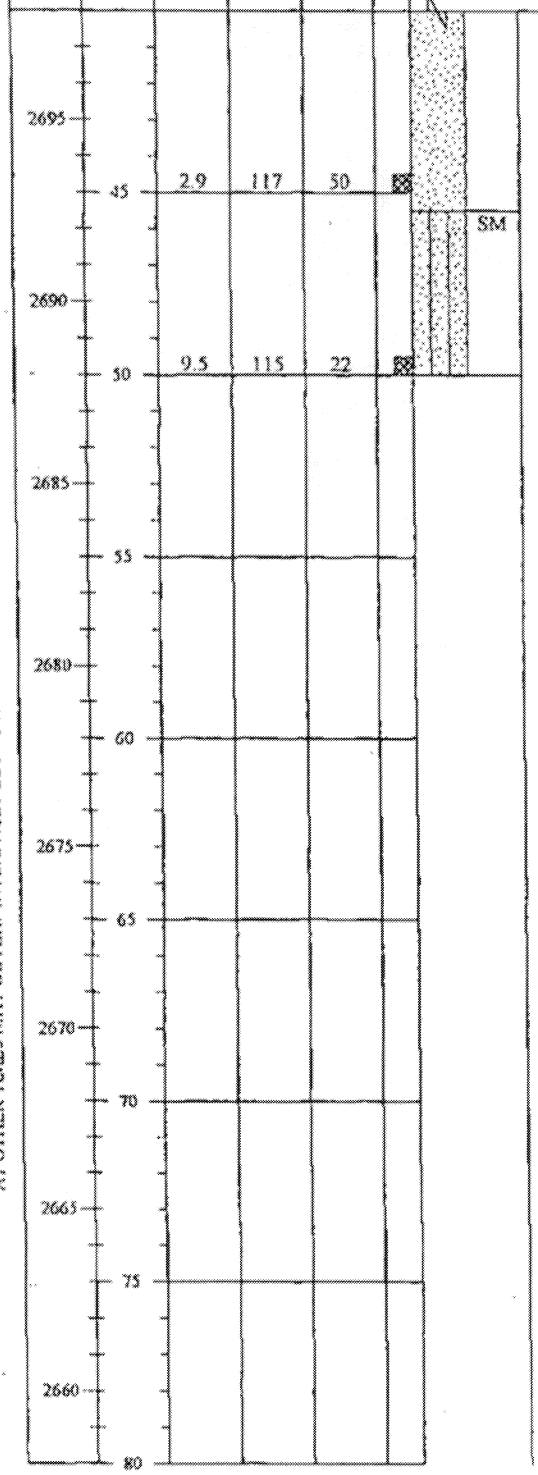
LOG OF BORING
Project: 4953-03-1101 Figure: A-1.4a

B11 SOIL CRANDALL 311101.OPJ LAW CRAN.GDT 4/25/03

BORING 4 (Continued)

DATE DRILLED: April 1, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,738 **



ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
2695							
	45	2.9	117	50			becomes very dense
						SM	SILTY SAND - dense, slightly moist, reddish brown, fine to medium sand with occasional coarse
2690							trace siltier seams
	50	9.5	115	22			End of Boring at 50'.
2685							
	55						
2680							
	60						
2675							
	65						
2670							
	70						
2665							
	75						
2660							
	80						

NOTES:

Water not encountered.
No caving or raveling.
Hole backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.4b

B1150/0. CRANDALL 31101.GPJ LAW CRAN.GDT 4/25/03

BORING 6

DATE DRILLED: March 31, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 2,719**

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
			4.5	121	12		SM	SILTY SAND - loose, slightly moist, reddish brown, fine to medium sand with occasional coarse, trace small gravel
2715			5.6	115	17			
	5		1.8	112	12			becomes dry
					16			
2710	10	5						41% passing No. 200 sieve
2705	15		4.0	114	15			becomes slightly moist
		36						becomes dense coarser sand
2700	20		10.3	119	60			becomes moist
		30						49.7% passing No. 200 sieve
2695	25		14.5	113	50			becomes light brown, fine to coarse sand
2690	30	45						22% passing No. 200 sieve trace siltier seams End of boring at 30½'.
2685	35							
2680	40							

NOTES:

Water not encountered.
Hole backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL

Field Tech: AR
Prepared By: SB
Checked By: JA

B12SOIL CRANDALL 31101.GPJ LAW CRANDDT 4/23/03

Palmdale Medical Center
Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.6

BORING 7

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,733 **

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
2730	0	5.7	111	<1		SM	SILTY SAND - loose, slightly moist, reddish brown, fine to medium sand with occasional coarse, trace gravel
		4.7	106	1			
	5	2.6	112	4			becomes medium dense
2725		3.7	113	4			
	10	3.9	116	10			trace clay
2720							
	15	5.1	125	23			becomes very dense
2715							
	20	6.3	119	9			becomes medium dense
2710							
	25	9.5	127	12			becomes dense becomes dark brown
2705							
	30	9.5	121	20			End of boring at 30'.
2700							NOTES:
	35						Water not encountered. No caving or raveling. Hole backfilled with soil cuttings and tamped.
2695							
	40						

Field Tech: AR
Prepared By: SB
Checked By: JA

D:\19\GIL CRANDALL 31101 OPT LAW CRAN ODT 4/23/03

Palmdale Medical Center
Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.7

BORING 8

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,719 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
						SM	SILTY SAND - loose, slightly moist, light brown, fine to coarse sand, trace small gravel
		4.1	110	2			
2715		3.4	109	2			
	5	2.8	113	2			
		6.4	103	6			becomes medium dense
2710							
	10	6.5	113	3			becomes loose
2705							
	15	5.6	118	3			
							a layer of Gravel layer with few 3" to 4" size cobbles
2700							
	20	9.7	122	11			trace clay, becomes dense
							trace small gravel
						SP	POORLY GRADED SAND - dense, slightly moist, light brownish gray, fine to coarse sand, trace small gravel
2695							
	25	7.5	114	11			
2690							
	30	6.0	116	21			End of boring at 30'.
2685							
	35						
2680							
	40						

NOTES:

Water not encountered.
No caving or raveling.
Hole backfilled with soil cuttings and tamped.

Field Tech: AR
Prepared By: SB
Checked By: JA

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

B11SOIL CRANDALL 31101.GPJ LAW_CRAN.GDT 4/25/03

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Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.8

BORING 9

DATE DRILLED: April 1, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,729 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
						SM	SILTY SAND - loose, slightly moist, reddish brown, trace small gravel
		4.1	110	1	⊠		
2725		3.6	116	1	⊠		
	5	2.5	112	3	⊠	SP	POORLY GRADED SAND - loose, slightly moist, reddish brown, fine to coarse sand, trace silt and gravel
		6.6	106	5	⊠	SM	SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand
2720	10	8.2	108	2	⊠		
2715	15	5.1	113	1½	⊠		
2710	20	9.6	111	4	⊠		trace clay alternating siltier and clayier seams
2705	25	9.8	126	8	⊠		becomes medium dense
						ML	SANDY SILT - very stiff, moist, light brown, fine to medium sand
2700	30	10.2	120	19	⊠		trace silt seams End of boring at 30'.
2695	35						
2690	40						

NOTES:

Water not encountered.
No caving or raveling.
Hole backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

B11502 GRANDALL 31101 GPJ LAW GRAN.GDT 4/25/03

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.9

BORING 10

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,731 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
2730						SM	SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand, trace small gravel
		4.1	115	2	⊠		
		3.8	113	4	⊠		becomes medium dense
	5						
2725		7.0	108	4	⊠		End of boring at 6'.
	10						
2720							
	15						
2715							
	20						
2710							
	25						
2705							
	30						
2700							
	35						
2695							
	40						

NOTES:

Water not encountered.
No caving or raveling.
Hole backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

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Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.10

B11SOIL CRANDALL 31101.GPJ LAW CRAN.GDT 4/25/03

BORING 11

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,714 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
		4.4	104	Push		SM	SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand
		4.8	108	1			
2710		3.5	107	2			
	5						End of boring at 5'.
2705							NOTES:
	10						Water not encountered. Hole backfilled with soil cuttings and tamped.
2700							
	15						
2695							
	20						
2690							
	25						
2685							
	30						
2680							
	35						
2675							
	40						

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

Palmdale Medical Center
Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.11

B11SUL CRANDALL 31101 OPT LAW CRAN.GDT 4/25/03

BORING 12

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,693 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
		8.8	107	Push	▩	SM	SILTY SAND - loose, slightly moist, reddish brown, fine to medium sand with occasional coarse
2690		8.7	121	2	▩		
	5	12.1	122	10	▩		becomes medium dense, moist
							End of boring at 5'.
2685							NOTES:
	10						Water not encountered. Hole backfilled with soil cuttings and tamped.
2680							
	15						
2675							
	20						
2670							
	25						
2665							
	30						
2660							
	35						
2655							
	40						

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

Palmdale Medical Center
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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.12

B11SOIL CRANDALL 3110 GPJ LAW CRAN GDT 4/25/03

BORING 13

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,751 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT** (blows/ft)	SAMPLE LOC.	
2750	0	5.9	110	Push		SM
		7.3	114	2		
	5	3.8	113	3		
2745						
	10					
2740						
	15					
2735						
	20					
2730						
	25					
2725						
	30					
2720						
	35					
2715						
	40					

SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand, trace gravel

End of boring at 5'.

NOTES:

Water not encountered.
Hole backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

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Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.13

B1 SOIL CRANDALL 3110.GPJ LAW CRAN GDT 4/25/03

BORING 14

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,708 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
		5.4	103	1	⊠	SM	SILTY SAND - loose, slightly moist, brown, fine to coarse sand, trace gravel
2705		5.2	102	2	⊠		
	5	5.1	99	2	⊠		
2700							
	10						
2695							
	15						
2690							
	20						
2685							
	25						
2680							
	30						
2675							
	35						
2670							
	40						

End of boring at 5'.

NOTES:

Water not encountered.
Hole backfilled with soil cuttings and tamped.

Field Tech: AR
Prepared By: SB
Checked By: JK

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Palmdale Medical Center
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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.14

III1SOB_CRANDALL_31101.GPJ LAW_CRAN.GDT 4/25/03

BORING 15

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,758 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
		6.3	113	Push	⊠	SM	SILTY SAND - loose, slightly moist, brown, fine to medium sand with occasional coarse, trace gravel
2755		5.2	117	5	⊠		becomes medium dense
	5	2.9	115	4	⊠		End of boring at 5'.
2750							
	10						
2745							
	15						
2740							
	20						
2735							
	25						
2730							
	30						
2725							
	35						
2720							
	40						

NOTES:

Water not encountered.
Hole backfilled with soil cuttings and tamped.

Field Tech: AR
Prepared By: SB
Checked By: JA

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

B11SOIL CRANDALL J1101.GPJ LAW CRAN.GDT 4/25/03

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Palmdale, California

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LOG OF BORING
Project: 4953-03-1101 Figure: A-1.15

BORING 16

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,738 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
		4.5	106	2	⊠	SM	SILTY SAND - loose, slightly moist, light brown and reddish brown, fine to coarse sand
2735		5.4	109	1	⊠		slightly porous
	5	5.9	110	3	⊠		End of boring at 5'.
2730							
	10						
2725							
	15						
2720							
	20						
2715							
	25						
2710							
	30						
2705							
	35						
2700							
	40						

NOTES:

Water not encountered.
Hole backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

B115GIL CRANDALL 31101.GPJ LAW_CRAN.GDT 4/25/03

Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.16

BORING 17

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2.723 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
		5.0	106	Push	⊠	SM	SILTY SAND - loose, slightly moist, brown, fine to coarse sand, trace gravel
2720		7.4	114	4	⊠		becomes medium dense
	5	3.4	113	3	⊠		becomes loose End of boring at 5'.
2715							
	10						
2710							
	15						
2705							
	20						
2700							
	25						
2695							
	30						
2690							
	35						
2685							
	40						

NOTES:

Water not encountered.
Hole backfilled with soil cuttings and tamped.

Field Tech: AR
Prepared By: SB
Checked By: JH

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

BI SOIL CRANDALL 3110I.GPJ LAW CRAN.GDT 4/23/03

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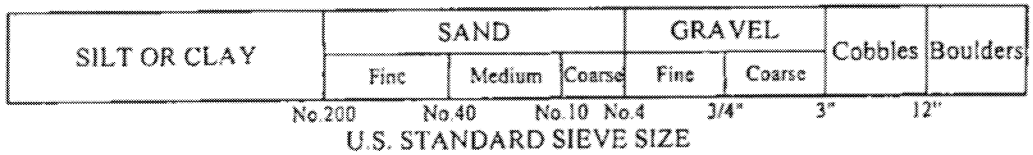
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.17

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel - sand mixtures, little or no fines.
			GP	Poorly graded gravels or grave - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel - sand - silt mixtures.
			GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size)	CLEAN SANDS (Little or no 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 (Appreciable amount of fines)	SM	Silty sands, sand - silt mixtures
			SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts and with slight plasticity.
			CL	Inorganic lays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, 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 and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.



Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

Undisturbed Sample		Auger Cuttings	
Split Spoon Sample		Bulk Sample	
Rock Core		Crandall Sampler	
Dilatometer		Pressure Meter	
Packer		No Recovery	
Water Table at time of drilling		Water Table after 24 hours	

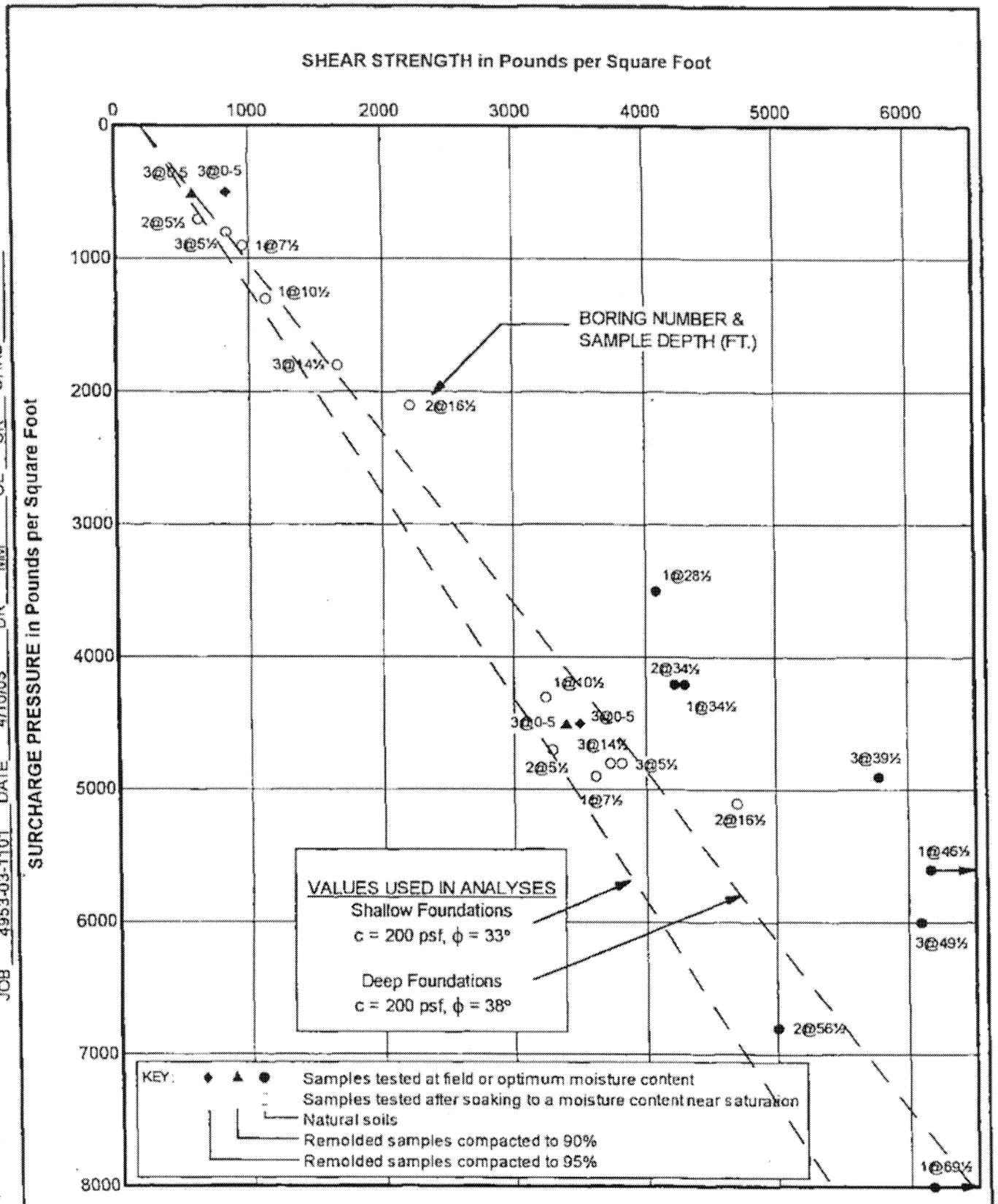
Correlation of Penetration Resistance with Relative Density and Consistency

SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 1	Very Soft
5 - 10	Loose	2 - 4	Soft
11 - 30	Medium Dense	5 - 8	Medium Stiff
31 - 50	Dense	9 - 15	Stiff
Over 50	Very Dense	16 - 30	Very Stiff
		Over 30	Hard

KEY TO SYMBOLS AND DESCRIPTIONS

MACTEC

FIGURE A-2

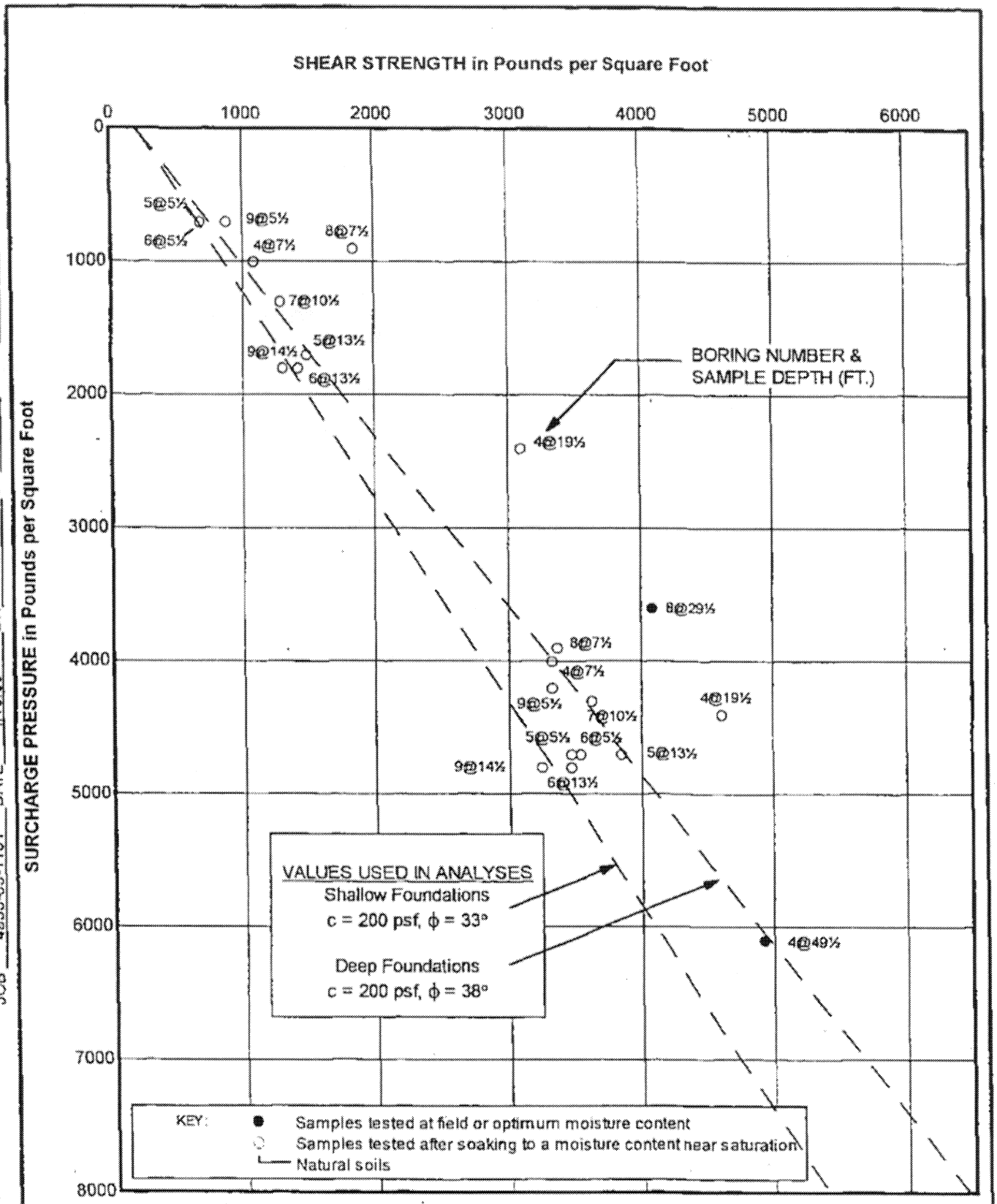


JOB 4953-03-1101 DATE 4/10/03 DR MM CK CHKD

DIRECT SHEAR TEST DATA
(BORINGS 1 THROUGH 3)

MACTEC

FIGURE A - 3.1

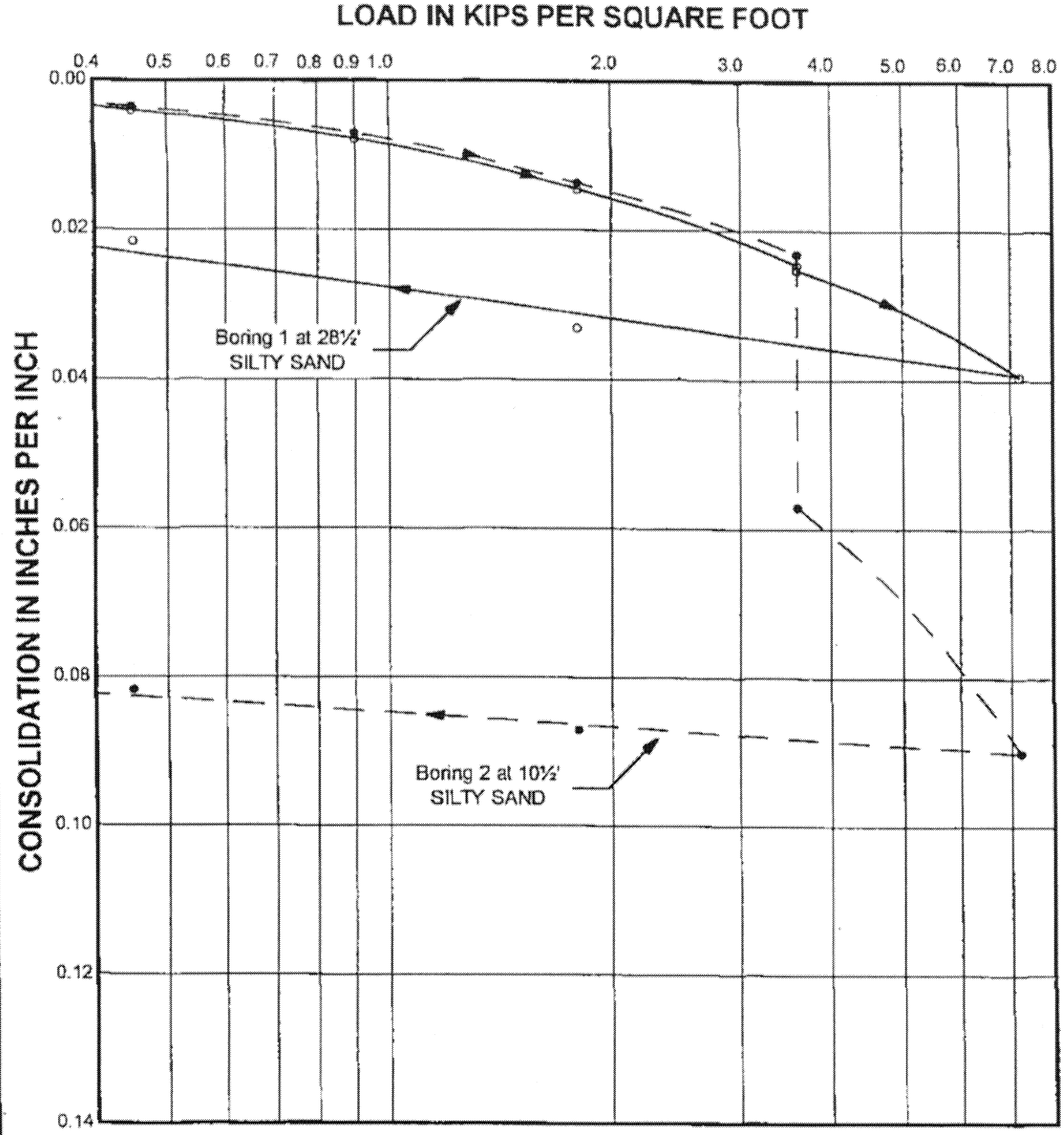


DIRECT SHEAR TEST DATA
(BORINGS 4 THROUGH 9)

MACTEC

FIGURE A - 3.2

JOB 4953-03-1101 DATE 4/16/03 DR MM OE CK CHKD SB



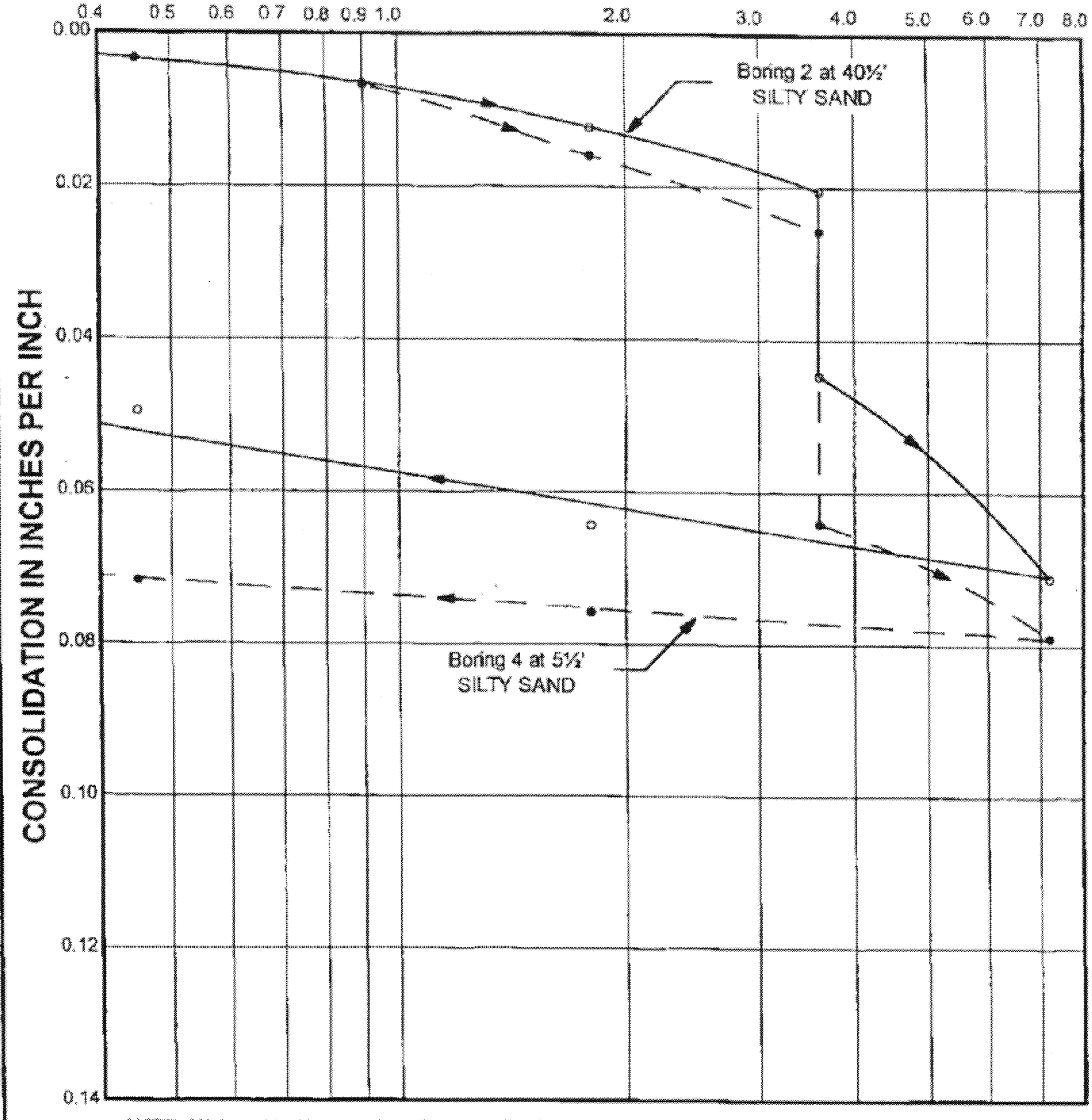
NOTE: Water added to samples after consolidation under a load of 3.6 kips per square foot.

CONSOLIDATION TEST DATA

MACTEC

FIGURE A - 4.1

JOB 4953-03-1101 DATE 4/16/03 DR MM OE CK CHKD BS



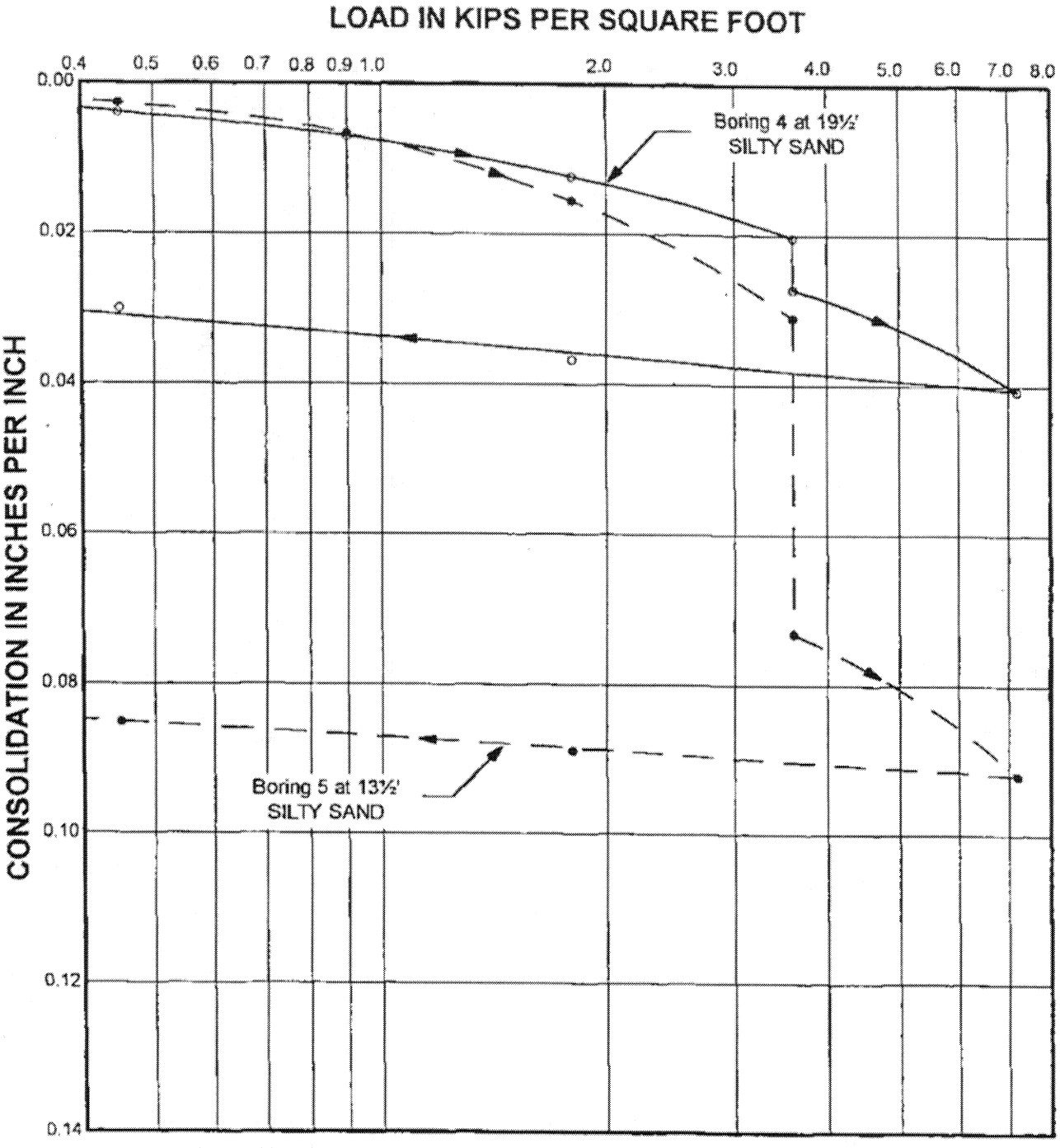
NOTE: Water added to samples after consolidation under a load of 3.6 kips per square foot.

CONSOLIDATION TEST DATA

MACTEC

FIGURE A - 4.2

JOB 4953-03-1101 DATE 4/16/03 DR MM CE CK CHKD EA



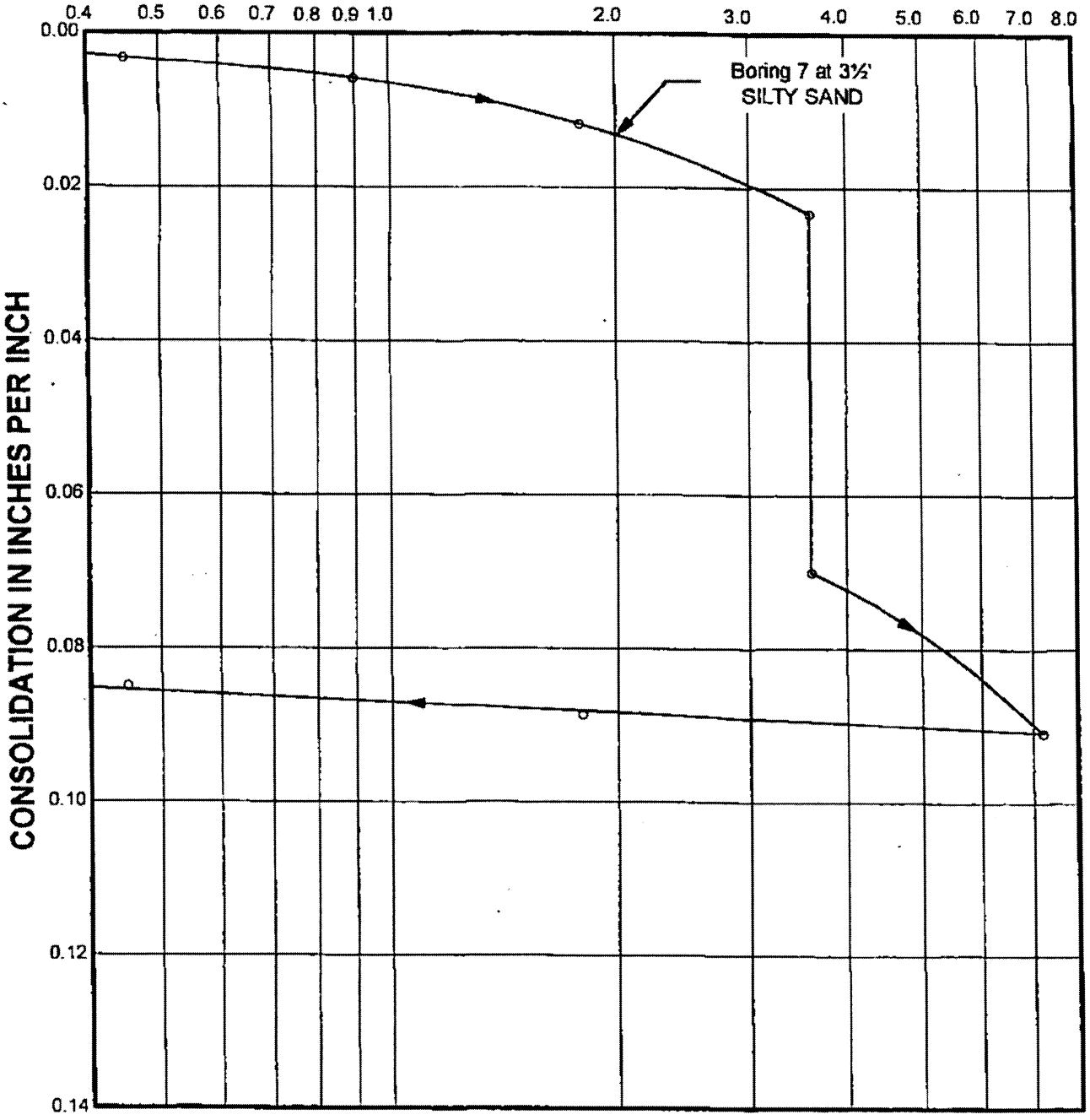
NOTE: Water added to samples after consolidation under a load of 3.6 kips per square foot.

CONSOLIDATION TEST DATA

MACTEC

FIGURE A - 4.3

JOB 4953-03-1101 DATE 4/16/03 DR MM OE CK CHKD



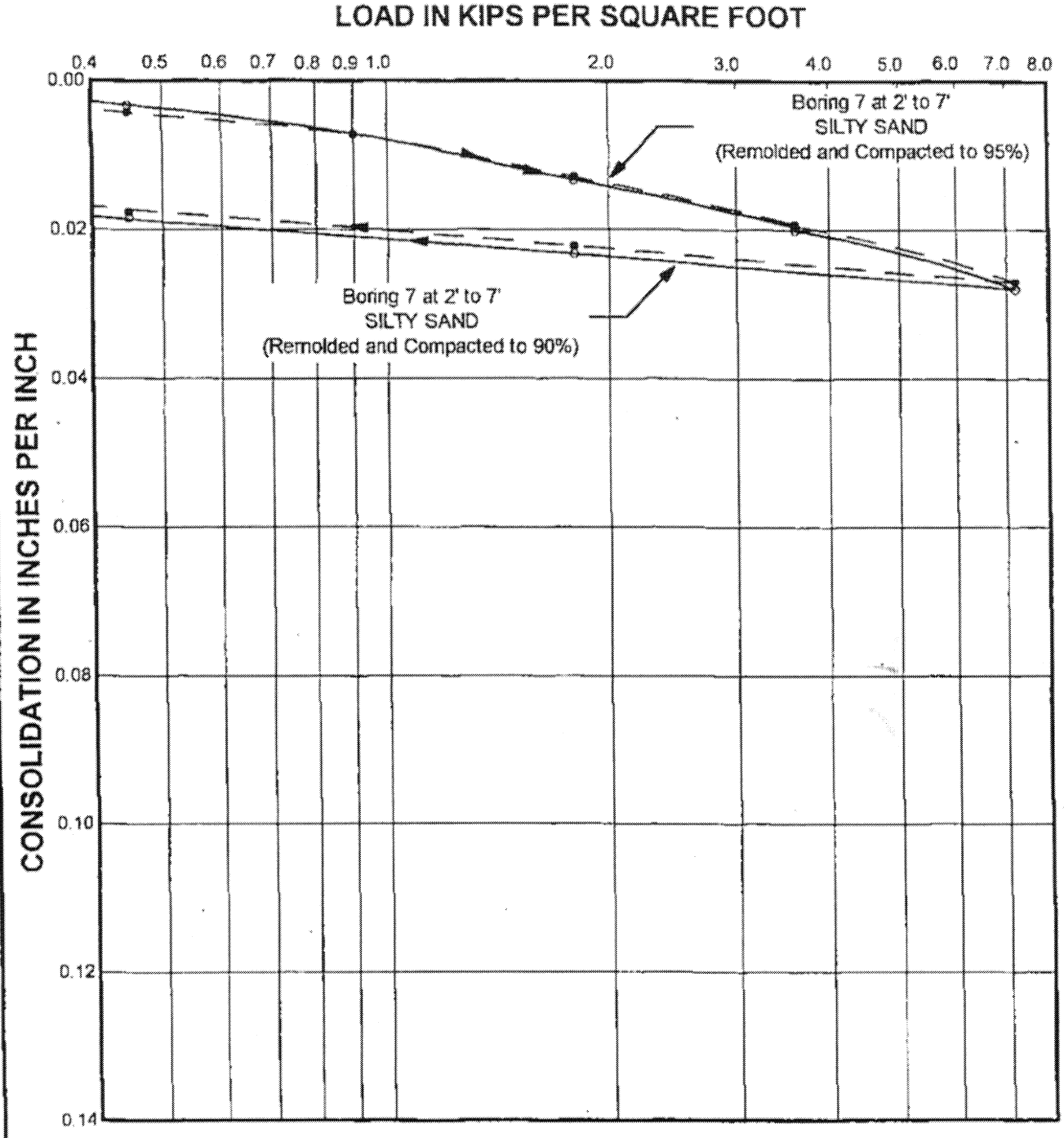
NOTE: Water added to sample after consolidation under a load of 3.6 kips per square foot

CONSOLIDATION TEST DATA

MACTEC

FIGURE A - 4.4

JOB 4953-03-1101 DATE 4/16/03 DR MM OE CK CHKD



NOTE: Water added to samples after consolidation under a load of 3.6 kips per square foot.

CONSOLIDATION TEST DATA

MACTEC

FIGURE A - 4.5

JOB 4953-03-1101 DATE 4/23/03 DR MM CE CK CHKD BB

BORING NUMBER AND SAMPLE DEPTH:	3 at 0' to 5'	7 at 2' to 7'	11 at 0' to 4'
SOIL TYPE:	SILTY SAND	SILTY SAND	SILTY SAND
MAXIMUM DRY DENSITY*: (lbs./cu.ft.)	128.5	129.5	131.5
OPTIMUM MOISTURE CONTENT: (%)	7.5	7.5	7.5
EXPANSION: (From optimum to saturated moisture content)	-	-	0.4
C.B.R.** (% of standard)			
AT 90% COMPACTION	-	-	10
AT 95% COMPACTION	-	-	27

*TEST METHOD: ASTM Designation D1557-91

**TEST METHOD: ASTM Designation D1883-94

COMPACTION AND C.B.R. TEST DATA

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FIGURE A - 5

M. J. Schiff & Associates, Inc.

Consulting Corrosion Engineers - Since 1959
431 W. Baseline Road
Claremont, CA 91711

Phone: (909) 626-0967 Fax: (909) 626-3316
E-mail lab@mjschiff.com
website: mjschiff.com

Table 1 - Laboratory Tests on Soil Samples

Palmdale Medical Center
Your #4953-03-1101, MJS&A #03-0458LAB
21-Apr-03

Sample ID			4 @ 14.5'	6 @ 1.5'	8 @ 3.5'	12 @ 2.5'	15 @ 2.2"
Resistivity		**Units**					
as-received		ohm-cm	28,000	21,000	38,000	9,500	30,000
saturated		ohm-cm	9,800	8,000	9,100	4,400	20,000
pH			8.3	7.5	7.5	7.2	7.7
Electrical Conductivity		mS/cm	0.04	0.05	0.04	0.05	0.03
Chemical Analyses							
Cations							
calcium	Ca^{2+}	mg/kg	16	36	16	32	16
magnesium	Mg^{2+}	mg/kg	ND	ND	ND	ND	ND
sodium	Na^{1+}	mg/kg	17	ND	ND	ND	ND
Anions							
carbonate	CO_3^{2-}	mg/kg	ND	ND	ND	ND	ND
bicarbonate	HCO_3^{1-}	mg/kg	52	64	31	64	21
chloride	Cl^{1-}	mg/kg	25	ND	ND	ND	ND
sulfate	SO_4^{2-}	mg/kg	ND	ND	ND	ND	ND
Other Tests							
ammonium	NH_4^{1+}	mg/kg	0.5	2.4	1.2	1.7	1.3
nitrate	NO_3^{1-}	mg/kg	3.5	4.0	3.3	3.5	2.7
sulfide	S^{2-}	qual	na	na	na	na	na
Redox		mv	na	na	na	na	na

Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

FIGURE A – 7

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REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED PALMDALE MEDICAL CENTER

SOUTHEAST OF THE INTERSECTION OF TIERRA SUBIDA AVENUE AND WEST PALMDALE BOULEVARD
PALMDALE, CALIFORNIA

Prepared for:

UNIVERSAL HEALTH SERVICES, INC.

Las Vegas, Nevada

April 28, 2003

Project 4953-03-1101

MACTEC

MACTEC

April 28, 2003

Mr. Pat Brietigam
Universal Health Services, Inc.
5400 South Rainbow Boulevard
Las Vegas, Nevada 89118

Subject: **Report of Geotechnical Investigation**
Proposed Palmdale Medical Center
Southeast of the Intersection of Tierra Subida Ave. and West Palmdale Blvd.
Palmdale, California 93551
MACTEC Project 4953-03-1101

Dear Mr. Brietigam:

We are pleased to submit the results of our geotechnical investigation for the proposed Palmdale Medical Center to be constructed in Palmdale, California. This investigation was conducted in general accordance with our proposal dated March 14, 2003, which was authorized on March 24, 2003.

The scope of our services was planned with Messrs. James Mitchell and Noel Barrick of HKS, Inc. who also advised us of the general structural features of the proposed buildings.

The results of our investigation and design recommendations are presented in this report. Please note that you or your representative should submit copies of this report to the appropriate governmental agencies for their review and approval prior to obtaining a building permit.

MACTEC Engineering and Consulting, Inc.
200 Citadel Drive • Los Angeles, CA 90040
323-889-5300 • Fax: 323-721-6700

It has been a pleasure to be of professional service to you. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

MACTEC Engineering and Consulting of Georgia, Inc.
D/b/a Law/Crandall, A Division of Law Engineering and Environmental Services, Inc.

Mark A. Murphy
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by ____ with permission

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(4 copies submitted)

Attachments

cc: (3) HKS, Inc.
Attn: Mr. Noel Barrick
Mr. James Mitchell

REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED PALMDALE MEDICAL CENTER

SOUTHEAST OF THE INTERSECTION OF TIERRA SUBIDA AVENUE AND WEST PALMDALE BOULEVARD
PALMDALE, CALIFORNIA

Prepared for:

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Las Vegas, Nevada

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f/k/a Law/Crandall, A Division of Law Engineering and Environmental Services, Inc.

Los Angeles, California

April 28, 2003

Project 4953-03-1101

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EXECUTIVE SUMMARY

We have completed our geotechnical investigation for the proposed Palmdale Medical Center to be constructed in Palmdale, California. Our subsurface explorations, engineering analyses, and foundation design recommendations are summarized below.

The natural soils at the site consist predominantly of medium dense silty sand to depths ranging from approximately 15 to 25 feet below ground surface (bgs). Deeper soils are predominantly dense to very dense silty sand and sand with occasional silt layers. The upper silty sand soils at the site are susceptible to hydro-consolidation and would become weaker and more compressible when wet. Fill soils were not encountered in our borings.

If the remedial grading recommendations in this report are implemented and proper drainage systems are installed to drain surface water away from the foundations, the proposed hospital building may be supported on shallow spread footings and the floor slabs may be supported on grade. Remedial grading consists of removing the upper 5 feet of the existing site soils (or 3 feet below bottom of footings, whichever is deeper) and replacing with properly compacted fill.

Alternatively, the proposed hospital building may be supported on drilled cast-in-place concrete piles extending into the dense natural soils. The building floor slabs may be structurally supported or on grade over a minimum of two feet of properly compacted fill.

Based on the available geologic data, active or potentially active faults with the potential for surface fault rupture are not known to be located beneath or projecting toward the site. In our opinion, the potential for surface rupture at the site due to fault plane displacement propagating to the ground surface during the design life of the project is considered low. Although the site could be subjected to strong ground shaking in the event of an earthquake, this hazard is common in Southern California and the effects of ground shaking can be mitigated by proper engineering design and construction in conformance with current building codes and engineering practices. The site is relatively level and the absence of nearby slopes precludes slope stability hazards. The potential for other geologic hazards such as liquefaction, tsunamis, inundation, seiches, flooding, and subsidence affecting the site is considered low.

1.0 SCOPE

This report provides geotechnical design information for the proposed Palmdale Medical Center to be constructed in Palmdale, California. The location of the site is shown on Figure 1, Site Location Map. The locations of the proposed structures and our exploration borings are shown on Figure 2, Plot Plan.

This investigation was authorized to determine the characteristics of the soils at the site of the proposed structures, and to provide recommendations for foundation design, for floor slab and paving support, for design of retaining walls and walls below grade, and grading for the development. We were to evaluate the existing soil and ground-water conditions at the site, including the corrosion potential of the soils, and develop recommendations for the following:

- A feasible foundation system design along with the necessary design parameters;
- Estimated settlement for the anticipated loads;
- Evaluation of the liquefaction potential of the soils underlying the site;
- Seismic coefficients and seismic zonation based on the current California Building Code;
- Subgrade preparation and floor slab support;
- Design of retaining walls and walls below grade;
- Design of asphalt concrete and portland cement concrete paving; and
- Grading, including site preparation, excavation, the placing of compacted fill, and quality control measures relating to earthwork.

The assessment of general site environmental conditions for the presence of contaminants in the soils and ground water of the site was beyond the scope of this investigation.

Our recommendations are based on the results of our field explorations, laboratory tests, and appropriate engineering analyses. The results of our subsurface explorations and laboratory tests are presented in the Appendix.

2.0 PROJECT DESCRIPTION

Universal Health Services plans to construct a new medical center in Palmdale, California, at the site shown on Figure 1 (Latitude 34.58N, Longitude 118.14W). The proposed structures are currently planned at the locations shown on Figure 2. Building locations have not yet been finalized. Accordingly, we request that we be provided with the finalized site plan when available to verify that the recommendations presented in this report remain applicable.

The initial phase of the proposed project will consist of the construction of a main hospital building and the northwest medical office building (MOB), a large surface parking lot, driveways, and landscaping. Future phases are planned to include the construction of an additional MOB and possible additions to the main hospital building. This report addresses the proposed hospital building and its possible additions. The MOBs are addressed in a separate report.

As part of the initial phase of the project, the main hospital building will be benched into the existing northeast-facing slope to create continuous floor levels across the entire building. A three-story tower is planned at the northeast side of the building. The tower portion of the building will be attached to a partially below grade, two-story ancillary structure that will in turn be attached to a one-story ancillary structure that will be at approximately the existing grade. An overhead walkway is currently planned to connect the two-story portion of the main hospital building to the second floor of the northwest MOB.

In addition to the southeast MOB, future phases are planned to include an expansion of the main hospital building to the southwest and the addition of fourth level atop the three-story tower portion of the building.

Maximum dead-plus-live column loads are estimated to range from 100 to 500 kips for the different segments of the main hospital building.

3.0 SITE CONDITIONS

The future campus of Palmdale Medical Center is planned to be located southeast of the intersection of Tierra Subida Avenue and West Palmdale Boulevard. The ground surface at the site of the proposed medical center campus has a mild slope, with an elevation drop of approximately 25 feet from the southwestern limits of the planned structures to the northeastern limits.

The site of the proposed medical center campus is currently unimproved and vacant land. Various underground utilities may cross the site.

4.0 EXPLORATIONS AND LABORATORY TESTS

To explore the subsurface conditions beneath the proposed medical center campus, 17 borings were drilled to depths of 5 to 71 feet below the existing grade at the locations shown on Figure 2. Details of the explorations and the logs of the borings are presented in the Appendix.

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to determine the pertinent engineering properties of the foundation soils. The following tests were performed:

- Moisture content and dry density determinations;
- Atterberg Limits;
- Direct shear;
- Consolidation;
- Compaction; and
- California Bearing Ratio (CBR).

All testing was performed in general accordance with applicable ASTM specifications. Details of the laboratory testing program are presented the Appendix.

5.0 SOIL CONDITIONS

Fill soils were not encountered in our borings. However, fill soils may exist in unexplored areas. The natural soils at the site consist of medium dense to dense silty sand with a few thin loose layers to a depth of approximately 25 feet below ground surface (bgs). Deeper soils are generally dense to very dense. The soils down to about 15 feet bgs are susceptible to hydro-consolidation and would become weaker and more compressible when wet.

Ground water was not encountered within the depths explored.

Results of soil corrosivity tests indicate that the on-site soils are moderately corrosive to ferrous metals and exposure of concrete to sulfate attack is considered negligible. The test results are presented in the Appendix.

Active Faults

San Andreas Fault Zone

The closest active fault is an unnamed splay of the San Andreas fault zone, located about 1.0 kilometer southwest of the site. This unnamed splay, which diverges from the Little Rock fault, thrusts quartz monzonite bedrock over Anaverde sandstone (Ehlert & Schell, 1989). According to Barrows et al. (1985), the fault dips about 45° to the south, and Holocene alluvium has been offset in several places along this 1.7-kilometer fault. This has been thought to be sympathetic as a result of the 1857 Fort Tejon earthquake along the main fault trace.

The main strand of the San Andreas fault zone is located 1.9 kilometers to the southwest of the site. The San Andreas fault zone, California's most prominent geological feature, trends generally northwest for almost the entire length of the state. The southern segment, closest to the site, is approximately 450 kilometers long and extends from the Mexican Border to the Transverse Ranges west of Tejon Pass. Wallace (1968) estimated the recurrence interval for a magnitude 8.0 earthquake along the entire fault zone to be between 50 and 200 years. Sieh (1984) estimated a recurrence interval of 140 to 200 years. The 1857 Fort Tejon earthquake was the last major earthquake along the San Andreas fault zone in Southern California.

Llano Fault

The active Llano fault is located approximately 29 kilometers east-southeast of the site. This relatively small reverse fault does not extend to the surface, but is expressed at the surface as a prominent scarp in which late Pleistocene age sediments have been warped and folded. The Llano fault is classified as active by Jennings (1994).

San Gabriel Fault Zone

The active San Gabriel Fault Zone is located about 32 kilometers south-southwest of the site. This fault zone extends southeasterly approximately 130 kilometers (80 miles) from near Bear Mountain in Ventura County to San Antonio Canyon in San Bernardino County (Weber, 1982). Estimates of the amount of total offset along the fault zone range from approximately 9.5 kilometers (6 miles) of right lateral displacement (Weber, 1982) to approximately 40 kilometers (25 miles) of right lateral displacement since the Pliocene, as hypothesized by Crowell (1952). Yeats and Stitt (1983) estimate that less than a kilometer (mile) of displacement has occurred along the San Gabriel fault zone during the late Quaternary. Recent work by Cotton et al. (1983), Yeats and Stitt (1983), Cotton and Seward (1984) indicates that this fault has been active within the Holocene epoch (last 11,000 years). The Saugus-Newhall segment of the San Gabriel fault zone is included within an Alquist-Priolo Earthquake Fault Zone.

San Fernando Fault Zone

The active San Fernando fault zone is located about 38 kilometers south-southwest of the site. The San Fernando fault zone comprises one of a number of left lateral/reverse frontal faults bounding the southern margin of the San Gabriel and Santa Susana Mountains. An earthquake of magnitude 6.6 originated along this fault zone on February 9, 1971. Surface rupture occurred along the Tujunga, Sylmar, and Mission Wells segments of the San Fernando fault zone during this earthquake.

Sierra Madre Fault Zone

The active Sierra Madre fault is located 38 kilometers south-southwest of the site. This fault zone borders the southern front of the San Gabriel Mountains and consists of a series of discontinuous reverse faults that separate pre-Tertiary crystalline rocks on the north from Tertiary and Quaternary sedimentary deposits on the south. The various faults exhibit northerly dips from 15 degrees to vertical, with the crystalline rocks thrust upward toward the south over sediments as young as mid-Pleistocene age. The Sierra Madre fault zone extends approximately 80 kilometers along the southern flank of the San Gabriel Mountains from Big Tujunga Canyon on the west to Cajon Pass on the east. The fault zone consists of a series of low-angle thrust faults that are believed to have been active at different times in the geologic past (Crook et al., 1987). The 1991 Sierra Madre earthquake is believed to be a result of movement on the Sierra Madre fault zone.

Blind Thrust Fault Zones

Northridge Thrust

The Northridge Thrust, as defined by Petersen et al. (1996), is an inferred deep thrust fault that is considered the eastern extension of the Oak Ridge fault. The Northridge Thrust is located beneath the majority of the San Fernando Valley and is believed to be the causative fault of the January 17, 1994 Northridge earthquake. This thrust fault is not exposed at the surface and does not present a potential surface fault rupture hazard. However, the Northridge Thrust is an active feature that can generate future earthquakes. The vertical surface projection of the Northridge Thrust is approximately 42 kilometers southwest of the site at the closest point. Petersen et al. (1996) estimates an average slip rate of 1.5 mm/yr. and a maximum magnitude of 6.9 for the Northridge Thrust.

Elysian Park Thrust

The Elysian Park Thrust, previously defined by Hauksson (1990) as the Elysian Park Fold and Thrust Belt, was postulated to extend northwesterly from the Santa Ana Mountains to the Santa Monica Mountains, extending westerly and paralleling the Santa Monica-Hollywood and Malibu Coast faults. The Elysian Park Thrust is now believed to be smaller in size, only underlying the central Los Angeles Basin (Petersen et al., 1996). The vertical surface projection of the Elysian Park Thrust is approximately 46 kilometers south of the site at its closest point. Like other blind thrust faults in the Los Angeles area, the Elysian Park Thrust is not exposed at the surface and does not present a potential surface rupture hazard; however, the Elysian Park Thrust should be considered an active feature capable of generating future earthquakes. An average slip rate of 1.5 mm/yr and a maximum magnitude of 6.7 are estimated by Petersen et al. (1996) for the Elysian Park Thrust.

Potentially Active Faults

Soledad Fault

The closest potentially active fault is the Soledad fault located approximately 16 kilometers southwest of the site. This north-dipping normal fault trends east-west forming two arcuate traces along the northern side of Soledad Canyon. The fault juxtaposes anorthosite against the Mint Canyon Formation in the Aqua Dulce area and is classified as potentially active by Jennings (1994).

Clearwater Fault

The potentially active Clearwater fault is located approximately 19½ kilometers west of the site. The Clearwater fault trends east-west and merges with the San Andreas fault zone at the northern part of the Leona Valley. Both vertical and strike-slip movement on the fault has been suggested; however, few details on the amount and type of displacement are available. There is evidence that Pleistocene or post-Pleistocene age displacement has occurred. Mesozoic age or older basement rocks north of the fault have been faulted over the younger Paleocene age Martinez Formation sandstone.

Pelona Fault

The potentially active Pelona fault is located about 26 kilometers west-southwest of the site. The Pelona fault is a northeast-trending normal fault that is located between the San Andreas fault to the north and the San Gabriel fault to the south.

6.5 GEOLOGIC-SEISMIC HAZARDS

Fault Rupture

The site is not within a currently established Alquist-Priolo Earthquake Fault Zone for surface fault rupture hazards. The closest Alquist-Priolo Earthquake Fault Zone, established for the previously mentioned unnamed splay of the San Andreas fault zone kilometers 850 meters southwest of the site. Based on the available geologic data, active or potentially active faults with the potential for surface fault rupture are not known to be located directly beneath or projecting toward the site. Therefore, the potential for surface rupture due to fault plane displacement propagating to the surface at the site during the design life of the project is considered low.

Seismicity

Earthquake Catalog Data

The seismicity of the region surrounding the site was determined from research of an electronic database of seismic data (Southern California Seismographic Network, 2002). This database includes earthquake data compiled by the California Institute of Technology for 1932 to 2002 and data for 1812 to 1931 compiled by Richter and the U.S. National Oceanic Atmospheric Administration (NOAA). The search for earthquakes that occurred within 100 kilometers of the site indicates that 593 earthquakes of Richter magnitude 4.0 and greater occurred between 1932 and 2002; 1 earthquake of magnitude 6.0 or greater occurred between 1906 and 1931; and 2 earthquakes of magnitude 7.0 or greater occurred between 1812 and 1905. A list of these earthquakes is presented as Table 3, List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site. Epicenters of moderate and major earthquakes (greater than magnitude 6.0) are shown on Figure 5.

Slope Stability

The relatively flat-lying topography at the site precludes both stability problems and the potential for lurching (earth movement at right angles to a cliff or steep slope during ground shaking). According to the City of Palmdale Safety Element (1993), the site is within an area having a slope gradient less than 15% and not within an area identified as having a potential for slope instability. There are no known landslides near the site, nor is the site in the path of any known or potential landslides. Additionally, the site is not located within an area identified as having a potential for seismic slope instability (California Geological Survey, 2003).

Liquefaction and Seismically-Induced Settlement

Liquefaction potential is greatest where the ground water level is shallow, and submerged loose, fine sands occur within a depth of about 15 meters (50 feet) or less. Liquefaction potential decreases as grain size and clay and gravel content increase. As ground acceleration and shaking duration increase during an earthquake, liquefaction potential increases.

According to the County of Los Angeles Seismic Safety Element (1990), the City of Palmdale Safety Element (1993), and the California Geological Survey (2003), the site is not within an area identified as having a potential for liquefaction. Based on ground-water level measurements in nearby wells, ground water is at a depth greater than 15 meters. Therefore, the potential for liquefaction and the associated ground deformation beneath the site is considered to be low.

Seismically-induced settlement is often caused by loose to medium-dense granular soils densified during ground shaking. Uniform settlement beneath a given structure would cause minimal damage; however, because of variations in distribution, density, and confining conditions of the soils, seismically-induced settlement is generally non-uniform and can cause serious structural damage. Dry and partially saturated soils as well as saturated granular soils are subject to seismically-induced settlement. Generally, differential settlements induced by ground failures such as liquefaction, flow slides, and surface ruptures would be much more severe than those caused by densification alone.

To evaluate the potential for seismically-induced settlement at the project site during the Design Basis Earthquake (DBE) and the Upper Bound Earthquake (UBE), the magnitude-7.5-adjusted peak ground accelerations (PGAs) corresponding to the DBE and UBE, which are defined as the events with a 10% probability of exceedance in 50 and 100 years, respectively, were computed. The magnitude-7.5-adjusted PGAs of the DBE and UBE were computed probabilistically using FRISKSP, Version 3.01b with the average ground motion from the attenuation relations discussed in Abrahamson & Silva (1997) and Sadigh (1997). The DBE and UBE liquefaction PGAs for the subject site were calculated as 0.75g and 0.89g, respectively. These calculated values show very good agreement with mapped values of magnitude-7.5-adjusted PGAs for the subject site published in the literature (California Geological Survey, 2003).

The seismically-induced settlement due to the DBE is estimated to range from about ½ inch to 1 inch across the site with a maximum differential settlement of less than 1 inch in 300 feet.

The seismically-induced settlement due to the UBE is estimated to range from about ½ inch to 2½ inches across the site, with a maximum differential settlement of less than 1 inch in 100 feet.

Tsunamis, Inundation, Seiches, and Flooding

The site is not in a coastal area. Therefore, tsunamis (seismic sea waves) are not considered a hazard at the site.

According to the County of Los Angeles Seismic Safety Element (1990), the site is not located downslope of any large bodies of water that could adversely affect the site in the event of earthquake-induced dam failures or seiches (wave oscillations in an enclosed or semi-enclosed body of water).

According to the City of Palmdale Safety Element, (1993), the site is not located within the boundaries of either a 100-year or 500-year flood zone.

Subsidence

The site is not within an area of known subsidence associated with fluid withdrawal (ground water or petroleum), peat oxidation, or hydrocompaction.

6.6 ESTIMATED PEAK GROUND ACCELERATION

Ground motions were postulated corresponding to the DBE, having a 10% probability of exceedance during a 50-year time period and the UBE, having a 10% probability of exceedance during a 100-year time period.

The site-specific peak ground acceleration for the UBE was estimated by a Probabilistic Seismic Hazard Analysis (PSHA) using the computer program FRISKSP, Version 3.01b. The faults used in the study are shown in Tables 1 and 2, along with the maximum magnitude and the slip rate assigned to each fault. FRISKSP converts the slip rate into an activity rate for each fault using an algorithm consistent with the Anderson and Luco Occurrence Relation 2 (Anderson and Luco, 1983).

The peak ground acceleration was developed using the average of the ground motion attenuation relations discussed in Abrahamson & Silva (1997), Sadigh (1997), and Boore et al. (1993, site type "C").

Dispersion in the ground motion attenuation relationships was considered by inclusion of the standard deviation of the ground motion data in the attenuation relationship used in the PSHA. We have used the "all-slip-type" relationship for rupture area versus magnitude of Wells and Coppersmith (1994) for all the faults in our model. The estimated peak ground accelerations for the DBE and the UBE are 1.02g and 1.21g, respectively.

6.7 CONCLUSIONS

Based on the available geologic data, active or potentially active faults with the potential for surface fault rupture are not known to be located beneath or projecting toward the site. In our opinion, the potential for surface rupture at the site due to fault plane displacement propagating to the ground surface during the design life of the project is considered low. Although the site could be subjected to strong ground shaking in the event of an earthquake, this hazard is common in Southern California and the effects of ground shaking can be mitigated by proper engineering design and construction in conformance with current building codes and engineering practices.

The site is relatively level and the absence of nearby slopes precludes slope stability hazards. The potential for other geologic hazards such as liquefaction, tsunamis, inundation, seiches, flooding, and subsidence affecting the site is considered low. With proper engineering design, the potential hazard of seismically-induced settlement can be mitigated.

7.0 RECOMMENDATIONS

7.1 GENERAL

The existing soils at the site are not considered suitable for support of the proposed hospital building on spread footings. With the possible introduction of additional moisture into the subsurface, which can occur due to water impoundment from improper drainage, rainfall, pipe leaks, or irrigation, significant settlement could occur if spread footings and concrete slabs-on-grade are placed directly on the existing site soils.

To mitigate the potential for unacceptable settlement, we recommend that remedial grading be performed to install at least 3 feet of properly compacted fill below footings. The upper 5 feet of the existing site soils (or 3 feet below bottom of footings, whichever is deeper) should be removed and replaced with properly compacted fill. The lateral extent of removal and replacement should equal the removal depth below footings. As an alternative to remedial grading, the proposed hospital building may be supported on drilled cast-in-place concrete piles extending into the dense natural soils. Drilled cast-in-place pile foundations may also be necessary to provide uplift resistance.

If at least the upper two feet of the existing soils below planned floor slabs are excavated and replaced with properly compacted fill, the floor slabs may be supported on grade. The building floor slabs may also be structurally supported.

We also recommend that the building structures be placed up-gradient within the site and that provisions for positive surface drainage away from the foundations be incorporated into the site grading plans. Impoundment of stormwater run-off within the construction area should not be permitted within the immediate vicinity of the foundation construction area. We also recommend avoiding the placement of planters, underground water pipes, or any other source of additional water to the subsurface soils in the immediate vicinity of the foundations.

If possible, we recommend that planter and landscaped areas be placed at least 15 feet away from the hospital building. Hardscape with proper surface drainage should be provided within the 15-foot strip. If planter or lawn areas adjacent to buildings are desired, these areas should have impermeable bottoms. In addition, we recommend pressure testing of utility lines prior to backfilling to detect leaks and eliminate leaks due to poor workmanship or material defects. In fact, to substantially reduce the risk of leaky utilities saturating the subsurface materials, all fluid-conveying utilities, except for sewer lines, could be installed above ground.

7.2 SHALLOW FOUNDATIONS

Bearing Value

Spread footings at least 12 inches wide carried at least 2 feet below the lowest adjacent grade or floor level and established in properly compacted fill soils may be designed to impose a net dead-plus-live load pressure of 3,000 pounds per square foot.

A one-third increase may be used for wind or seismic loads. The recommended bearing value is a net value, and the weight of concrete in the footings can be taken as 50 pounds per cubic foot; the weight of soil backfill can be neglected when determining the downward loads.

Footings for minor structures (loading dock walls, minor retaining walls, and free-standing walls) that are structurally separate from the structures may be designed to impose a net dead-plus-live load pressure of 1,500 pounds per square foot at a depth of 1½ feet below the lowest adjacent grade. Such footings should be underlain by at least 2 feet of properly compacted fill soils.

Settlement

Based on the maximum column loads provided to us, we estimate the static settlement of the proposed building, supported on spread footings in the manner recommended, will be on the order of 1 inch. Differential static settlement between adjacent columns is expected to be less than ½ inch. At least half of the estimated static settlement is expected to occur during construction.

In addition to the estimated static settlement, the hospital building should be designed to accommodate the seismic settlement discussed in Section 6.5, Geologic Hazards.

Structural connections between the main hospital building and the northwest MOB should be designed to accommodate both the static and seismic settlement.

Lateral Resistance

Lateral loads may be resisted by soil friction and by the passive resistance of the soils. A coefficient of friction of 0.5 may be used between the footings and the floor slab and the supporting soils. The passive resistance of properly compacted fill soils may be assumed to be equal to the pressure developed by a fluid with a density of 300 pounds per cubic foot. A one-third increase in the passive value may be used for wind or seismic loads. The frictional resistance and the passive resistance of the soils can be combined without reduction in determining the total lateral resistance.

7.3 DEEP FOUNDATIONS

Downdrag loads may develop on deep foundations due to settlement of hydro-collapsible soils and due to seismically-induced settlement. (We have assumed that the proposed development may introduce increased moisture to soils as deep as about 15 feet bgs.) In deriving the capacities of drilled cast-in-place concrete piles, we have neglected the resistance of the upper 15 feet. In addition, downdrag loads must be added to the column loads before determining the required pile lengths. The downward capacities of 24-, 30-, and 36-inch-diameter drilled cast-in-place concrete piles are presented as a function of penetration below pile cap on Figure 7, Downward Drilled Pile Capacities. The upward capacities of 24-, 30-, and 36-inch diameter drilled cast-in-place concrete piles are presented as a function of penetration below pile cap on Figure 8, Upward Drilled Pile Capacities. Downdrag loads for these piles are presented in a following section.

To the develop the full lateral pile capacity presented in the following section on lateral loads, the piles should be at least as long as necessary to reach the depth to zero moment.

A one-third increase in the pile capacities may be used for wind or seismic loads. The capacities presented are based on the strength of the natural soils; the compressive and tensile strengths of the pile sections should be checked to verify the structural capacity of the piles. Piles in groups, if needed, should be spaced at least 3 diameters on centers. If the piles are so spaced, no reduction in the axial capacities of the piles need be considered due to group action.

Settlement

We estimate the static settlement of the proposed hospital building, supported on cast-in-place drilled concrete piles, as recommended above, to be less than ½ inch and the differential settlement between adjacent columns to be less than ¼ inch.

In addition to the estimated static settlement, the hospital building should be designed to accommodate the seismic settlement discussed in Section 6.5, Geologic Hazards.

Structural connections between the main hospital building and the northwest MOB should be designed to accommodate both the static and seismic settlement.

Lateral Loads

We have computed the lateral capacities of the piles using the computer program LPILE by ENSOFT, Inc. Resistance of the soils adjacent to 24-, 30-, 36-inch-diameter drilled piles are shown in the following tables for top of pile deflections of ¼ and ½ inch. These resistances have been calculated assuming both free- and fixed-head pile conditions. The lateral resistance of other sizes of piles may be assumed to be proportional to the pile diameter.

Pile Diameter	¼-inch Groundline Deflection					
(inches)	Free Head			Fixed Head		
	Lateral Load (kips)	Maximum Induced Moment (foot-kips)	Depth to Zero Moment (feet)	Lateral Load (kips)	Maximum Induced Moment (foot-kips)	Depth to Zero Moment (feet)
24	30	116	19	80	363	22
30	44	199	23	115	621	25
36	59	309	25	155	963	29

Pile Diameter	½-inch Groundline Deflection					
(inches)	Free Head			Fixed Head		
	Lateral Load (kips)	Maximum Induced Moment (foot-kips)	Depth to Zero Moment (feet)	Lateral Load (kips)	Maximum Induced Moment (foot-kips)	Depth to Zero Moment (feet)
24	59	232	19	154	715	22
30	87	397	23	226	1235	25
36	118	617	25	308	1921	29

For piles in groups spaced at least 3 pile diameters on centers, no reduction in the lateral capacity need be considered for the first row of piles. For subsequent rows in the direction parallel to loading, piles in groups spaced closer than 8 pile diameters on centers will have a reduction in lateral capacity due to group effects. In the direction parallel to loading, the lateral capacity of piles in groups, except for the first pile, spaced at 3 pile diameters on centers may be assumed to be reduced by ¾. The reduction of lateral capacity in the direction parallel to loading for other pile spacings may be interpolated.

The passive resistance of properly compacted fill soils against pile caps and grade beams may be assumed to be equal to the pressure developed by a fluid with a density of 300 pounds per cubic foot. A one-third increase in the passive value may be used when considering wind or seismic loads.

The resistance of the piles and the passive resistance of the soils against pile caps and grade beams may be combined without reduction in determining the total lateral resistance.

Downdrag Loads

As previously stated, due to the presence of soils susceptible to hydro-collapsible and seismically-induced settlement, downdrag loads may develop on the piles. The downdrag loads presented in the table below should be added to the column loads before determining the required pile lengths. Downdrag loads for other pile sizes may be assumed to be proportional to the diameter.

Pile Diameter (in.)	Downdrag Load (kips)
24	80
30	100
36	120

Installation

All drilled pile excavations should be observed by personnel of our firm. Piles spaced less than 8 feet on centers should be drilled and filled alternately, with the concrete permitted to set at least eight hours before drilling an adjacent hole. Pile excavations should be filled with concrete as soon after drilling and inspection as possible; the holes should not be left open overnight. The concrete should be placed with special equipment so that the concrete is not allowed to fall freely more than 5 feet and to prevent concrete from striking the walls of the excavations.

We did not observe severe caving or raveling in our 16-inch-diameter bucket-auger borings. However, due to the presence of loose to medium dense granular soils beneath the site, larger diameter drilled shafts may require special provisions such as slowing drilling rates to reduce vibration or the injection of water to help prevent caving of shaft side walls. Shell casing or drilling mud will probably not be necessary. Only competent drilling contractors with experience in the installation of drilled cast-in-place piles in similar soil conditions should be considered for the pile construction. We suggest requesting the piling contractor to submit a list of similar projects along with references for each project.

7.4 SITE COEFFICIENT AND SEISMIC ZONATION

The site coefficient, S, can be determined as established in the Earthquake Regulations under Section 1629A of the California Building Code (CBC), 2001 edition, for seismic design of the proposed structures. Based on a review of the local soil and geologic conditions, the site may be classified as Soil Profile S_D, as specified in the code. The site is located within CBC Seismic Zone 4.

The site is near the Mojave segment of the San Andreas fault, which has been determined to be a Type A seismic source by the California Division of Mines and Geology (now the California Geological Survey). According to Map M-30 (ICBO, 1998), used to determine near source factors, the proposed structures are located at a distance of less than 2 kilometers from the Mojave segment of the San Andreas fault zone. At this distance from a seismic source Type A, the near source factors, N_a and N_v are to be taken as 1.5 and 2.0 respectively, according to Tables 16A-S and 16A-T of the 2001 CBC.

7.5 GROUND MOTION STUDY

Ground motions were postulated corresponding to earthquake levels having a 10% probability of exceedence during a 50-year time period (designated the Design Basis Earthquake) and 10% probability of exceedence in a 100-year time period (designated the Upper Bound Earthquake). The probabilistic response spectra developed for this study are referred to as the site-specific response spectra.

The site-specific response spectra for the Design Basis Earthquake and the Upper Bound Earthquake for the levels of shaking specified were determined by a Probabilistic Seismic Hazard Analysis (PSHA) using the computer program FRISKSP, version 3.01b. The response spectra were developed using the average ground motion from the attenuation relations discussed Abrahamson & Silva (1997), Sadigh (1997), and Boore et al. (1993, site type "C"). Dispersion in the ground motion attenuation relationships was considered by inclusion of the standard deviation of the ground motion data in the attenuation relationship used in the PSHA.

The response spectra for the horizontal component of shaking for the Design Basis Earthquake ground motions and the Upper Bound Earthquake ground motions are presented on Figures 9 and 10 for structural damping values of 2%, 5%, and 10%. The response spectra in digitized form are shown in Tables 4 and 5.

7.6 FLOOR SLAB SUPPORT ON GRADE

If the subgrade is prepared as recommended in Section 7.9, Grading, the building floor slabs may be supported on grade.

Construction activities and exposure to the environment can cause deterioration of the prepared subgrade. Therefore, we recommend our that our field representative observe the condition of the final subgrade soils immediately prior to slab-on-grade construction, and, if necessary, perform further density and moisture content tests to determine the suitability of the final prepared subgrade.

If vinyl or other moisture-sensitive floor covering is planned, we recommend that the floor slab in those areas be underlain by a capillary break consisting of a vapor-retarding membrane over a 4-inch-thick layer of gravel. A 2-inch-thick layer of sand should be placed between the gravel and the membrane to decrease the possibility of damage to the membrane. We suggest the following gradation for the gravel:

Sieve Size	Percent Passing
¾"	90–100
No. 4	0–10
No. 100	0–3

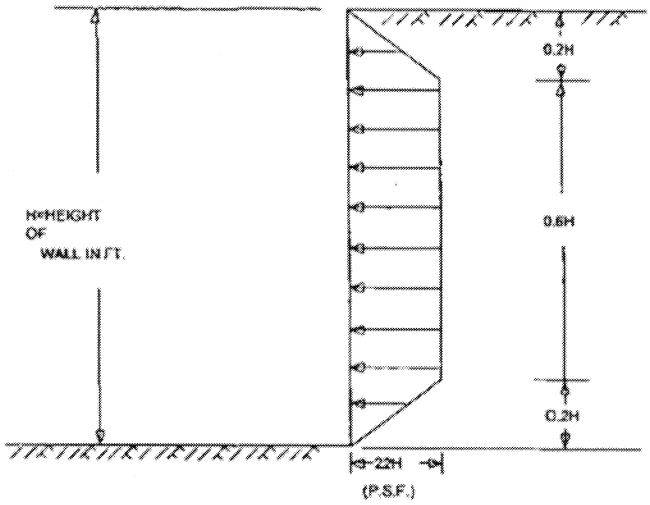
A low-slump concrete should be used to minimize possible curling of the slab. A 2-inch-thick layer of coarse sand can be placed over the vapor retarding membrane to reduce slab curling. If this sand bedding is used, care should be taken during the placement of the concrete to prevent displacement of the sand. The concrete slab should be allowed to cure properly before placing vinyl or other moisture-sensitive floor covering.

7.7 RETAINING WALLS AND WALLS BELOW GRADE

Lateral Earth Pressure

For design of cantilevered retaining walls, where the surface of the backfill is level, it can be assumed that drained soils will exert a lateral pressure equal to that developed by a fluid with a density of 30 pounds per cubic foot. In addition to the recommended earth pressure, the walls should be designed to resist any applicable surcharges due to foundation, storage, or traffic loads.

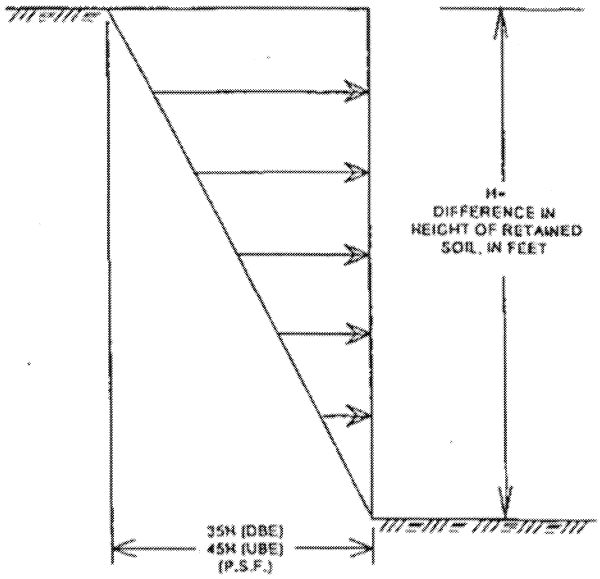
For the design of braced basement walls, a trapezoidal distribution of lateral earth pressure plus any surcharge loadings occurring as a result of traffic and adjacent foundations should be used. The recommended pressure distribution for the case where the grade is level behind the walls, is illustrated in the following diagram, where the maximum lateral pressure will be 22H in pounds per square foot, where H is the height of the basement wall in feet:



In addition to the recommended earth pressures, walls adjacent to areas subject to vehicular traffic should be designed to resist a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot surcharge behind the walls due to normal vehicular traffic. If the traffic is kept back at least 10 feet from the walls, the traffic surcharge can be neglected.

Seismic Lateral Earth Pressure

In addition to the above-mentioned lateral earth pressures, retaining walls and walls below grade with more than 6 feet of unbalanced earth (where the difference in height of retained soil from one side of the building to the other is greater than 6 feet) should be designed to support a seismic active earth pressure in addition to the lateral earth pressure given above. The recommended seismic active pressure distribution on the wall is illustrated in the following diagram with the maximum pressure equal to 35H in pounds per square foot for the DBE, where H is the wall height in feet.



For the UBE, the recommended seismic active pressure distribution on the wall is illustrated in the above diagram with the maximum pressure equal to 45H in pounds per square foot, where H is the wall height in feet.

Drainage

Retaining walls should be designed to resist hydrostatic pressures or be provided with a drain pipe or weepholes. The drain could consist of a 4-inch-diameter perforated pipe placed with perforations down at the base of the wall. The pipe should be sloped at least 2 inches in 100 feet and surrounded by filter gravel. The filter gravel should meet the requirements of Class 2

Permeable Material as defined in the current State of California, Department of Transportation, Standard Specifications.

If Class 2 Permeable Material is not available, ¾-inch crushed rock or gravel separated from the on-site soils by an appropriate filter fabric can be used. The crushed rock or gravel should have less than 5% passing a No. 200 sieve.

7.8 PAVING

To provide support for paving, the subgrade soils should be prepared as recommended in Section 7.9. Compaction of the subgrade, including trench backfills, to at least 90% of the maximum dry density, and achieving a firm, hard, and unyielding surface will be important for paving support. The preparation of the paving area subgrade should be performed immediately prior to placement of the base course. Proper drainage of the paved areas should be provided since this will reduce moisture infiltration into the subgrade and increase the life of the paving.

To provide data for design paving sections, a California Bearing Ratio (CBR) test was performed on a sample of the upper soils. The test results, which indicate a CBR value of 10 at 90% compaction, are presented in the Appendix. This CBR-value should be confirmed during grading.

Asphalt Concrete Paving

The required asphalt concrete (AC) paving and base thicknesses will depend on the expected wheel loads and volume of traffic (Traffic Index or TI). Assuming that the paving subgrade will consist of the on-site or comparable soils compacted to the percent compaction recommended, the minimum recommended paving thicknesses are presented in the following table.

Traffic Index	AC (inches)	Base Course (inches)
5	3	4
6	4	4
7	4	5½

The asphalt paving sections were determined using the Caltrans design method. We can determine the recommended paving and base course thicknesses for other Traffic Indices if required. Careful inspection is recommended to verify that the recommended thicknesses or greater are achieved, and that proper construction procedures are followed.

Portland Cement Concrete Paving

Portland cement concrete (PCC) paving sections were determined in accordance with procedures developed by the Portland Cement Association. Concrete paving sections for a range of Traffic Indices are presented in the following table. We have assumed that the Portland cement concrete will have a compressive strength of at least 3,000 pounds per square inch.

Assumed Traffic Index	PCC (Inches)	Base Course (Inches)
5	6½	4
6	7	4
7	7½	4

We recommend that the concrete paving be properly reinforced. In addition, dowels are recommended at joints in the paving to reduce possible offsets.

Base Course

The base course for both AC and PCC paving should meet the specifications for Class 2 Aggregate Base as defined in Section 26 of the latest edition of the State of California, Department of Transportation, Standard Specifications. Alternatively, the base course could meet the specifications for untreated base as defined in Section 200-2 of the latest edition of the Standard Specifications for Public Works Construction. The base course should be compacted to at least 95%.

Permeable Material as defined in the current State of California, Department of Transportation, Standard Specifications.

If Class 2 Permeable Material is not available, ¾-inch crushed rock or gravel separated from the on-site soils by an appropriate filter fabric can be used. The crushed rock or gravel should have less than 5% passing a No. 200 sieve.

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Traffic Index	AC (inches)	Base Course (inches)
5	3	4
6	4	4
7	4	5½

The asphalt paving sections were determined using the Caltrans design method. We can determine the recommended paving and base course thicknesses for other Traffic Indices if required. Careful inspection is recommended to verify that the recommended thicknesses or greater are achieved, and that proper construction procedures are followed.

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6	7	4
7	7½	4

We recommend that the concrete paving be properly reinforced. In addition, dowels are recommended at joints in the paving to reduce possible offsets.

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The base course for both AC and PCC paving should meet the specifications for Class 2 Aggregate Base as defined in Section 26 of the latest edition of the State of California, Department of Transportation, Standard Specifications. Alternatively, the base course could meet the specifications for untreated base as defined in Section 200-2 of the latest edition of the Standard Specifications for Public Works Construction. The base course should be compacted to at least 95%.

7.9 GRADING

The existing site soils are not suitable for shallow foundation, floor slab, or paving support and should be removed to the depths required and replaced as properly compacted fill soils. The hydro-collapsible soils should be removed to allow the placement of at least 3 feet of properly compacted fill beneath footings, and at least 2 feet of properly compacted fill beneath floor slabs and PCC paving.

We recommend that the same procedure be implemented in areas to receive AC paving. However, if some risk of greater than normal cracking and distress to AC paving is considered acceptable, only the upper 12 inches of the existing soils need be removed and replaced as properly compacted. The on-site soils can be used in any required fill.

Site Preparation

After the site is cleared and any existing loose or disturbed soils are removed, the exposed soils should be scarified to a depth of 6 inches, brought to near-optimum moisture content, and rolled with heavy compaction equipment. At least the upper 6 inches of the exposed soils should be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557 method of compaction.

Excavations and Temporary Slopes

Where excavations are deeper than about 4 feet, the sides of the excavations should be sloped back at 1½:1 (horizontal to vertical) or shored for safety. Unshored excavations should not extend below a plane drawn at 1½:1 (horizontal to vertical) extending downward from adjacent existing footings. We would be pleased to present data for design of shoring if required.

Excavations should be observed by personnel of our firm so that any necessary modifications based on variations in the soil conditions can be made. All applicable safety requirements and regulations, including OSHA and State of California regulations, should be met.

Compaction

Any required fill should be placed in loose lifts not more than 8-inches-thick and compacted. The fill should be compacted to at least 90% of the maximum density obtainable by the ASTM Designation D1557 method of compaction. The moisture content of the on-site soils at the time of compaction should vary no more than 2% below or above optimum moisture content.

Backfill

All required backfill should be mechanically compacted in layers; flooding should not be permitted. Proper compaction of backfill will be necessary to minimize settlement of the backfill and to reduce settlement of overlying slabs and paving. Backfill should be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557 method of compaction. The on-site soils can be used in the compacted backfill. The exterior grades should be sloped to drain away from the foundations to prevent ponding of water.

Some settlement of the backfill should be expected, and any utilities supported therein should be designed to accept differential settlement, particularly at the points of entry to the building. Also, provisions should be made for some settlement of concrete walks supported on backfill.

Material for Fill

The on-site soils, less any debris or organic matter, can be used in required fills. Cobbles larger than 4 inches in diameter should not be used in the fill. Any required import material should consist of relatively non-expansive soils with an Expansion Index of less than 35. The imported materials should contain sufficient fines (binder material) so as to be relatively impermeable and result in a stable subgrade when compacted. All proposed import materials should be approved by our personnel prior to being placed at the site.

7.10 GEOTECHNICAL OBSERVATION

The reworking of the upper soils and the compaction of all required fill should be observed and tested during placement by a representative of our firm. This representative should perform at least the following duties:

- Observe the clearing and grubbing operations for proper removal of all unsuitable materials.
- Observe the exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished subgrade. The representative should also observe proofrolling and delineation of areas requiring overexcavation.
- Evaluate the suitability of on-site and import soils for fill placement; collect and submit soil samples for required or recommended laboratory testing where necessary.
- Observe the fill and backfill for uniformity during placement.
- Test backfill for field density and compaction to determine the percentage of compaction achieved during backfill placement.
- Observe and probe foundation materials to confirm that suitable bearing materials are present at the design foundation depths.
- Observe the installation of drilled cast-in-place concrete piles, if necessary.

The governmental agencies having jurisdiction over the project should be notified prior to commencement of grading so that the necessary grading permits can be obtained and arrangements can be made for required inspection(s). The contractor should be familiar with the inspection requirements of the reviewing agencies.

8.0 BASIS FOR RECOMMENDATIONS

The recommendations provided in this report are based upon our understanding of the described project information and on our interpretation of the data collected during our current and previous subsurface explorations. We have made our recommendations based upon experience with similar subsurface conditions under similar loading conditions. The recommendations apply to the specific project discussed in this report; therefore, any change in the structure configuration, loads, location, or the site grades should be provided to us so that we can review our conclusions and recommendations and make any necessary modifications.

The recommendations provided in this report are also based upon the assumption that the necessary geotechnical observations and testing during construction will be performed by representatives of our firm. The field observation services are considered a continuation of the geotechnical investigation and essential to verify that the actual soil conditions are as expected. This also provides for the procedure whereby the client can be advised of unexpected or changed conditions that would require modifications of our original recommendations. In addition, the presence of our representative at the site provides the client with an independent professional opinion regarding the geotechnically related construction procedures. If another firm is retained for the geotechnical observation services, our professional responsibility and liability would be limited to the extent that we would not be the geotechnical engineer of record.

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Table 2
Major Named Faults Considered to be Potentially Active in Southern California

Fault (in increasing distance)	Maximum Magnitude			Slip Rate (mm/yr.)	Distance From Site (Kilometers)	Direction From Site
Soledad	6.6	(e)	NO	0.05	16	SSW
Clearwater	6.8	(e)	RO	0.05	19½	W
Pelona	6.0	(e)	NO	0.05	26	WSW
Mirage Valley	6.7	(a)	RO	0.05	42	NE
Santa Susana	6.6	(b)	RO	5.0	43	SW
Clamshell-Sawpit	6.5	(b)	RO	0.5	47	SSE
Holser	6.3	(b)	RO	0.4	48	WSW
Blake Ranch	6.8	(d)	RO	0.05	48	NE
Duarte	6.7	(a)	RO	0.1	50	SSE
Northridge Hills	6.6	(d)	SS	1.2	50	SW
Kramer Hills Zone (Leuhman)	6.8	(a)	NO	0.1	58	NE
Indian Hill	6.6	(b)	RO	0.1	60	SSE
Coyote Pass	6.7	(b)	RO	0.1	61	S
San Jose	6.5	(e)	RO	0.5	65	SSW

(a) Mark, 1977
(b) CDMG, 1996
(c) Anderson, 1984
(d) Wesnousky, 1986
(e) Wells & Coppersmith., 1994
SS Strike Slip
NO Normal Oblique
RO Reverse Oblique

Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
03-11-1933	02:04:00	33.75 N	118.08 W	C	93	.0	4.9
03-11-1933	02:05:00	33.75 N	118.08 W	C	93	.0	4.3
03-11-1933	02:09:00	33.75 N	118.08 W	C	93	.0	5.0
03-11-1933	02:10:00	33.75 N	118.08 W	C	93	.0	4.6
03-11-1933	02:11:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	02:16:00	33.75 N	118.08 W	C	93	.0	4.8
03-11-1933	02:22:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	02:27:00	33.75 N	118.08 W	C	93	.0	4.6
03-11-1933	02:30:00	33.75 N	118.08 W	C	93	.0	5.1
03-11-1933	02:52:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	02:57:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	02:58:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	02:59:00	33.75 N	118.08 W	C	93	.0	4.6
03-11-1933	03:05:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	03:09:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	03:11:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	03:23:00	33.75 N	118.08 W	C	93	.0	5.0
03-11-1933	03:36:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	03:39:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	03:47:00	33.75 N	118.08 W	C	93	.0	4.1
03-11-1933	04:36:00	33.75 N	118.08 W	C	93	.0	4.6
03-11-1933	04:39:00	33.75 N	118.08 W	C	93	.0	4.9
03-11-1933	04:40:00	33.75 N	118.08 W	C	93	.0	4.7
03-11-1933	05:10:22	33.70 N	118.07 W	C	98	.0	5.1
03-11-1933	05:13:00	33.75 N	118.08 W	C	93	.0	4.7
03-11-1933	05:15:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	05:21:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	05:24:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	05:53:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	05:55:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	06:11:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	06:18:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	06:29:00	33.85 N	118.27 W	C	82	.0	4.4
03-11-1933	06:35:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	07:51:00	33.75 N	118.08 W	C	93	.0	4.2

NOTE: Q IS A FACTOR RELATING THE QUALITY OF EPICENTRAL DETERMINATION

A = +- 1 km horizontal distance; +- 2 km depth
B = +- 2 km horizontal distance; +- 5 km depth
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D = >+- 5 km horizontal distance

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Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
03-11-1933	07:59:00	33.75 N	118.08 W	C	93	.0	4.1
03-11-1933	08:08:00	33.75 N	118.08 W	C	93	.0	4.5
03-11-1933	08:32:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	08:37:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	08:54:57	33.70 N	118.07 W	C	98	.0	5.1
03-11-1933	09:10:00	33.75 N	118.08 W	C	93	.0	5.1
03-11-1933	09:11:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	09:26:00	33.75 N	118.08 W	C	93	.0	4.1
03-11-1933	10:25:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	10:45:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	11:00:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	11:04:00	33.75 N	118.13 W	C	92	.0	4.6
03-11-1933	11:29:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	11:38:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	11:41:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	11:47:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	13:50:00	33.73 N	118.10 W	C	94	.0	4.4
03-11-1933	13:57:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	14:25:00	33.85 N	118.27 W	C	82	.0	5.0
03-11-1933	14:47:00	33.73 N	118.10 W	C	94	.0	4.4
03-11-1933	14:57:00	33.88 N	118.32 W	C	79	.0	4.9
03-11-1933	15:09:00	33.73 N	118.10 W	C	94	.0	4.4
03-11-1933	15:47:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	16:53:00	33.75 N	118.08 W	C	93	.0	4.8
03-11-1933	19:44:00	33.75 N	118.08 W	C	93	.0	4.0
03-11-1933	19:56:00	33.75 N	118.08 W	C	93	.0	4.2
03-11-1933	22:00:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	22:31:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	22:32:00	33.75 N	118.08 W	C	93	.0	4.1
03-11-1933	22:40:00	33.75 N	118.08 W	C	93	.0	4.4
03-11-1933	23:05:00	33.75 N	118.08 W	C	93	.0	4.2
03-12-1933	00:27:00	33.75 N	118.08 W	C	93	.0	4.4
03-12-1933	00:34:00	33.75 N	118.08 W	C	93	.0	4.0
03-12-1933	04:48:00	33.75 N	118.08 W	C	93	.0	4.0
03-12-1933	05:46:00	33.75 N	118.08 W	C	93	.0	4.4

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A = +- 1 km horizontal distance; +- 2 km depth
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Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
03-12-1933	06:01:00	33.75 N	118.08 W	C	93	.0	4.2
03-12-1933	06:16:00	33.75 N	118.08 W	C	93	.0	4.6
03-12-1933	07:40:00	33.75 N	118.08 W	C	93	.0	4.2
03-12-1933	08:35:00	33.75 N	118.08 W	C	93	.0	4.2
03-12-1933	15:02:00	33.75 N	118.08 W	C	93	.0	4.2
03-12-1933	16:51:00	33.75 N	118.08 W	C	93	.0	4.0
03-12-1933	17:38:00	33.75 N	118.08 W	C	93	.0	4.5
03-12-1933	18:25:00	33.75 N	118.08 W	C	93	.0	4.1
03-12-1933	21:28:00	33.75 N	118.08 W	C	93	.0	4.1
03-12-1933	23:54:00	33.75 N	118.08 W	C	93	.0	4.5
03-13-1933	03:43:00	33.75 N	118.08 W	C	93	.0	4.1
03-13-1933	04:32:00	33.75 N	118.08 W	C	93	.0	4.7
03-13-1933	06:17:00	33.75 N	118.08 W	C	93	.0	4.0
03-13-1933	13:18:28	33.75 N	118.08 W	C	93	.0	5.3
03-13-1933	15:32:00	33.75 N	118.08 W	C	93	.0	4.1
03-13-1933	19:29:00	33.75 N	118.08 W	C	93	.0	4.2
03-14-1933	00:36:00	33.75 N	118.08 W	C	93	.0	4.2
03-14-1933	12:19:00	33.75 N	118.08 W	C	93	.0	4.5
03-14-1933	22:42:00	33.75 N	118.08 W	C	93	.0	4.1
03-15-1933	02:08:00	33.75 N	118.08 W	C	93	.0	4.1
03-15-1933	04:32:00	33.75 N	118.08 W	C	93	.0	4.1
03-15-1933	05:40:00	33.75 N	118.08 W	C	93	.0	4.2
03-16-1933	14:56:00	33.75 N	118.08 W	C	93	.0	4.0
03-16-1933	15:29:00	33.75 N	118.08 W	C	93	.0	4.2
03-16-1933	15:30:00	33.75 N	118.08 W	C	93	.0	4.1
03-17-1933	16:51:00	33.75 N	118.08 W	C	93	.0	4.1
03-18-1933	20:52:00	33.75 N	118.08 W	C	93	.0	4.2
03-19-1933	21:23:00	33.75 N	118.08 W	C	93	.0	4.2
03-20-1933	13:58:00	33.75 N	118.08 W	C	93	.0	4.1
03-21-1933	03:26:00	33.75 N	118.08 W	C	93	.0	4.1
03-23-1933	08:40:00	33.75 N	118.08 W	C	93	.0	4.1
03-23-1933	18:31:00	33.75 N	118.08 W	C	93	.0	4.1
03-25-1933	13:46:00	33.75 N	118.08 W	C	93	.0	4.1
03-30-1933	12:25:00	33.75 N	118.08 W	C	93	.0	4.4
03-31-1933	10:49:00	33.75 N	118.08 W	C	93	.0	4.1

NOTE: Q IS A FACTOR RELATING THE QUALITY OF EPICENTRAL DETERMINATION

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Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
04-01-1933	06:42:00	33.75 N	118.08 W	C	93	.0	4.2
04-02-1933	08:00:00	33.75 N	118.08 W	C	93	.0	4.0
04-02-1933	15:36:00	33.75 N	118.08 W	C	93	.0	4.0
05-16-1933	20:58:55	33.75 N	118.17 W	C	92	.0	4.0
08-04-1933	04:17:48	33.75 N	118.18 W	C	92	.0	4.0
10-02-1933	09:10:17	33.78 N	118.13 W	A	89	.0	5.4
10-25-1933	07:00:46	33.95 N	118.13 W	C	70	.0	4.3
11-13-1933	21:28:00	33.87 N	118.20 W	C	80	.0	4.0
11-20-1933	10:32:00	33.78 N	118.13 W	B	89	.0	4.0
01-09-1934	14:10:00	34.10 N	117.68 W	A	68	.0	4.5
01-18-1934	02:14:00	34.10 N	117.68 W	A	68	.0	4.0
11-16-1934	21:26:00	33.75 N	118.00 W	B	93	.0	4.0
06-11-1935	18:10:00	34.72 N	118.97 W	B	77	.0	4.0
07-13-1935	10:54:16	34.20 N	117.90 W	A	48	.0	4.7
09-03-1935	06:47:00	34.03 N	117.32 W	B	97	.0	4.5
02-23-1936	22:20:42	34.13 N	117.34 W	A	90	10.0	4.5
02-26-1936	09:33:27	34.14 N	117.34 W	A	89	10.0	4.0
08-22-1936	05:21:00	33.77 N	117.82 W	B	95	.0	4.0
10-29-1936	22:35:36	34.38 N	118.62 W	C	49	10.0	4.0
11-29-1936	05:54:45	34.84 N	118.99 W	A	82	10.0	4.0
03-19-1937	01:23:38	34.11 N	117.43 W	A	84	10.0	4.0
09-01-1937	13:48:08	34.21 N	117.53 W	A	70	10.0	4.5
09-01-1937	16:35:33	34.18 N	117.55 W	A	70	10.0	4.5
08-31-1938	03:18:14	33.76 N	118.25 W	A	92	10.0	4.5
11-29-1938	19:21:15	33.90 N	118.43 W	A	80	10.0	4.0
12-07-1938	03:38:00	34.00 N	118.42 W	B	69	.0	4.0
12-27-1938	10:09:28	34.13 N	117.52 W	B	76	10.0	4.0
02-23-1939	08:45:51	34.91 N	118.97 W	A	84	10.0	4.5
02-23-1939	09:18:46	34.89 N	119.00 W	A	86	10.0	4.5
03-07-1939	19:53:31	34.84 N	119.03 W	A	86	10.0	4.0
05-08-1939	02:48:05	34.90 N	119.04 W	A	89	10.0	4.5
11-04-1939	21:41:00	33.77 N	118.12 W	B	91	.0	4.0
12-27-1939	19:28:49	33.78 N	118.20 W	A	89	.0	4.7
01-13-1940	07:49:07	33.78 N	118.13 W	B	89	.0	4.0
02-08-1940	16:56:17	33.70 N	118.07 W	B	98	.0	4.0

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Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
02-11-1940	19:24:10	33.98 N	118.30 W	B	68	.0	4.0
04-18-1940	18:43:43	34.03 N	117.35 W	A	95	.0	4.4
05-18-1940	09:15:12	34.60 N	118.90 W	C	69	.0	4.0
07-20-1940	04:01:13	33.70 N	118.07 W	B	98	.0	4.0
10-11-1940	05:57:12	33.77 N	118.45 W	A	95	.0	4.7
10-12-1940	00:24:00	33.78 N	118.42 W	B	92	.0	4.0
10-14-1940	20:51:11	33.78 N	118.42 W	B	92	.0	4.0
11-01-1940	07:25:03	33.78 N	118.42 W	B	92	.0	4.0
11-02-1940	02:58:26	33.78 N	118.42 W	B	92	.0	4.0
01-30-1941	01:34:46	33.97 N	118.05 W	A	69	.0	4.1
03-25-1941	23:43:41	34.22 N	117.47 W	B	74	.0	4.0
04-11-1941	01:20:24	33.95 N	117.58 W	B	87	.0	4.0
09-21-1941	19:53:07	34.87 N	118.93 W	A	79	.0	5.1
10-22-1941	06:57:18	33.82 N	118.22 W	A	85	.0	4.8
11-14-1941	08:41:36	33.78 N	118.25 W	A	89	.0	4.8
09-03-1942	14:06:01	34.48 N	118.98 W	C	78	.0	4.5
09-04-1942	06:34:33	34.48 N	118.98 W	C	78	.0	4.5
04-06-1943	22:36:24	34.68 N	119.00 W	C	79	.0	4.0
06-19-1944	00:03:33	33.87 N	118.22 W	B	80	.0	4.5
06-19-1944	03:06:07	33.87 N	118.22 W	C	80	.0	4.4
07-03-1944	05:38:23	35.35 N	117.83 W	B	90	-2.0	4.7
02-24-1946	06:07:52	34.40 N	117.80 W	C	38	.0	4.1
06-01-1946	11:06:31	34.42 N	118.83 W	C	66	.0	4.1
03-01-1948	08:12:13	34.17 N	117.53 W	B	73	.0	4.7
04-16-1948	22:26:24	34.02 N	118.97 W	B	98	.0	4.7
10-03-1948	02:46:28	34.18 N	117.58 W	A	68	.0	4.0
01-11-1950	21:41:35	33.94 N	118.20 W	A	72	.4	4.1
01-24-1950	21:56:59	34.67 N	118.83 W	C	64	.0	4.0
02-26-1950	00:06:22	34.62 N	119.08 W	C	86	.0	4.7
09-22-1951	08:22:39	34.12 N	117.34 W	A	90	11.9	4.3
07-21-1952	11:52:14	35.00 N	119.02 W	A	92	.0	7.5
07-21-1952	11:54:00	35.00 N	119.03 W	D	94	.0	4.5
07-21-1952	11:55:00	35.00 N	119.03 W	D	94	.0	4.5
07-21-1952	11:57:00	35.00 N	119.03 W	D	94	.0	4.5
07-21-1952	11:58:00	35.00 N	119.03 W	D	94	.0	4.6

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Table 3
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(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
07-21-1952	11:59:00	35.00 N	119.03 W	D	94	.0	4.5
07-21-1952	12:02:00	35.00 N	119.03 W	D	94	.0	5.6
07-21-1952	12:05:31	35.00 N	119.00 W	D	91	.0	6.4
07-21-1952	12:06:00	35.00 N	119.00 W	D	91	.0	4.8
07-21-1952	12:07:00	35.00 N	119.00 W	D	91	.0	4.7
07-21-1952	12:10:00	35.00 N	119.00 W	D	91	.0	4.5
07-21-1952	12:12:00	35.00 N	119.00 W	D	91	.0	4.6
07-21-1952	12:18:00	35.00 N	119.00 W	D	91	.0	4.4
07-21-1952	12:19:36	34.95 N	118.87 W	A	78	.0	5.3
07-21-1952	12:22:00	35.00 N	119.00 W	D	91	.0	4.9
07-21-1952	12:25:00	35.00 N	119.00 W	D	91	.0	4.7
07-21-1952	12:28:00	35.00 N	119.00 W	D	91	.0	4.2
07-21-1952	12:39:00	35.00 N	119.00 W	D	91	.0	4.2
07-21-1952	12:40:00	35.00 N	119.00 W	D	91	.0	4.9
07-21-1952	12:59:00	35.00 N	119.00 W	D	91	.0	4.2
07-21-1952	13:08:00	35.00 N	119.00 W	D	91	.0	4.5
07-21-1952	13:11:00	35.00 N	119.00 W	D	91	.0	4.1
07-21-1952	13:13:00	35.00 N	119.00 W	D	91	.0	4.5
07-21-1952	13:17:00	35.00 N	119.00 W	D	91	.0	4.0
07-21-1952	13:25:12	35.00 N	119.00 W	A	91	.0	4.5
07-21-1952	13:36:00	35.00 N	119.00 W	D	91	.0	4.1
07-21-1952	13:59:00	35.00 N	119.00 W	D	91	.0	4.6
07-21-1952	14:06:00	35.00 N	119.00 W	D	91	.0	4.2
07-21-1952	14:15:00	35.00 N	119.00 W	D	91	.0	4.4
07-21-1952	14:17:00	35.00 N	119.00 W	D	91	.0	4.1
07-21-1952	14:42:00	35.00 N	119.00 W	D	91	.0	4.2
07-21-1952	14:51:00	35.00 N	119.00 W	D	91	.0	4.2
07-21-1952	15:13:58	35.18 N	118.65 W	D	81	.0	5.1
07-21-1952	15:36:00	35.00 N	119.00 W	D	91	.0	4.2
07-21-1952	15:42:00	35.00 N	119.00 W	D	91	.0	4.2
07-21-1952	15:53:00	35.00 N	119.00 W	D	91	.0	4.5
07-21-1952	16:17:00	35.00 N	119.00 W	D	91	.0	4.1
07-21-1952	16:38:00	35.00 N	119.00 W	D	91	.0	4.5
07-21-1952	17:42:44	35.23 N	118.53 W	A	80	.0	5.1
07-21-1952	18:00:00	35.00 N	119.00 W	D	91	.0	4.5

NOTE: Q IS A FACTOR RELATING THE QUALITY OF EPICENTRAL DETERMINATION

A = +- 1 km horizontal distance; +- 2 km depth
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(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
07-21-1952	18:23:38	35.30 N	118.53 W	A	87	.0	4.5
07-21-1952	18:26:28	35.30 N	118.53 W	A	87	.0	4.1
07-21-1952	19:12:07	35.24 N	118.56 W	A	82	5.8	4.3
07-21-1952	19:16:19	35.27 N	118.45 W	A	81	.0	4.3
07-21-1952	19:41:22	35.13 N	118.77 W	A	84	.0	5.5
07-21-1952	20:21:05	35.24 N	118.52 W	A	80	-2.0	4.2
07-21-1952	21:53:09	34.87 N	119.02 W	A	86	.0	4.3
07-21-1952	23:53:28	34.98 N	119.03 W	A	93	.0	4.5
07-22-1952	01:41:02	35.13 N	118.52 W	A	70	.0	4.5
07-22-1952	01:51:51	35.28 N	118.55 W	A	86	.0	4.4
07-22-1952	03:21:05	35.20 N	118.63 W	A	82	.0	4.4
07-22-1952	07:44:55	34.87 N	118.87 W	A	73	.0	4.1
07-22-1952	08:16:24	35.08 N	118.58 W	A	69	.0	4.4
07-22-1952	08:21:22	35.00 N	119.00 W	A	91	.0	4.1
07-22-1952	08:47:34	35.08 N	118.75 W	A	79	.0	4.7
07-22-1952	09:10:25	35.23 N	118.60 W	A	83	.0	4.5
07-22-1952	10:19:39	35.03 N	119.00 W	A	93	.0	4.1
07-22-1952	13:31:43	35.00 N	119.00 W	A	91	.0	4.8
07-22-1952	14:05:11	35.10 N	119.00 W	C	97	.0	4.3
07-22-1952	14:30:18	34.90 N	119.05 W	A	90	.0	4.3
07-22-1952	15:03:14	35.23 N	118.53 W	A	80	.0	4.2
07-22-1952	17:52:36	35.00 N	119.00 W	A	91	.0	4.1
07-22-1952	19:08:58	35.19 N	118.47 W	A	74	3.7	4.3
07-22-1952	19:10:24	35.00 N	119.00 W	D	91	.0	4.1
07-22-1952	21:02:11	35.07 N	118.77 W	A	78	.0	4.2
07-22-1952	22:31:33	35.03 N	118.93 W	A	88	.0	4.7
07-23-1952	00:38:32	35.37 N	118.58 W	A	96	.0	6.1
07-23-1952	00:43:08	35.00 N	119.00 W	A	91	.0	4.4
07-23-1952	00:47:38	35.37 N	118.58 W	A	96	.0	4.6
07-23-1952	03:19:23	35.37 N	118.58 W	A	96	.0	5.0
07-23-1952	03:49:28	35.28 N	118.55 W	A	86	.0	4.7
07-23-1952	04:01:40	35.37 N	118.58 W	A	96	.0	4.7
07-23-1952	05:46:03	35.38 N	118.57 W	A	97	.0	4.7
07-23-1952	06:10:45	35.30 N	118.43 W	A	84	14.5	4.2
07-23-1952	06:26:28	35.37 N	118.58 W	A	96	.0	4.0

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A = +- 1 km horizontal distance; +- 2 km depth
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Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
07-23-1952	06:53:42	35.37 N	118.58 W	A	96	.0	4.2
07-23-1952	07:37:00	35.28 N	118.55 W	A	86	.0	4.8
07-23-1952	07:53:19	35.00 N	118.83 W	A	78	.0	5.4
07-23-1952	09:38:42	35.25 N	118.48 W	A	80	.0	4.2
07-23-1952	10:54:13	35.34 N	118.47 W	A	89	19.7	4.1
07-23-1952	13:17:05	35.22 N	118.82 W	A	94	.0	5.7
07-23-1952	13:30:04	35.25 N	118.48 W	A	80	.0	4.4
07-23-1952	15:25:24	35.13 N	118.52 W	A	70	.0	4.0
07-23-1952	16:18:38	35.33 N	118.60 W	A	93	.0	4.5
07-23-1952	16:48:53	35.33 N	118.60 W	A	93	.0	4.5
07-23-1952	17:22:23	35.34 N	118.47 W	A	89	6.6	4.5
07-23-1952	17:53:29	35.07 N	119.03 W	A	98	.0	4.1
07-23-1952	18:03:28	35.35 N	118.51 W	A	91	10.4	4.0
07-23-1952	18:13:51	35.00 N	118.83 W	A	78	.0	5.2
07-23-1952	19:51:34	35.37 N	118.53 W	A	94	.0	4.2
07-23-1952	21:16:58	35.03 N	118.92 W	A	87	.0	4.1
07-23-1952	22:32:20	35.07 N	118.93 W	A	90	.0	4.1
07-23-1952	23:51:36	35.07 N	118.62 W	A	69	.0	4.0
07-24-1952	03:11:07	35.10 N	119.00 W	A	97	.0	4.1
07-24-1952	05:02:49	35.34 N	118.47 W	A	89	2.1	4.5
07-24-1952	09:50:32	34.98 N	118.90 W	A	82	.0	4.3
07-24-1952	11:47:56	35.40 N	118.58 W	A	99	.0	4.4
07-24-1952	12:07:57	35.29 N	118.47 W	A	84	14.1	4.1
07-24-1952	14:05:25	35.32 N	118.51 W	A	88	5.4	4.3
07-24-1952	14:10:12	35.32 N	118.54 W	A	90	9.5	4.0
07-24-1952	17:35:06	35.23 N	118.53 W	A	80	.0	4.2
07-25-1952	00:03:00	35.00 N	119.00 W	D	91	.0	4.0
07-25-1952	07:03:51	35.40 N	118.58 W	A	99	.0	4.1
07-25-1952	13:13:08	35.31 N	118.50 W	A	87	2.8	5.0
07-25-1952	14:34:42	35.13 N	118.77 W	A	84	.0	4.4
07-25-1952	19:09:44	35.32 N	118.49 W	A	88	5.5	5.7
07-25-1952	19:43:23	35.32 N	118.52 W	A	88	11.2	5.7
07-25-1952	20:06:06	35.30 N	118.44 W	A	84	-1.4	4.8
07-26-1952	01:02:21	35.29 N	118.46 W	A	84	10.8	4.2
07-26-1952	06:38:50	35.18 N	118.60 W	A	79	.0	4.0

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Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
07-26-1952	09:22:06	35.28 N	118.55 W	A	86	.0	4.3
07-26-1952	15:08:31	35.08 N	118.75 W	A	79	.0	4.4
07-26-1952	18:02:44	35.08 N	118.75 W	A	79	.0	4.0
07-26-1952	22:41:03	35.18 N	118.60 W	A	79	.0	4.6
07-26-1952	22:58:56	35.31 N	118.53 W	A	89	6.8	4.3
07-27-1952	00:09:15	35.32 N	118.52 W	A	89	6.5	4.2
07-27-1952	07:16:11	35.03 N	119.05 W	A	97	.0	4.1
07-27-1952	07:35:39	35.37 N	118.58 W	A	96	.0	4.2
07-27-1952	11:34:38	35.07 N	119.03 W	A	98	.0	4.1
07-28-1952	05:45:54	35.13 N	118.52 W	A	70	.0	4.2
07-28-1952	15:41:20	35.37 N	118.58 W	A	96	.0	4.0
07-29-1952	15:49:50	35.18 N	118.60 W	A	79	.0	4.9
07-29-1952	17:36:43	35.23 N	118.53 W	A	80	.0	4.4
07-30-1952	09:59:29	35.30 N	118.53 W	A	87	.0	4.0
07-30-1952	11:02:55	34.97 N	118.95 W	A	85	.0	4.1
07-30-1952	14:46:50	35.23 N	118.53 W	A	80	.0	4.1
07-31-1952	04:10:22	35.28 N	118.55 W	A	86	.0	4.2
07-31-1952	12:09:09	35.33 N	118.60 W	A	93	.0	5.8
07-31-1952	17:19:08	35.28 N	118.58 W	A	88	.0	4.5
07-31-1952	19:05:15	35.31 N	118.52 W	A	87	7.3	4.0
08-01-1952	03:16:11	35.28 N	118.55 W	A	86	.0	4.5
08-01-1952	10:35:56	35.33 N	118.53 W	A	91	.0	4.0
08-01-1952	13:04:30	34.90 N	118.95 W	A	82	.0	5.1
08-01-1952	21:35:22	35.30 N	118.47 W	A	85	4.2	4.0
08-03-1952	01:51:56	35.36 N	118.44 W	A	90	7.0	4.1
08-04-1952	05:35:00	35.08 N	118.58 W	A	69	.0	4.0
08-04-1952	19:47:50	35.07 N	118.98 W	C	94	.0	4.0
08-05-1952	06:50:10	35.33 N	118.73 W	A	99	.0	4.4
08-06-1952	03:46:24	35.34 N	118.52 W	A	91	12.6	4.3
08-07-1952	16:31:51	35.03 N	119.05 W	A	97	.0	4.9
08-08-1952	05:17:18	35.33 N	118.57 W	A	92	.0	4.0
08-09-1952	10:07:32	35.30 N	118.51 W	A	87	-2.0	4.2
08-10-1952	06:01:18	35.33 N	118.60 W	A	93	.0	4.0
08-10-1952	12:23:18	35.29 N	118.41 W	A	82	4.0	4.6
08-10-1952	19:44:24	35.00 N	119.00 W	A	91	.0	4.1

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Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
08-13-1952	13:21:49	35.35 N	118.53 W	B	92	-2.0	4.4
08-13-1952	04:29:40	35.29 N	118.40 W	A	82	14.5	4.6
08-13-1952	17:39:25	35.15 N	118.68 W	A	80	.0	4.7
08-13-1952	21:25:48	35.30 N	118.67 W	A	93	.0	4.1
08-14-1952	07:28:22	35.13 N	118.52 W	A	70	.0	4.1
08-14-1952	11:41:46	35.07 N	118.88 W	A	86	.0	4.2
08-17-1952	06:14:04	35.05 N	118.95 W	A	90	.0	4.0
08-17-1952	09:09:07	35.02 N	118.98 W	A	91	.0	4.1
08-17-1952	21:04:42	35.07 N	118.88 W	A	86	.0	4.3
08-18-1952	04:40:10	35.03 N	119.05 W	A	97	.0	4.7
08-20-1952	08:47:47	34.88 N	119.03 W	A	88	.0	4.2
08-23-1952	06:03:03	35.00 N	118.73 W	A	71	.0	4.3
08-23-1952	10:09:07	34.52 N	118.20 W	A	9	13.1	5.1
08-25-1952	06:20:26	35.10 N	118.97 W	A	95	.0	4.7
08-26-1952	20:56:40	35.06 N	118.42 W	A	59	-.8	4.4
08-30-1952	04:55:59	35.31 N	118.48 W	A	87	5.5	4.7
08-30-1952	04:59:54	35.34 N	118.54 W	A	91	3.5	4.0
09-02-1952	12:41:32	35.13 N	118.70 W	A	80	.0	4.6
09-02-1952	16:38:09	35.30 N	118.53 W	A	87	.0	4.0
09-02-1952	20:45:56	34.97 N	119.00 W	A	89	.0	4.7
09-04-1952	18:06:49	35.30 N	118.48 W	A	86	5.8	4.4
09-12-1952	10:35:25	35.00 N	119.05 W	A	95	.0	4.5
09-14-1952	20:43:24	35.22 N	118.67 W	A	85	.0	4.1
09-15-1952	04:40:13	35.32 N	118.49 W	A	87	4.2	4.9
09-16-1952	14:24:54	35.33 N	118.60 W	A	93	.0	4.0
09-16-1952	15:21:08	35.37 N	118.58 W	A	96	.0	4.3
09-25-1952	16:21:36	35.05 N	118.90 W	A	87	.0	4.1
09-26-1952	20:21:20	35.10 N	118.62 W	A	72	.0	4.0
10-16-1952	12:22:07	34.95 N	118.95 W	A	84	.0	4.3
10-20-1952	18:14:43	35.31 N	118.49 W	A	87	14.0	4.3
11-07-1952	08:55:35	35.00 N	119.08 W	A	98	.0	4.6
11-11-1952	18:12:25	34.95 N	119.02 W	A	90	.0	4.1
11-14-1952	23:34:01	35.05 N	118.95 W		90	.0	4.0
11-27-1952	15:36:41	34.97 N	118.95 W	A	85	.0	4.0
12-01-1952	05:26:10	35.00 N	118.83 W	A	78	.0	4.4

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Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
12-25-1952	05:56:32	35.35 N	118.46 W	A	90	4.6	4.1
01-10-1953	22:17:38	35.23 N	118.60 W	A	83	.0	4.0
01-20-1953	08:13:22	35.32 N	118.49 W	A	88	7.2	4.0
02-19-1953	08:12:06	35.30 N	118.50 W	A	86	.0	4.4
03-17-1953	16:15:17	35.23 N	118.53 W	A	80	.0	4.0
03-23-1953	17:06:37	34.98 N	118.90 W	A	82	.0	4.0
04-29-1953	12:47:45	35.00 N	118.73 W	A	71	.0	4.7
05-01-1953	06:48:20	35.12 N	118.48 W	A	67	2.4	4.1
05-25-1953	03:24:01	35.00 N	119.02 W	A	92	.0	4.8
06-20-1953	23:18:52	35.37 N	118.50 W	A	93	.0	4.4
08-05-1953	12:20:59	35.02 N	119.05 W	A	96	.0	4.3
09-05-1953	19:24:36	35.38 N	118.60 W	A	98	.0	4.1
10-07-1953	14:59:21	35.03 N	118.85 W	A	82	.0	4.9
12-15-1953	12:44:36	35.22 N	118.82 W	A	94	.0	4.6
01-12-1954	23:33:49	35.00 N	119.02 W	A	92	.0	5.6
01-27-1954	14:19:48	35.15 N	118.63 W	B	77	.0	5.0
02-10-1954	23:58:38	34.93 N	119.07 W	A	93	.0	4.5
05-23-1954	23:52:43	34.98 N	118.98 W	A	89	.0	5.1
11-17-1954	23:03:51	34.50 N	119.12 W	B	90	.0	4.4
01-15-1955	01:03:06	34.93 N	118.97 W	A	85	9.1	4.3
02-11-1955	19:44:31	35.32 N	118.49 W	A	88	14.7	4.5
05-15-1955	17:03:25	34.12 N	117.48 W	A	79	7.6	4.0
07-19-1955	02:04:25	35.36 N	118.54 W	A	93	6.4	4.1
08-24-1955	17:05:40	35.36 N	118.62 W	B	96	7.2	4.0
02-07-1956	02:16:56	34.53 N	118.64 W	B	46	16.0	4.2
02-07-1956	03:16:38	34.59 N	118.61 W	A	43	2.6	4.6
03-23-1956	21:23:27	35.04 N	119.00 W	A	94	12.1	4.3
06-28-1957	11:32:00	35.23 N	118.51 W	A	79	1.6	4.1
06-28-1960	20:00:48	34.12 N	117.47 W	A	80	12.0	4.1
09-01-1961	16:51:48	35.20 N	118.53 W	A	77	4.5	4.0
10-04-1961	02:21:31	33.85 N	117.75 W	B	89	4.3	4.1
11-15-1961	05:38:55	34.94 N	118.99 W	B	87	10.7	4.9
11-18-1961	03:18:35	35.40 N	117.77 W	B	97	11.1	4.3
01-09-1963	06:04:03	34.92 N	119.10 W	B	96	8.7	4.0
03-01-1963	00:25:57	34.93 N	118.98 W	B	86	13.9	4.5

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(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
03-04-1963	20:10:42	34.95 N	118.97 W	B	86	8.5	4.0
01-02-1964	19:48:40	35.44 N	118.35 W	B	97	6.3	4.2
08-30-1964	22:57:37	34.27 N	118.44 W	B	45	15.4	4.0
01-01-1965	08:04:18	34.14 N	117.52 W	B	76	5.9	4.4
04-15-1965	20:08:33	34.13 N	117.43 W	B	83	5.5	4.5
07-16-1965	07:46:22	34.49 N	118.52 W	B	36	15.1	4.0
07-15-1966	10:09:43	35.39 N	117.78 W	B	95	4.7	4.0
10-11-1966	16:59:12	35.11 N	117.35 W	B	93	6.5	4.4
06-15-1967	04:58:05	34.00 N	117.97 W	B	67	10.0	4.1
05-29-1968	02:29:38	35.33 N	118.51 W	B	89	3.1	4.0
02-28-1969	04:56:12	34.57 N	118.11 W	A	3	5.3	4.3
05-05-1969	16:02:09	34.30 N	117.57 W	B	61	8.8	4.4
07-08-1970	09:25:30	35.41 N	117.80 W	A	97	8.0	4.0
09-12-1970	14:10:11	34.27 N	117.52 W	A	67	8.0	4.1
09-12-1970	14:30:52	34.27 N	117.54 W	A	65	8.0	5.2
09-13-1970	04:47:48	34.28 N	117.55 W	A	64	8.0	4.4
02-09-1971	14:00:41	34.41 N	118.40 W	B	30	8.4	6.6
02-09-1971	14:01:08	34.41 N	118.40 W	D	30	8.0	5.8
02-09-1971	14:01:33	34.41 N	118.40 W	D	30	8.0	4.2
02-09-1971	14:01:40	34.41 N	118.40 W	D	30	8.0	4.1
02-09-1971	14:01:50	34.41 N	118.40 W	D	30	8.0	4.5
02-09-1971	14:01:54	34.41 N	118.40 W	D	30	8.0	4.2
02-09-1971	14:01:59	34.41 N	118.40 W	D	30	8.0	4.1
02-09-1971	14:02:03	34.41 N	118.40 W	D	30	8.0	4.1
02-09-1971	14:02:30	34.41 N	118.40 W	D	30	8.0	4.3
02-09-1971	14:02:31	34.41 N	118.40 W	D	30	8.0	4.7
02-09-1971	14:02:44	34.41 N	118.40 W	D	30	8.0	5.8
02-09-1971	14:03:25	34.41 N	118.40 W	D	30	8.0	4.4
02-09-1971	14:03:46	34.41 N	118.40 W	D	30	8.0	4.1
02-09-1971	14:04:07	34.41 N	118.40 W	D	30	8.0	4.1
02-09-1971	14:04:34	34.41 N	118.40 W	C	30	8.0	4.2
02-09-1971	14:04:39	34.41 N	118.40 W	D	30	8.0	4.1
02-09-1971	14:04:44	34.41 N	118.40 W	D	30	8.0	4.1
02-09-1971	14:04:46	34.41 N	118.40 W	D	30	8.0	4.2
02-09-1971	14:05:41	34.41 N	118.40 W	D	30	8.0	4.1

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(CAL TECH DATA 1932-2002)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
06-26-1988	15:04:58	34.14 N	117.71 W	A	64	7.9	4.7
12-03-1988	11:38:26	34.15 N	118.13 W	A	48	14.3	5.0
01-19-1989	06:53:28	33.92 N	118.63 W	A	86	11.9	5.0
02-18-1989	07:17:04	34.01 N	117.74 W	A	74	3.3	4.1
03-29-1989	09:29:49	34.91 N	118.99 W	A	86	14.3	4.3
06-12-1989	16:57:18	34.03 N	118.18 W	A	62	15.6	4.6
06-12-1989	17:22:25	34.02 N	118.18 W	A	62	15.5	4.4
12-28-1989	09:41:08	34.19 N	117.39 W	A	82	14.6	4.3
02-28-1990	23:43:36	34.14 N	117.70 W	A	64	4.5	5.4
03-01-1990	00:34:57	34.13 N	117.70 W	A	65	4.4	4.0
03-01-1990	03:23:03	34.15 N	117.72 W	A	62	11.4	4.7
03-02-1990	17:26:25	34.15 N	117.69 W	A	64	5.6	4.7
04-17-1990	22:32:27	34.11 N	117.72 W	A	66	3.6	4.8
06-28-1991	14:43:54	34.27 N	117.99 W	A	37	9.1	5.8
06-28-1991	17:00:55	34.25 N	117.99 W	A	39	9.5	4.3
07-05-1991	17:41:57	34.50 N	118.56 W	A	39	10.9	4.1
06-28-1992	12:26:02	35.11 N	117.35 W	B	93	3.5	4.4
06-29-1992	01:18:13	35.16 N	117.36 W	A	96	4.2	4.6
06-29-1992	01:26:15	35.16 N	117.35 W	C	97	5.5	4.1
06-29-1992	04:16:42	35.02 N	117.20 W	A	99	3.5	4.1
06-30-1992	02:32:12	35.16 N	117.35 W	A	97	4.9	4.0
07-11-1992	18:14:16	35.21 N	118.07 W	A	70	10.7	5.7
01-17-1994	12:30:55	34.21 N	118.54 W	A	55	18.4	6.7
01-17-1994	12:30:55	34.22 N	118.54 W	A	54	17.4	6.6
01-17-1994	12:31:58	34.27 N	118.49 W	C	47	6.0	5.9
01-17-1994	12:34:18	34.31 N	118.47 W	C	43	6.0	4.4
01-17-1994	12:39:39	34.26 N	118.54 W	C	51	6.0	4.9
01-17-1994	12:40:09	34.32 N	118.51 W	C	44	6.0	4.8
01-17-1994	12:40:36	34.34 N	118.61 W	C	51	6.0	5.2
01-17-1994	12:54:33	34.31 N	118.46 W	C	42	6.0	4.0
01-17-1994	12:55:46	34.28 N	118.58 W	C	52	6.0	4.1
01-17-1994	13:06:28	34.25 N	118.55 W	C	52	6.0	4.6
01-17-1994	13:26:45	34.32 N	118.46 W	C	41	6.0	4.7
01-17-1994	13:28:13	34.27 N	118.58 W	C	53	6.0	4.0
01-17-1994	13:56:02	34.29 N	118.62 W	C	54	6.0	4.4

NOTE: Q IS A FACTOR RELATING THE QUALITY OF EPICENTRAL DETERMINATION

A = +- 1 km horizontal distance; +- 2 km depth
B = +- 2 km horizontal distance; +- 5 km depth
C = +- 5 km horizontal distance; no depth restriction
D = >+- 5 km horizontal distance

Event qualities are highly suspect prior to 1990. Many of these event qualities are based on incomplete information according to Caltech.

Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(NOAA/CDMG DATA 1812-1905)

DATE	TIME	LATITUDE	LONGITUDE	Q	DIST	DEPTH	MAGNITUDE
01-09-1857	16:00:00	35.00 N	119.00 W	D	91	.0	8.0
02-09-1890	04:06:00	34.00 N	117.50 W	D	88	.0	7.0

S E A R C H O F E A R T H Q U A K E D A T A F I L E 3

SITE: Palmdale Medical Center, Palmdale, CA 4953-03-1101

COORDINATES OF SITE ..... 34.5832 N 118.1438 W

DISTANCE PER DEGREE ..... 110.9 KM-N 91.8 KM-W

MAGNITUDE LIMITS ..... 7.0 - 8.5

TEMPORAL LIMITS ..... 1812 - 1905

SEARCH RADIUS (KM) 100

NUMBER OF YEARS OF DATA 94.00

NUMBER OF EARTHQUAKES IN FILE 9

NUMBER OF EARTHQUAKES IN AREA 2

MACTEC Engineering and Consulting

Table 3
List of Historic Earthquakes of Magnitude 4.0 or Greater within 100 km of the Site
(NOAA/CDMG DATA 1812-1905)

S U M M A R Y O F E A R T H Q U A K E S E A R C H

* * *

NUMBER OF HISTORIC EARTHQUAKES WITHIN 100 KM RADIUS OF SITE

MAGNITUDE RANGE	NUMBER
4.0 - 4.5	388
4.5 - 5.0	146
5.0 - 5.5	39
5.5 - 6.0	14
6.0 - 6.5	3
6.5 - 7.0	3
7.0 - 7.5	1
7.5 - 8.0	1
8.0 - 8.5	1

* * *

MACTEC Engineering and Consulting

Table 4: Horizontal Ground Motion Pseudo Spectral Velocity in Inches/Second

	2% damping		5% damping		10% damping	
Period in Seconds	DBE 10% in 50 years	UBE 10% in 100 years	DBE 10% in 50 years	UBE 10% in 100 years	DBE 10% in 50 years	UBE 10% in 100 years
0.01	0.63	0.75	0.63	0.75	0.63	0.75
0.03	1.91	2.27	1.91	2.27	1.91	2.27
0.10	13.44	15.95	11.23	13.33	9.57	11.35
0.20	40.05	47.75	30.94	36.89	24.05	28.67
0.30	61.49	73.87	50.08	60.17	41.46	49.81
0.40	82.65	100.42	67.32	81.79	55.73	67.71
0.50	101.36	124.33	82.56	101.27	68.34	83.83
1.00	155.41	196.57	126.59	160.12	104.79	132.54
2.00	180.96	230.77	147.41	187.97	122.02	155.60

By: MM 4/23/03
Chkd: JA 4/24/03

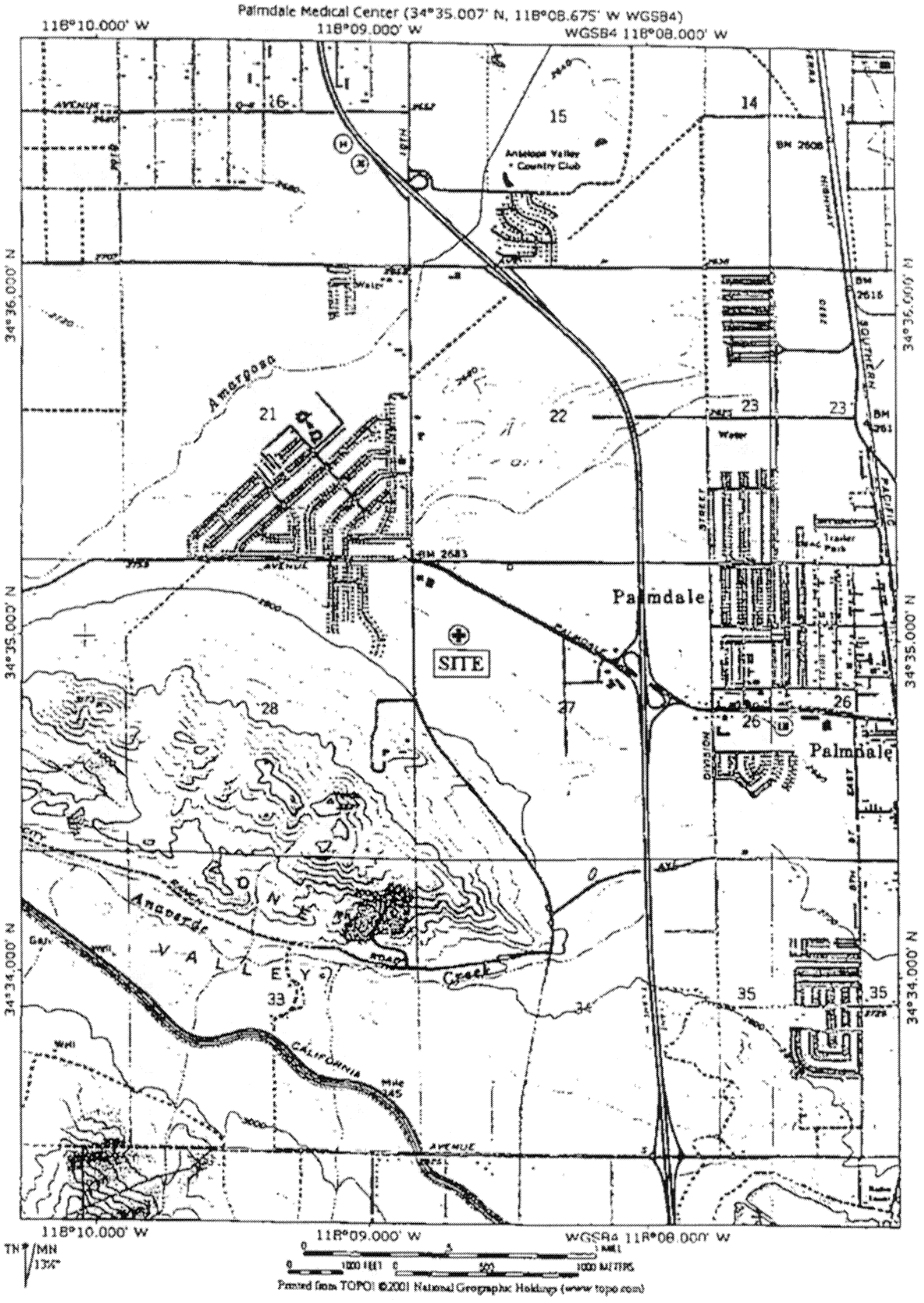
Table 5: Horizontal Ground Motion Pseudo Spectral Acceleration in g's

	2% damping		5% damping		10% damping	
Period in Seconds	DBE 10% in 50 years	UBE 10% in 100 years	DBE 10% in 50 years	UBE 10% in 100 years	DBE 10% in 50 years	UBE 10% in 100 years
0.01	1.02	1.21	1.02	1.21	1.02	1.21
0.03	1.03	1.23	1.03	1.23	1.03	1.23
0.10	2.19	2.59	1.83	2.17	1.56	1.85
0.20	3.26	3.88	2.52	3.00	1.96	2.33
0.30	3.33	4.00	2.71	3.26	2.25	2.70
0.40	3.36	4.08	2.74	3.33	2.27	2.75
0.50	3.30	4.04	2.68	3.29	2.22	2.73
1.00	2.53	3.20	2.06	2.60	1.70	2.16
2.00	1.47	1.88	1.20	1.53	0.99	1.27

By: MM 4/23/03
Chkd: JA 4/24/03

FIGURES

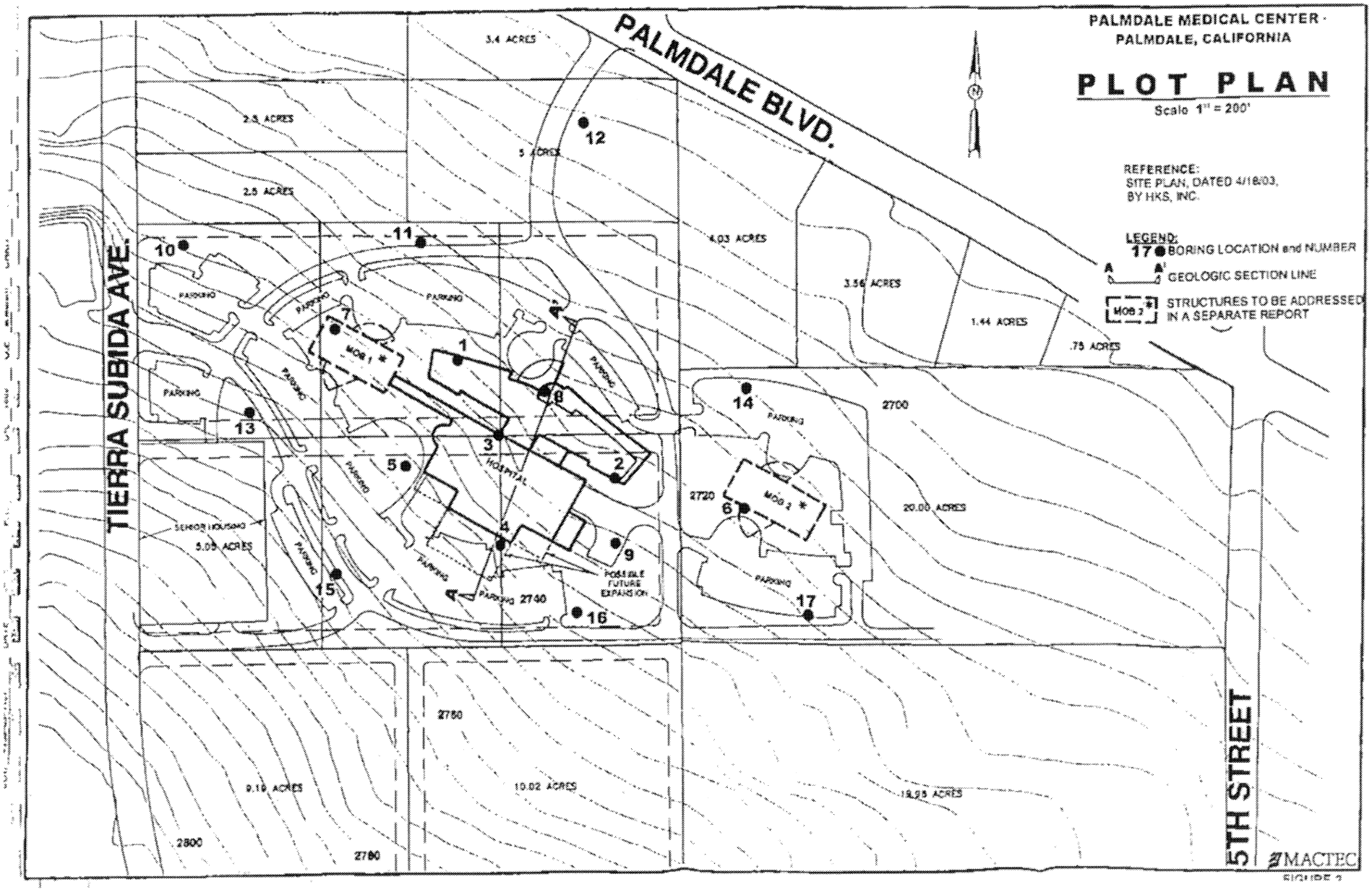
JOB 4953-03-1101 DATE 4/24/03 F.T. ____ DR Todd O.E. M Murphy CHKD ____

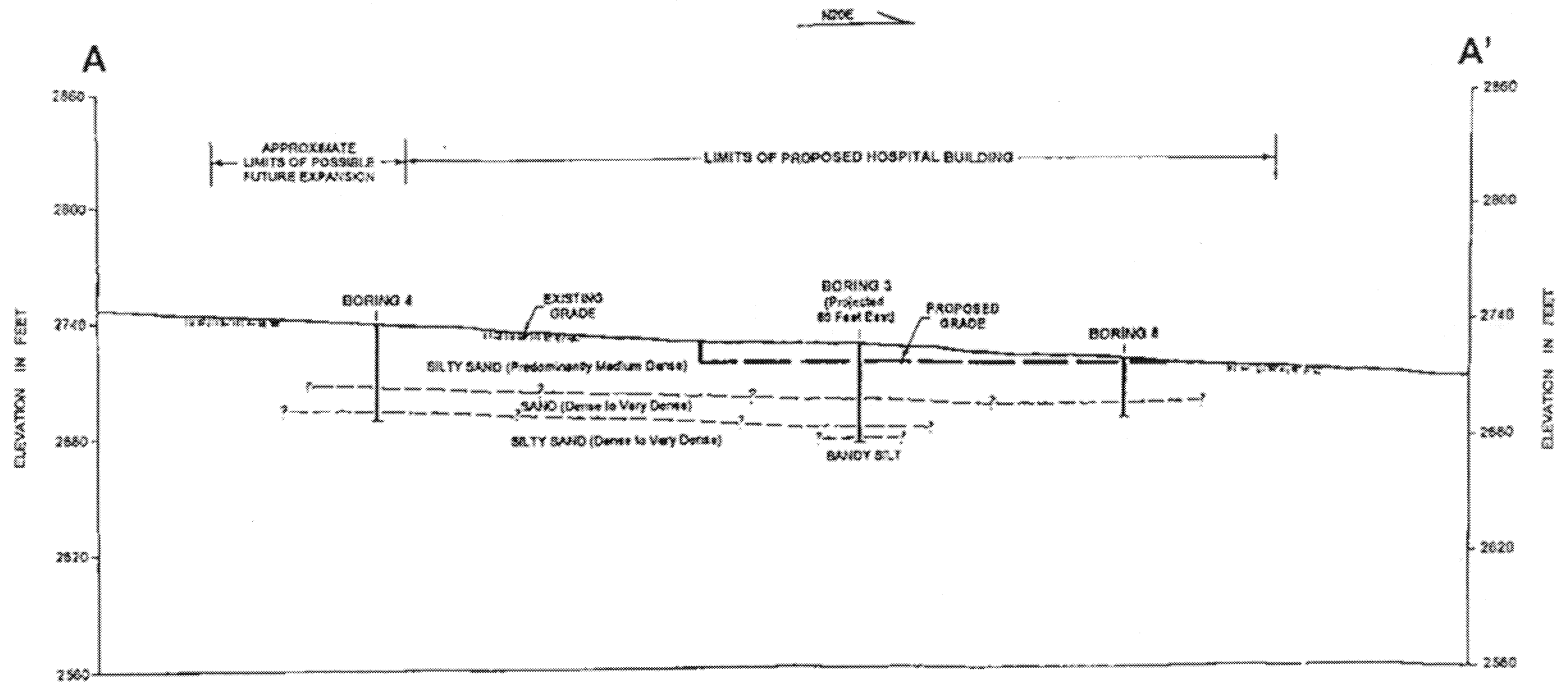


SITE LOCATION MAP

MACTEC

FIGURE 1


PALMDALE MEDICAL CENTER
PALMDALE, CALIFORNIA
PLOT PLAN
Scale 1" = 200'
PALMDALE BLVD.
TIERRA SUBIDA AVE.
5TH STREET
REFERENCE:
SITE PLAN, DATED 4/18/03,
BY HKS, INC.
LEGEND:
17 BORING LOCATION and NUMBER
A A' GEOLOGIC SECTION LINE
MOB 3 STRUCTURES TO BE ADDRESSED IN A SEPARATE REPORT
MOB 1 *
MOB 2 *
HOSPITAL
SENIOR HOUSING
5.05 ACRES
POSSIBLE FUTURE EXPANSION
PARKING
2.5 ACRES
2.5 ACRES
3.4 ACRES
5 ACRES
4.03 ACRES
3.56 ACRES
1.44 ACRES
.75 ACRES
20.00 ACRES
9.19 ACRES
10.02 ACRES
18.95 ACRES
2700
2720
2740
2760
2780
2800
MACTEC



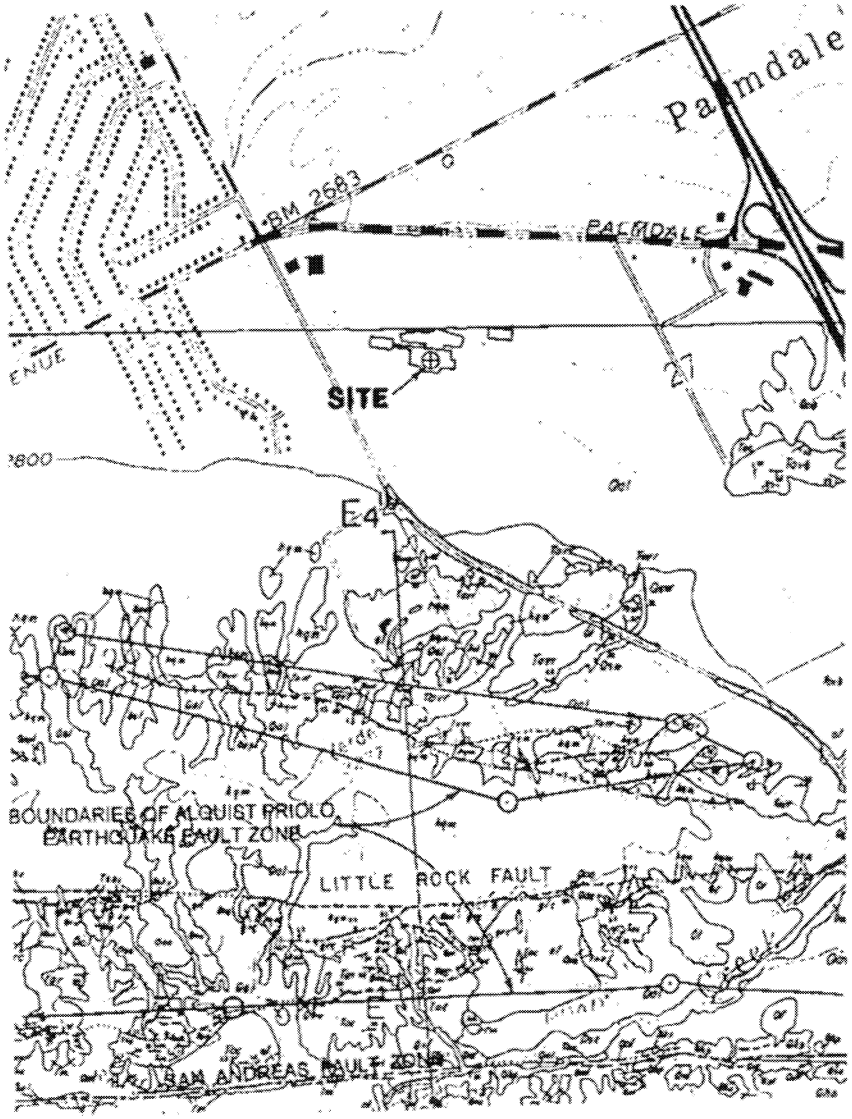
NOTES:
1. SECTION BASED ON SOIL CONDITIONS AT BORING LOCATIONS. SOIL CONDITIONS BETWEEN BORINGS HAVE BEEN INTERPOLATED AND LOCALIZED VARIATIONS FROM CONDITIONS ENCOUNTERED MAY OCCUR. SECTION IS INTENDED FOR DESCRIPTIVE PURPOSES ONLY.
2. SEE FIGURE 2 FOR LOCATION OF SECTION.

GEOLOGIC SECTION A-A'

SCALE 1" = 60'

MACTEC

FIGURE 3



REFERENCES:

1. CALIFORNIA DIVISION OF MINES AND GEOLOGY, 1985, "EARTHQUAKE HAZARDS AND TECTONIC HISTORY OF THE SAN ANDREAS FAULT ZONE, LOS ANGELES COUNTY, CALIFORNIA", CDMG OPEN FILE REPORT 85-10 LA.
2. CALIFORNIA DIVISION OF MINES AND GEOLOGY, 1979, "STATE OF CALIFORNIA SPECIAL STUDIES ZONES, RITTER RIDGE QUADRANGLE, REVISED OFFICIAL MAP", EFFECTIVE JANUARY 1, 1979

EXPLANATION:

Qal - YOUNGER ALLUVIUM-HOLOCENE
Qsw - SLOPEWASH-HOLOCENE
Qf - ALLUVIAL FAN DEPOSITS-HOLOCENE
Qoa - OLDER ALLUVIUM-PLEISTOCENE
Qhp - HAROLD FORMATION, PELONA SCHIST-CLAST MEMBER-PLEISTOCENE

ANAVERDE FORMATION-PLEISTOCENE
Tac - CLAY SHALE MEMBER
Tab - BUFF ARKOSE MEMBER
Tag - RED ARKOSE MEMBER
Tavp - BUFF ARKOSE MEMBER WITH VOLCANIC CLASTS
Tavr - RED ARKOSE MEMBER WITH VOLCANIC CLASTS
gre - CRUSHED GRANITE ROCKS-CRETACEOUS
hgm - HOLCOMB QUARTZ MONZONITE AND GRANODIORITE, CRETACEOUS

BOUNDARIES OF ALQUIST PRIOLO EARTHQUAKE FAULT ZONE

FAULT- DASHED WHERE APPROXIMATE, DOTTED WHERE INFERRED, QUERIED WHERE QUESTIONABLE

STRIKE AND DIP OF BEDDING

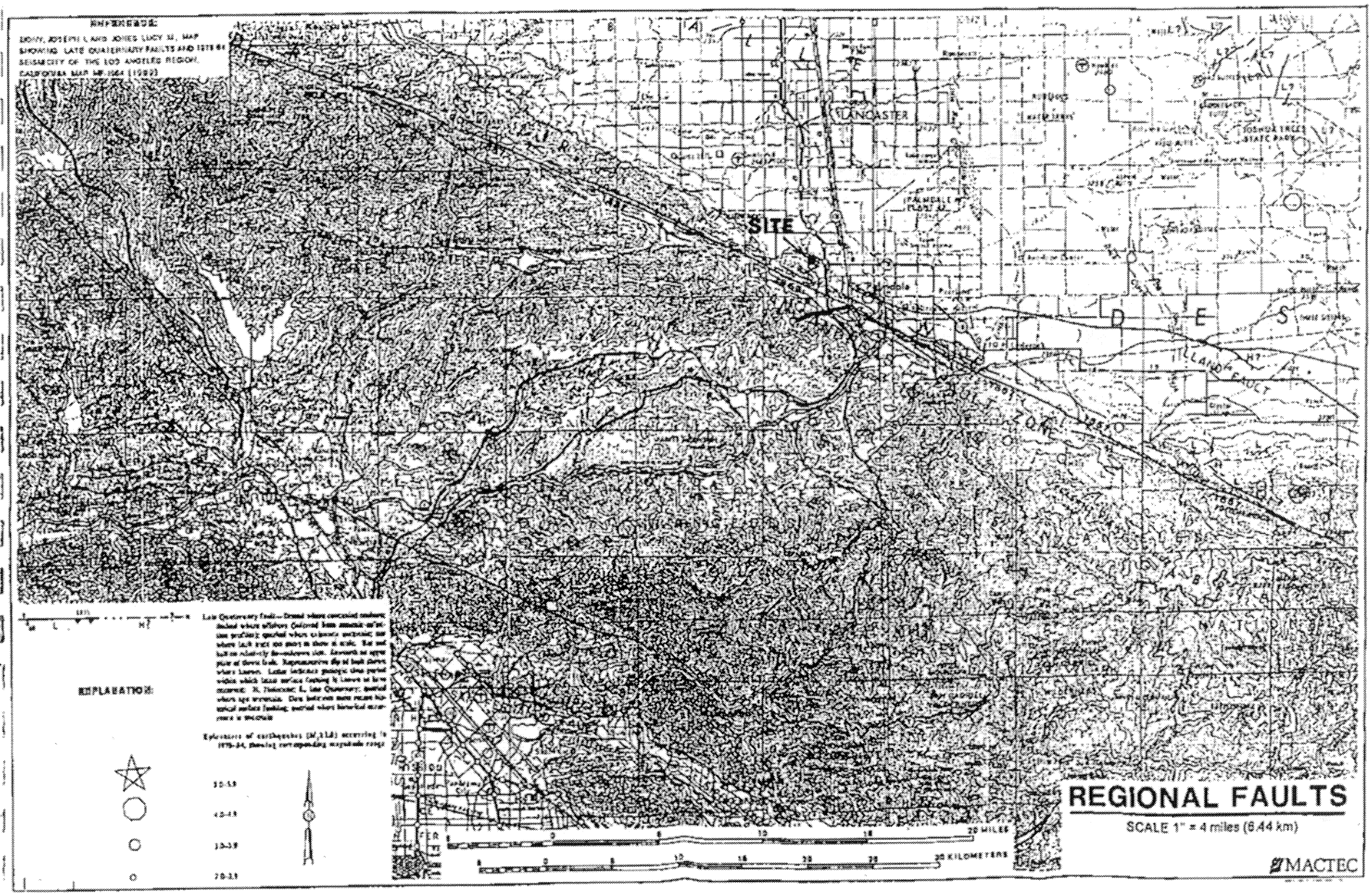
SITE COORDINATES:
Latitude 34.5832N
Longitude 118.1438W

LOCAL GEOLOGY

SCALE 1" = 1000' (305 m)

MACTEC

FIGURE 4


SITE
LANCASTER
REGIONAL FAULTS
SCALE 1" = 4 miles (6.44 km)
MACTEC
20 MILES
20 KILOMETERS
EXPLANATION

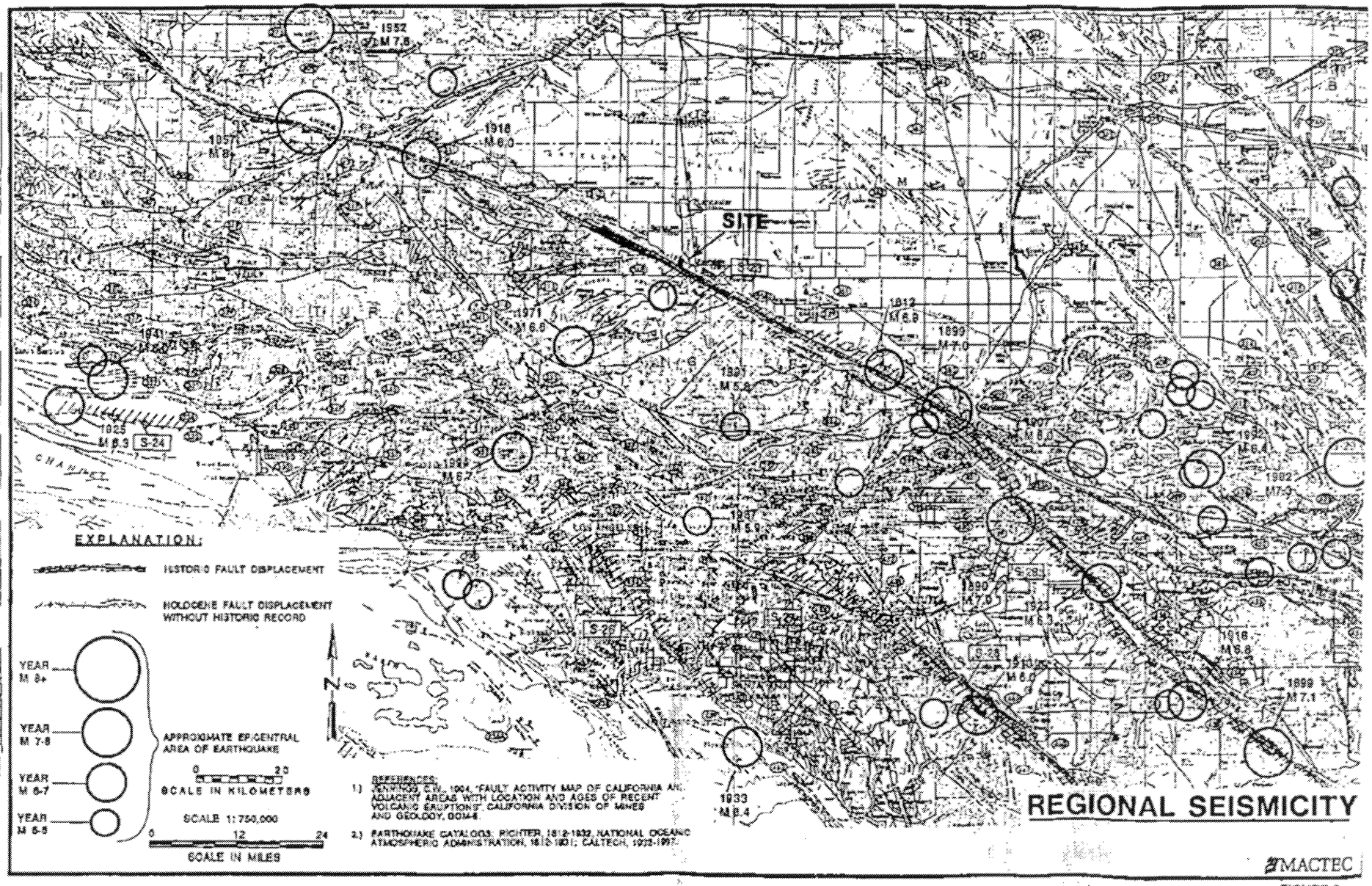
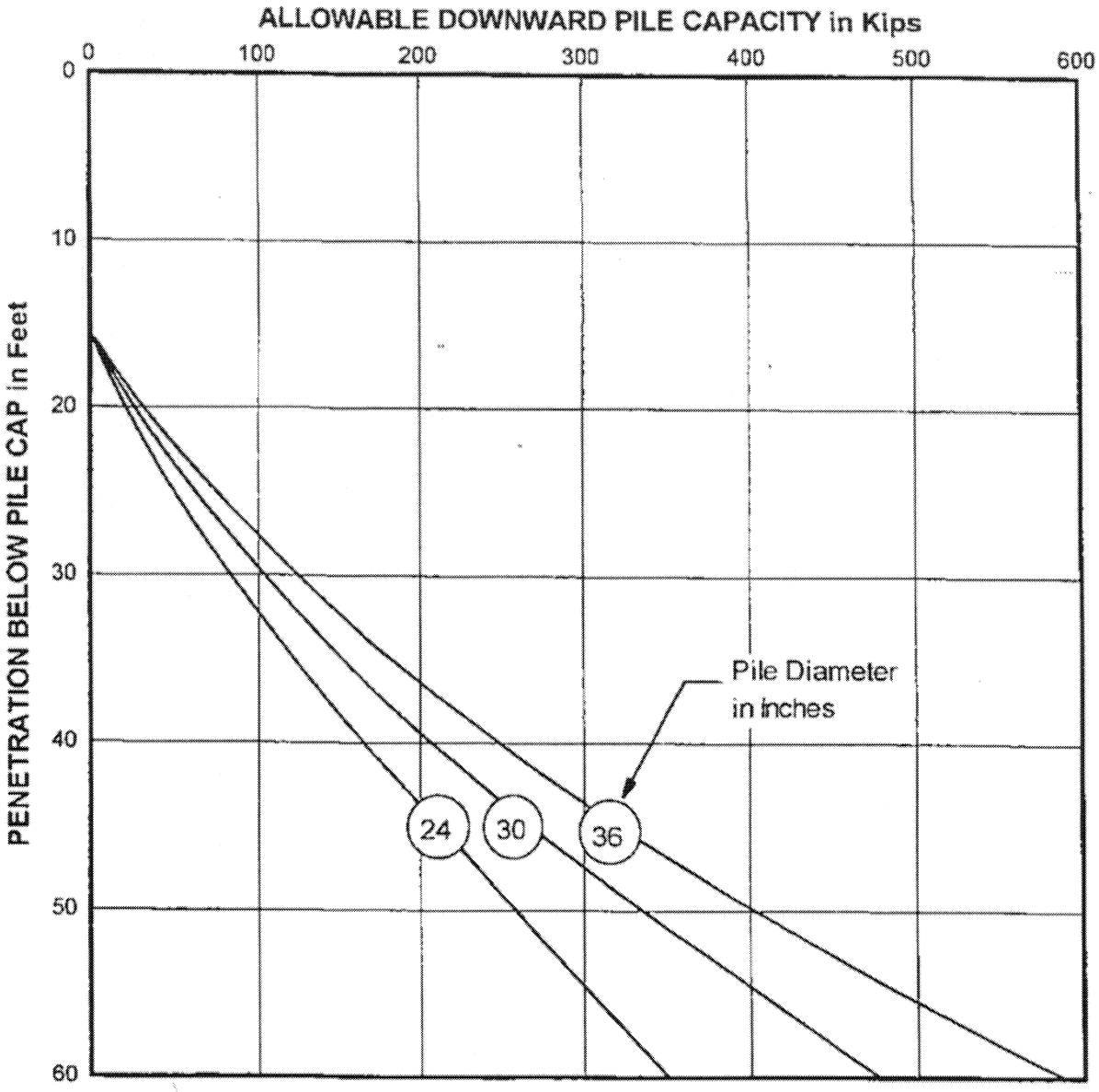

SITE
1952
M 7.8
1957
M 8+
1916
M 6.0
1971
M 6.6
1812
M 6.9
1899
M 7.0
1891
M 5.8
1907
M 6.0
1925
M 6.3
S-24
1994
M 6.7
1987
M 5.9
1902
M 7.0
1890
M 7.0
1923
M 6.3
1916
M 6.8
1899
M 7.1
1933
M 6.4
EXPLANATION:
HISTORIC FAULT DISPLACEMENT
HOLOCENE FAULT DISPLACEMENT WITHOUT HISTORIC RECORD
YEAR M 8+
YEAR M 7-8
YEAR M 6-7
YEAR M 5-5
APPROXIMATE EPICENTRAL AREA OF EARTHQUAKE
0 20
SCALE IN KILOMETERS
SCALE 1:750,000
0 12 24
SCALE IN MILES
N
REFERENCES:
1) JENNINGS, C.W., 1994, "FAULT ACTIVITY MAP OF CALIFORNIA AND ADJACENT AREAS WITH LOCATION AND AGES OF RECENT VOLCANIC ERUPTIONS", CALIFORNIA DIVISION OF MINES AND GEOLOGY, DOM-6.
2) EARTHQUAKE CATALOGS: RICHTER, 1812-1932, NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION, 1812-1931; CALTECH, 1932-1997.
REGIONAL SEISMICITY
MACTEC

FIGURE 6

JOB 4953-03-1101 DATE 4/21/03 DR JA OE MM CHKD MM



NOTES:

(1) The indicated values refer to the total of dead plus live loads; a one-third increase may be used when considering wind or seismic loads.

(2) Piles in groups should be spaced a minimum of 3 diameters on centers, and should be drilled and filled alternately with the concrete permitted to set at least 8 hours before drilling an adjacent hole.

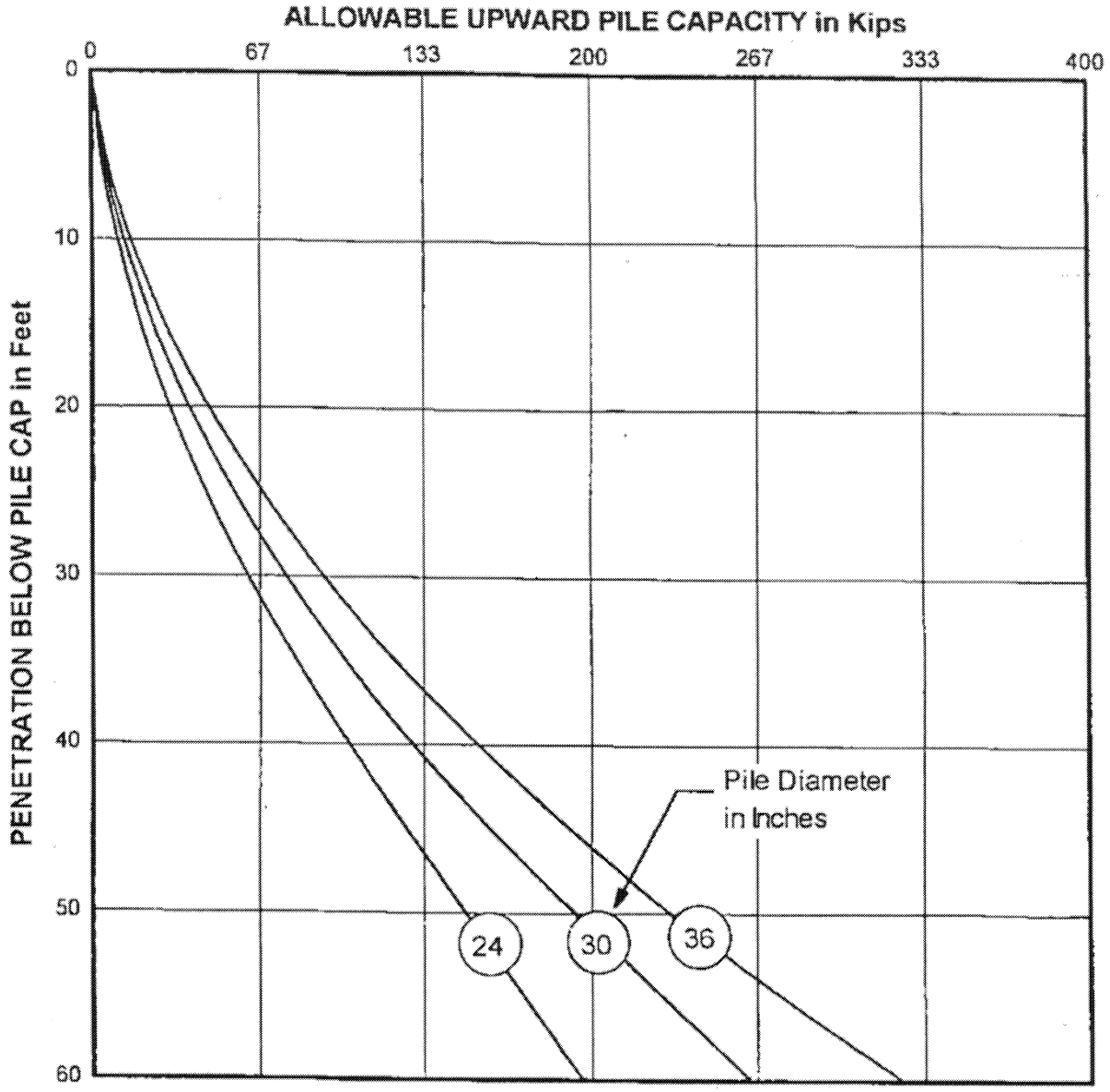
(3) The indicated values are based on the strength of the soils; the actual pile capacities may be limited to lesser values by the strength of the piles.

DOWNWARD DRILLED PILE CAPACITIES

MACTEC

FIGURE 7

JOB 4953-03-1101 DATE 4/21/03 DR JA OE MM CHKD MM



NOTES:

(1) The indicated values refer to the total of dead plus live loads; a one-third increase may be used when considering wind or seismic loads.

(2) Piles in groups should be spaced a minimum of 3 diameters on centers, and should be drilled and filled alternately with the concrete permitted to set at least 8 hours before drilling an adjacent hole.

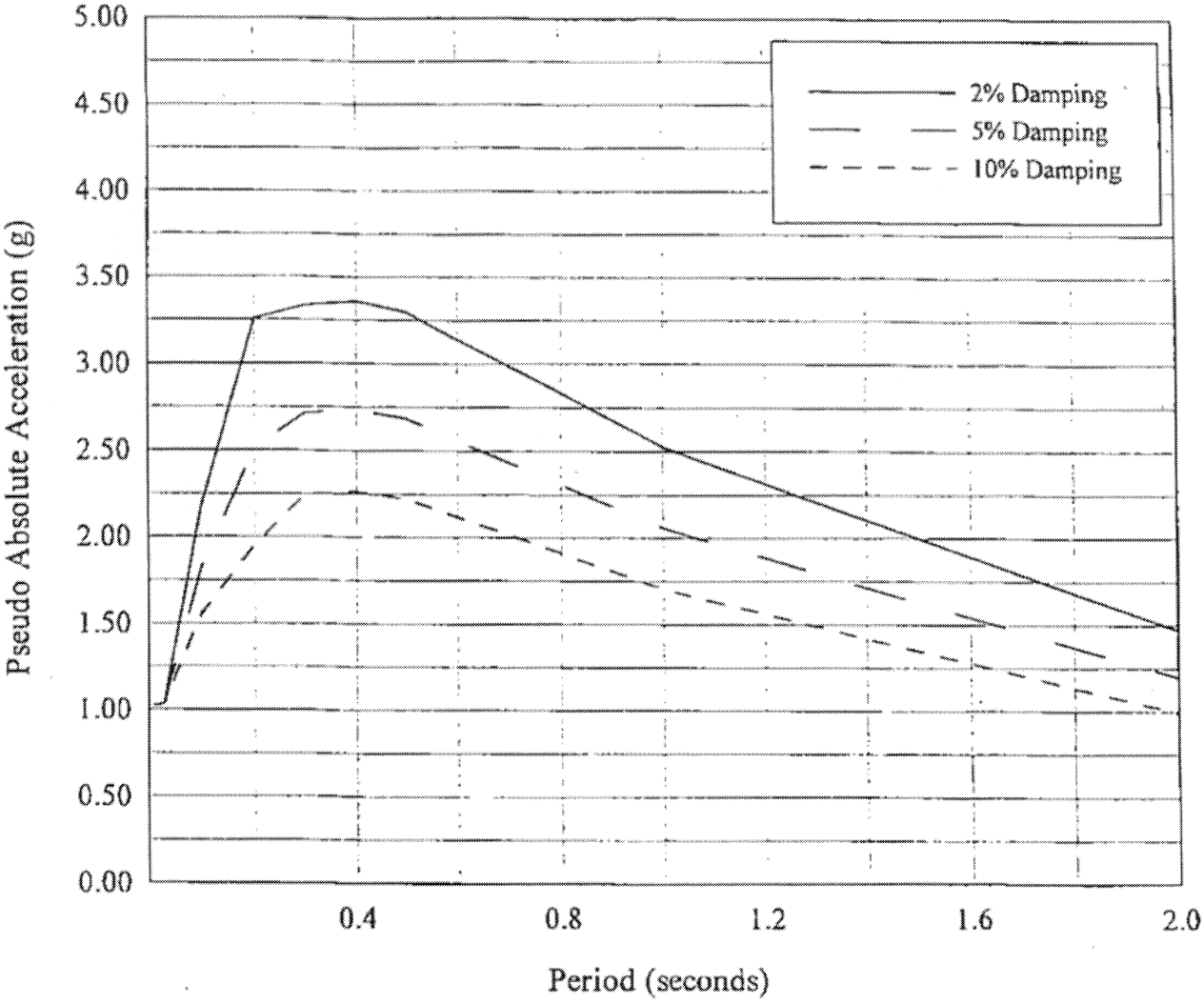
(3) The indicated values are based on the strength of the soils; the actual pile capacities may be limited to lesser values by the strength of the piles.

UPWARD DRILLED PILE CAPACITIES

MACTEC

FIGURE 8

JOB: 4953-03-1101 DATE: 4/18/03 F.T.: n/a DR.: MM O.E.: MM CHKD: JA



HORIZONTAL RESPONSE SPECTRA

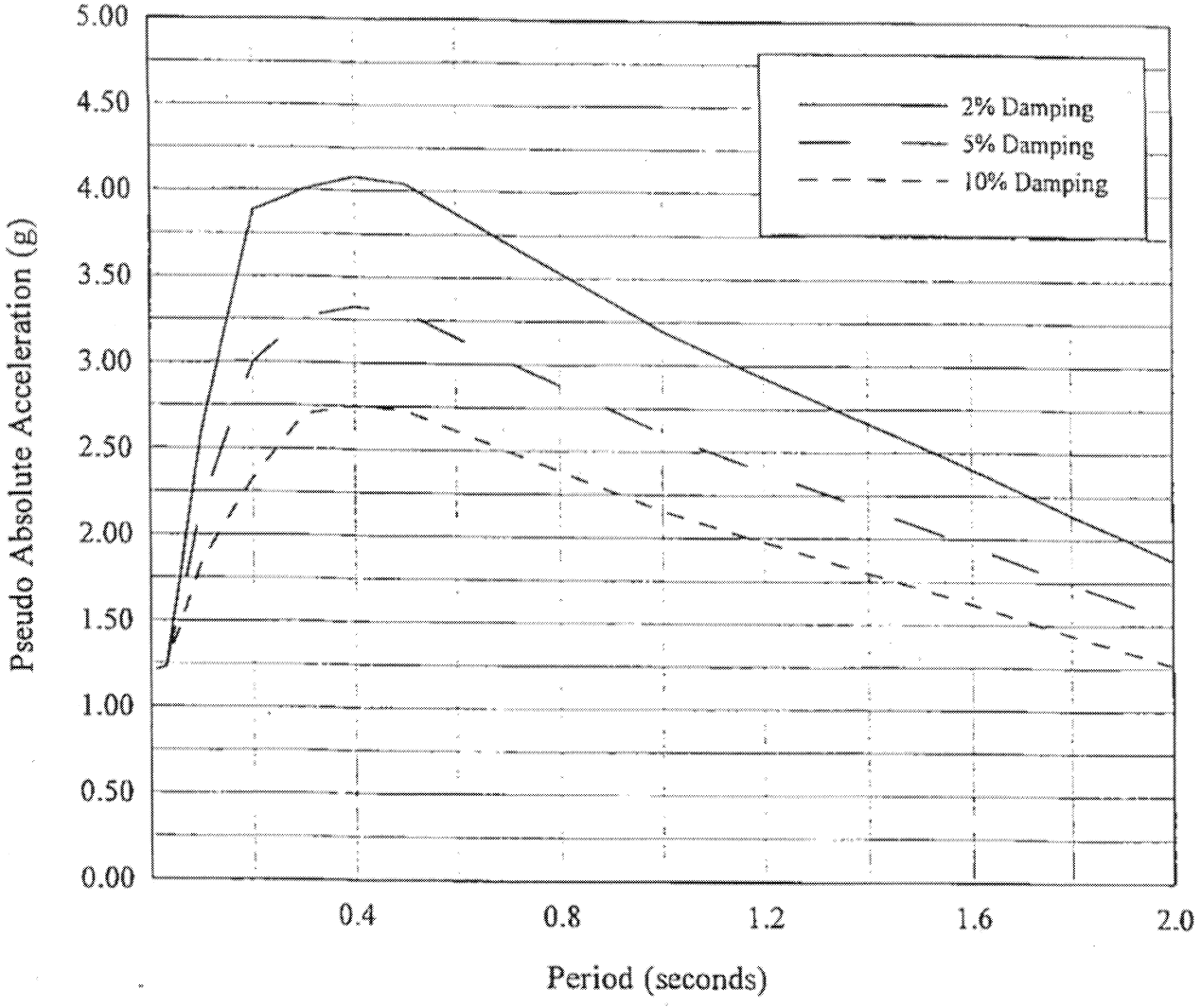
Design Basis Earthquake (DBE)
10% Probability of Exceedence in 50 Years
Palmdale Medical Center
Palmdale, California

MACTEC

31101\calculations\ground motion\SpectraDBEfinal.grf

Figure 9

JOB: 4953-03-1101 DATE: 4/18/03 F.T.: n/a DR.: MM O.E.: MM CHKD: JA



HORIZONTAL RESPONSE SPECTRA

Upper Bound Earthquake (DBE)
10% Probability of Exceedence in 100 Years
Palmdale Medical Center
Palmdale, California

MACTEC

31101\calculations\ground motion\SpectraUBEfinal.grf

Figure 10

APPENDIX

EXPLORATIONS AND LABORATORY TESTS

EXPLORATIONS

The soil conditions beneath the site were explored by drilling 17 borings at the locations shown on Figure 2. The borings were drilled to depths of 5 to 71 feet below the existing grade using a combination of 8-inch-diameter hollow stem auger-type and 16-inch diameter bucket-type drilling equipment.

The soils encountered were logged by our field technician, and undisturbed and bulk samples were obtained for laboratory inspection and testing. The logs of the borings are presented on Figures A-1.1 through A-1.17; the depths at which undisturbed samples were obtained are indicated to the left of the boring logs. The number of blows required to drive the Crandall sampler 12 inches using the specified hammer weight and drop is indicated on the logs. In addition to obtaining undisturbed samples, standard penetration tests (SPT) were performed in four of the borings; the results of the tests are indicated on the logs. The soils are classified in the accordance with the Unified Soil Classification System described on Figure A-2.

LABORATORY TESTS

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to evaluate their engineering properties.

The field moisture content and dry density of the soils encountered were determined by performing tests on the undisturbed samples. The results of the tests are presented to the left of the boring logs.

Direct shear tests were performed on selected undisturbed samples to determine the strength of the soils. The tests were performed at field moisture content, and after soaking to near-saturated moisture content and at various surcharge pressures. Remolded samples, compacted to 90% and

95% of the maximum dry density obtainable by the ASTM Designation D1557-91 method of compaction, were tested at optimum moisture content and after soaking to near-saturated moisture content. The peak values determined from the direct shear tests are presented on Figures A-3.1 and A-3.2, Direct Shear Test Data.

Confined consolidation tests were performed on selected undisturbed samples to determine the compressibility of the soils. Water was added to the samples during the tests to illustrate the effect of moisture on the compressibility. The results of the tests are presented on Figures A-4.1 through A-4.5, Consolidation Test Data.

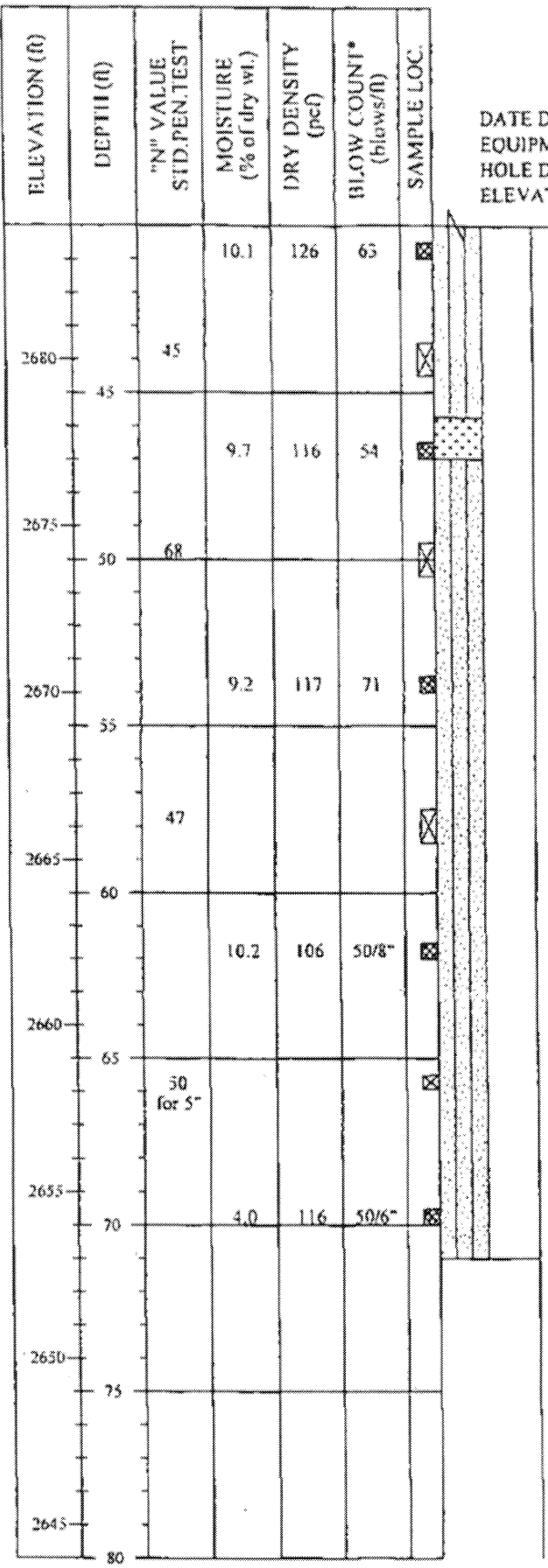
The optimum moisture content and maximum dry density of the upper soils were determined by performing a compaction test on three samples obtained from the upper soils. The test was performed in accordance with the ASTM Designation D1557-91 method of compaction. After completion of the compaction test, a California Bearing Ratio test was performed on one of the sample in accordance with the ASTM Designation D1883-94 method. The results of the tests are presented on Figure A-5, Compaction and C.B.R. Test Data.

To determine the particle size distribution of the soils and to aid in classifying the soils, mechanical analyses were performed on one sample. The results of the mechanical analyses are presented on Figure A-6, Particle Size Distribution.

We retained M.J. Schiff & Associates to perform soil corrosivity tests on samples of the on-site soils. The results of the tests are presented on Figure A-7.

BORING 1 (Continued)

DATE DRILLED: March 31, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 2.724**



ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	
			10.1	126	63	⊠	
2680		45				⊠	44% passing No. 200 sieve
	45						layer of Well-Graded Sand
			9.7	116	54	⊠	becomes very dense, slightly moist
2675							
	50	68				⊠	
2670			9.2	117	71	⊠	becomes dense
	55						
		47				⊠	layer of sandy silt 61% passing No. 200 sieve
2665							
	60						becomes very dense, moist, hard drilling below 60½'
			10.2	106	50/8"	⊠	
2660							
	65	50 for 5"				⊠	light gray with siltier seams
2655							
	70		4.0	116	50/6"	⊠	becomes slightly moist
2650							
	75						
2645							
	80						

End of Boring at 71' due to hard drilling conditions.

NOTES:

Water not encountered.
Bottom at 63' after auger removed.
Hole backfilled with soil cuttings and tamped.

* Number of blows required to drive Crandall sampler 12 inches using a 140 pound hammer falling 30 inches.

** Elevations are based on topographic survey provided by HKS, inc.; see Figure 1.

Field Tech: AR
Prepared By: SB
Checked By: JA

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

H:\SOIL CRANDALL 3110I.GPJ LAW CRAN.GDT 4/25/03

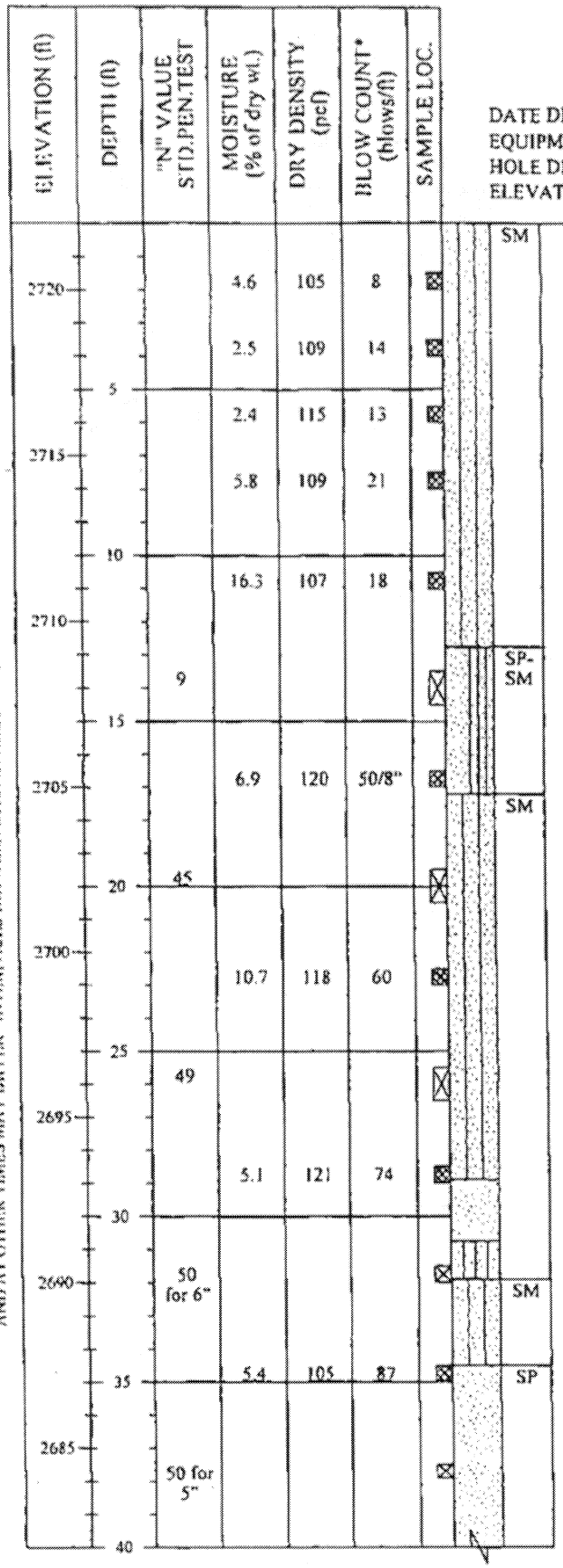
Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.1b

BORING 2

DATE DRILLED: March 31, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 2,722**



SM — SILTY SAND - loose, slightly moist, light brown, trace small gravel, fine to medium sand with occasional coarse sand
27% passing No. 200 sieve

becomes medium dense

SP-SM — POORLY GRADED SAND with Silt - loose, slightly moist, light brown, fine to medium sand with occasional coarse, trace small gravel
10% passing No. 200 sieve

becomes very dense

SM — SILTY SAND - dense, moist, light brown, fine to medium sand with occasional coarse sand

becomes moist

becomes slightly moist
layer of Poorly Graded Sand

layer of Sandy Silt, hard, moist, reddish brown

SM — SILTY SAND - dense, moist, light brown, fine to medium sand

SP — POORLY GRADED SAND - very dense, slightly moist, light brown, fine to coarse sand

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: SB
Checked By: JA

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

B125201 CRANDALL 31101.GPJ LAW_CRAN.GDT 4/25/03

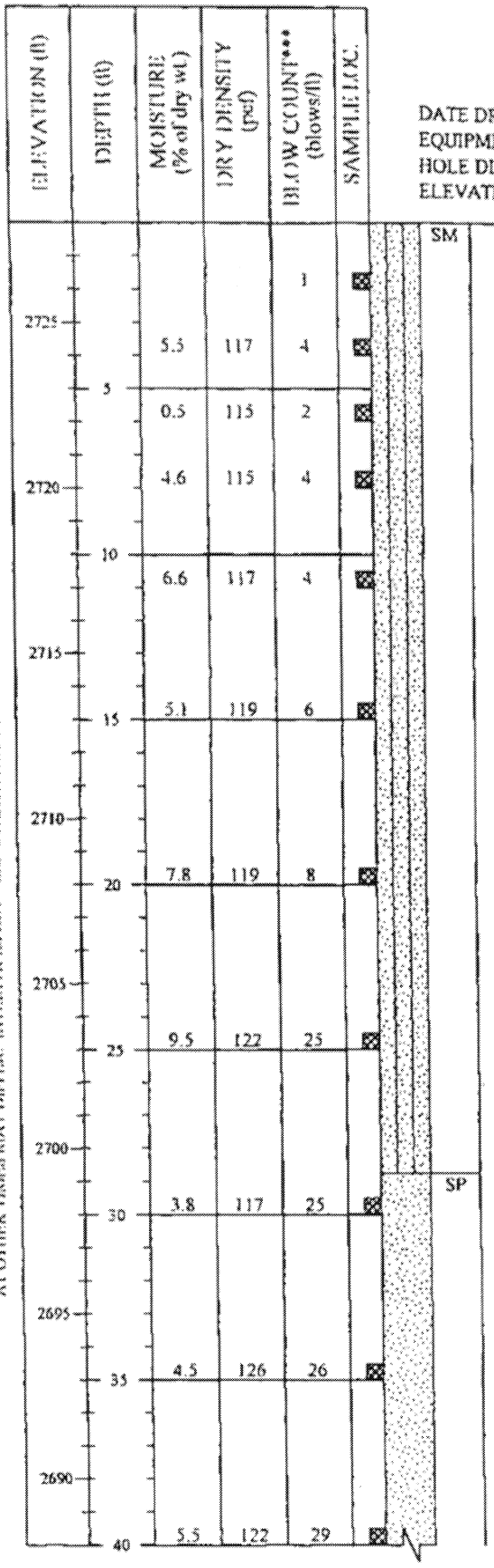
Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.

BORING 3

DATE DRILLED: April 1, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2.728 **



ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
						SM	SILTY SAND - loose, slightly moist, light brown, fine to medium sand with occasional coarse, trace gravel, few rootlets
				1			
2725		5.5	117	4			becomes medium dense
	5	0.5	115	2			layer of sandy silty clay, medium stiff, dry
2720		4.6	115	4			
	10	6.6	117	4			siltier layer
2715							
	15	5.1	119	6			
2710							
	20	7.8	119	8			few gravel
2705							
	25	9.5	122	25			becomes very dense
2700						SP	POORLY GRADED SAND - dense, slightly moist, light brown, fine to coarse sand, few small gravel
	30	3.8	117	25			
2695							
	35	4.5	126	26			4.6% passing No. 200 sieve layers of Well-Graded Sand
2690							
	40	5.5	122	29			

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

(CONTINUED ON FOLLOWING FIGURE)

Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.3

BH SOIL CRANDALL 3110 UPJ LAW CRAN.GDT 4/25/03

BORING 4

DATE DRILLED: April 1, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,738 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
						SM	SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand with occasional gravel
		4.5	111	1	⊠		
2735		4.3	117	2	⊠		coarser sand
	5	0.5	112	3	⊠		becomes dry
2730		2.8	110	3	⊠		becomes slightly moist
	10	5.4	110	3	⊠		
2725							
	15	8.7	112	2	⊠		
2720							
	20	9.4	123	8	⊠		becomes medium dense
2715							
	25	12.0	112	6	⊠		becomes moist
2710							
	30	8.8	123	21	⊠		becomes dense, slightly moist
2705							
	35	4.1	120	29	⊠	SP	POORLY GRADED SAND - dense, slightly moist, light brownish gray, few gravel
2700							
	40	3.8	119	26	⊠		

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

(CONTINUED ON FOLLOWING FIGURE)

Palmdale Medical Center
Palmdale, California

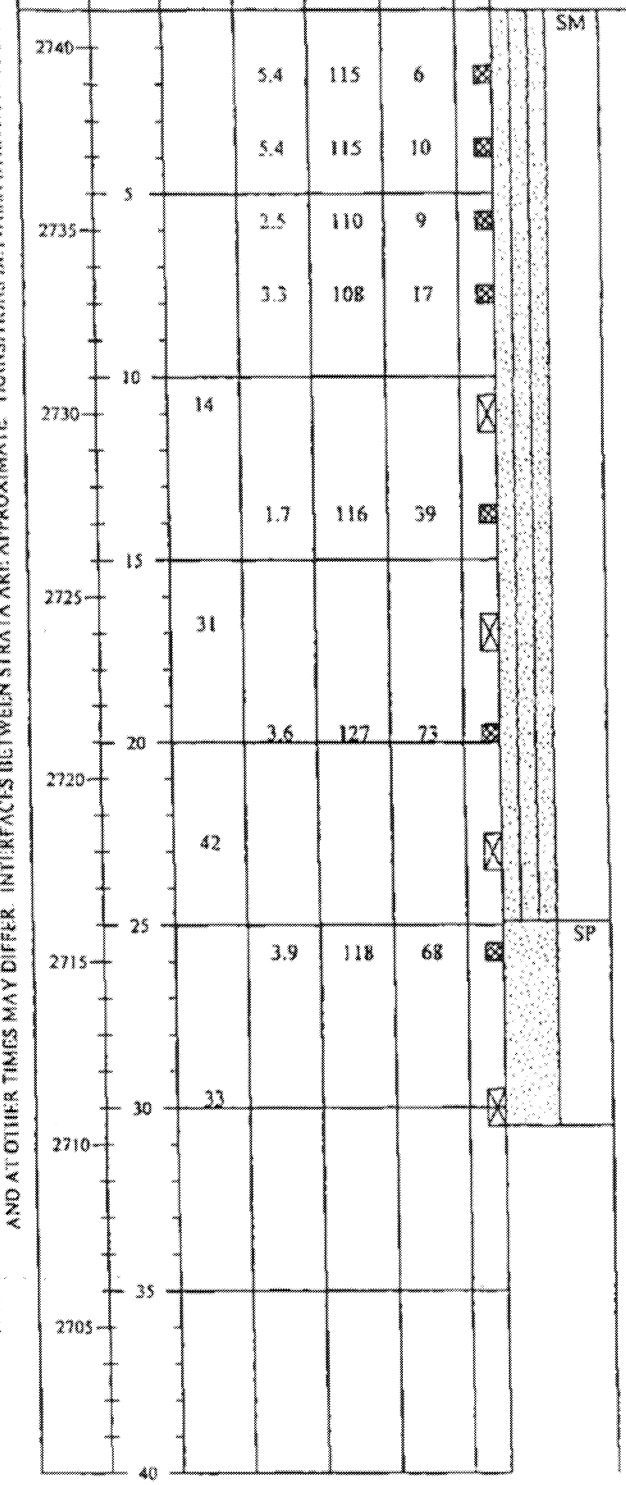
MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.4

BI1504L CRANDALL 3110LGPJ LAW_CRAN.GDT 4/25/03

BORING 5

DATE DRILLED: March 31, 2003
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 2,741**



SM SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand, trace gravel

becomes medium dense

becomes dry

coarser sand, becomes slightly moist

becomes dense and light brown

SP POORLY GRADED SAND - dense, moist, light brown, fine to coarse sand with occasional coarse

End of boring at 30½'.

NOTES:

Water not encountered.
Bottom at 17' after auger removed.
Hole backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JA

3115SOIL CRANDALL 31101.GPJ LAW_CRANGDT 4/23/03

Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1

BORING 10

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,731 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
2730						SM	SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand, trace small gravel
		4.1	115	2	⊠		
		3.8	113	4	⊠		becomes medium dense
	5						
2725		7.0	108	4	⊠		End of boring at 6'.
	10						
2720							
	15						
2715							
	20						
2710							
	25						
2705							
	30						
2700							
	35						
2695							
	40						

NOTES:

Water not encountered.
No caving or raveling.
Hole backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: SB
Checked By: JR

Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.1

DH SOIL CRANDALL 3110 GPJ LAW CRAN.GDT 4/25/03

BORING 11

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,714 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
		4.4	104	Push	⊠	SM	SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand
		4.8	108	1	⊠		
2710		3.5	107	2	⊠		
	5						End of boring at 5'.
2705	10						
2700	15						
2695	20						
2690	25						
2685	30						
2680	35						
2675	40						

NOTES:

Water not encountered.
Hole backfilled with soil cuttings and tamped.

Field Tech: AR
Prepared By: SB
Checked By: JA

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

HLSOB, GRANDALL 3110LOP LAW CHAN GHT 4/25/03

Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING
Project: 4953-03-1101 Figure: A-1.1

BORING 12

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,693 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
		8.8	107	Push	☒	SM	SILTY SAND - loose, slightly moist, reddish brown, fine to medium sand w... occasional coarse
2690		8.7	121	2	☒		
		12.1	122	10	☒		becomes medium dense, moist
	5						End of boring at 5'.
2685							
	10						
2680							
	15						
2675							
	20						
2670							
	25						
2665							
	30						
2660							
	35						
2655							
	40						

NOTES:

Water not encountered.
Hole backfilled with soil cuttings and tamped.

Field Tech: AR
Prepared By: SB
Checked By: JM

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

BLDG 8L CRANDALL 3110 UPI LAW CRAN ODT 12560

Palmdale Medical Center
Palmdale, California

MACTEC

LOG OF BORING

Project: 4[illegible]

Figure: A-1.1

BORING 13

DATE DRILLED: April 2, 2003
EQUIPMENT USED: Bucket Auger
HOLE DIAMETER (in.): 16
ELEVATION: 2,751 **

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT*** (blows/ft)	SAMPLE LOC.		
2750		5.9	110	Push	⊠	SM	SILTY SAND - loose, slightly moist, reddish brown, fine to coarse sand, trace gravel
		7.3	114	2	⊠		
	5	3.8	113	3	⊠		
2745							End of boring at 5'.
	10						
2740							
	15						
2735							
	20						
2730							
	25						
2725							
	30						
2720							
	35						
2715							
	40						

NOTES

Water not encountered.
Hole backfilled with soil cuttings and tamped.

Field Tech: AR
Prepared By: SB
Checked By: JA

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

DB19 SL CRANDALL 3100 GPI LAW CRAN GDT 4/25/03

Palmdale Medical Center
Palmdale, California

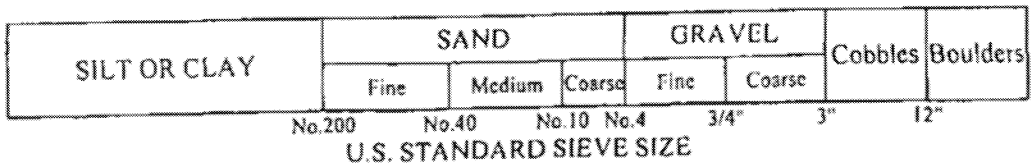
MACTEC

LOG OF BORING

Project: [illegible] Figure: A-1

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel - sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel - sand - silt mixtures.
			GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size)	CLEAN SANDS (Little or no 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 (Appreciable amount of fines)	SM	Silty sands, sand - silt mixtures
			SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts and with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, 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 and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.



Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

Undisturbed Sample	Auger Cuttings
Split Spoon Sample	Bulk Sample
Rock Core	Crandall Sampler
Dilatometer	Pressure Meter
Packer	No Recovery
Water Table at time of drilling	Water Table after 24 hours

Correlation of Penetration Resistance with Relative Density and Consistency

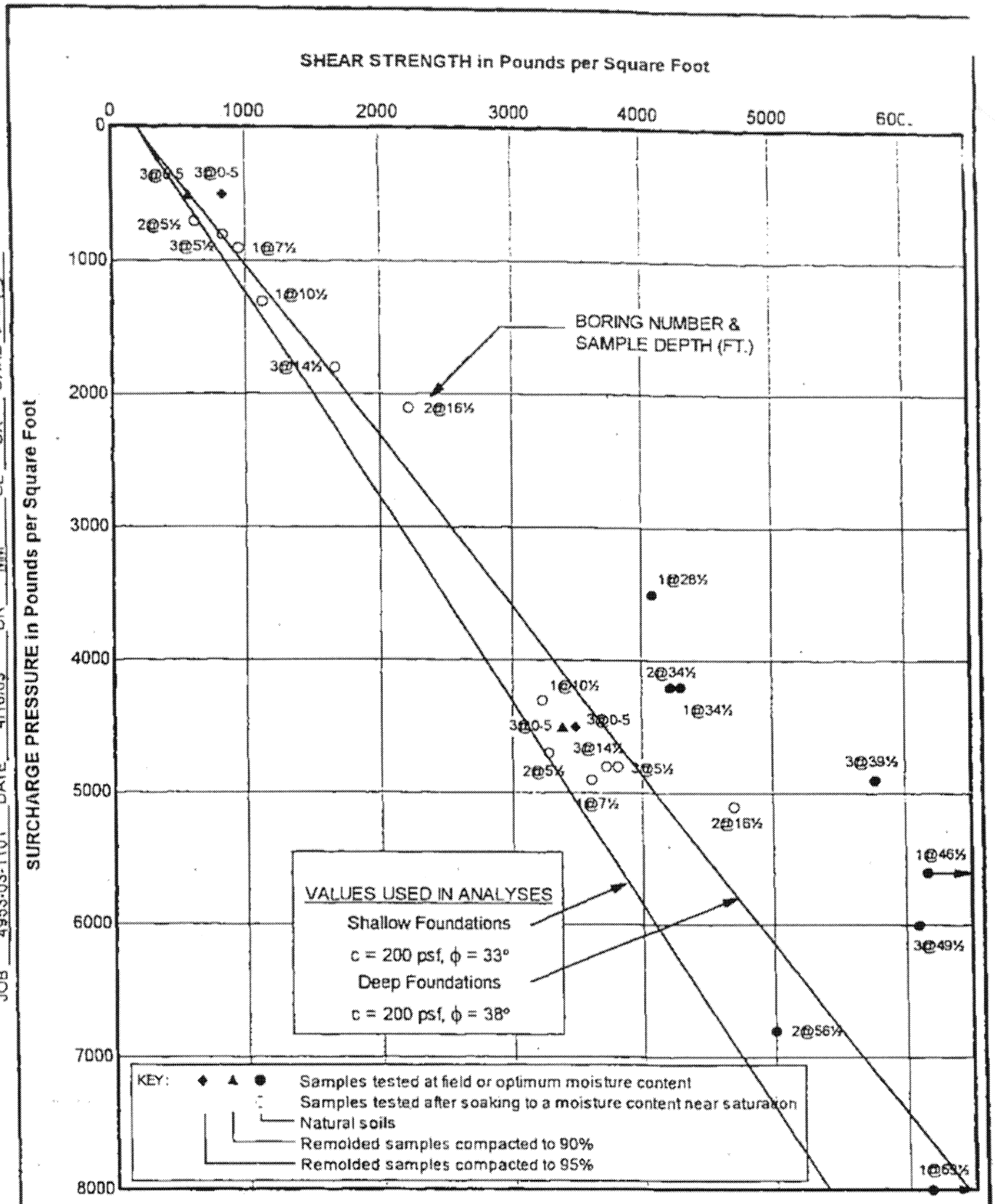
SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 1	Very Soft
5 - 10	Loose	2 - 4	Soft
11 - 30	Medium Dense	5 - 8	Medium Stiff
31 - 50	Dense	9 - 15	Stiff
Over 50	Very Dense	16 - 30	Very Stiff
		Over 30	Hard

KEY TO SYMBOLS AND DESCRIPTIONS

MACTEC

FIGURE A

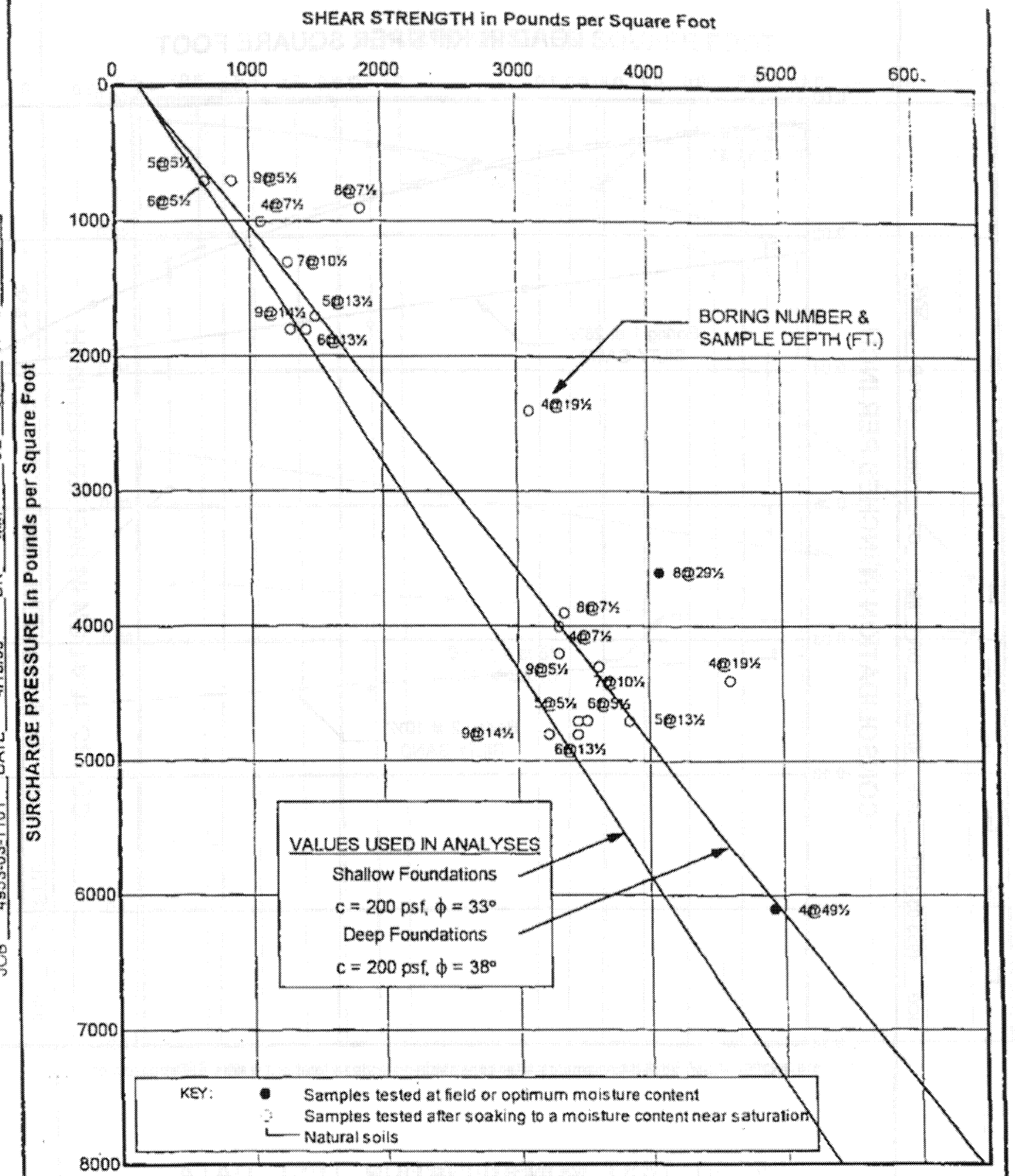
JOB 4953-03-1101 DATE 4/10/03 DR MM OE CK CHKD



DIRECT SHEAR TEST DATA
(BORINGS 1 THROUGH 3)

MACTEC

FIGURE A - 3.1



DIRECT SHEAR TEST DATA
(BORINGS 4 THROUGH 9)

MACTEC

FIGURE A - 3.2

APPENDIX 10.6:
HYDROLOGY REPORT

JACOBS

Conceptual Hydrology Study for Palmdale Medical Center Site

We are providing a conceptual hydrology analysis, for the new Palmdale Medical Center site.
According to a previous study done by CCL Engineering, a 36" pipe will be aligned through this hospital site, carrying a 97cfs peak flow conveyed from the adjacent land south of this subject site. The flow discharge produced from the Hospital site will be joined with the 36" pipe.

The City of Palmdale Design Standards state that, the peak flow of this site will be limited to 85% of its pre-developed condition. Our study reveal that the undeveloped condition, 50 year discharge, is 77 cfs where the developed condition discharge is 89 cfs. Limiting the discharge to 85% of its undeveloped level will result in a flow of 65cfs. In order to maintain this limit, a detention basin of approximately 34,000 ft^3 will be necessary. A detention basin with such capacity, located at the northeast corner of this site is feasible. Connecting with the 65cfs flow with the 97cfs coming from the adjacent land, will produce a flow of 162cfs. The size of a pipe to accomodate this discharge will be determined during the final design phase.

RECEIVED
MAY 13 2003
PLANNING
CUP 03-09

JE JACOBS

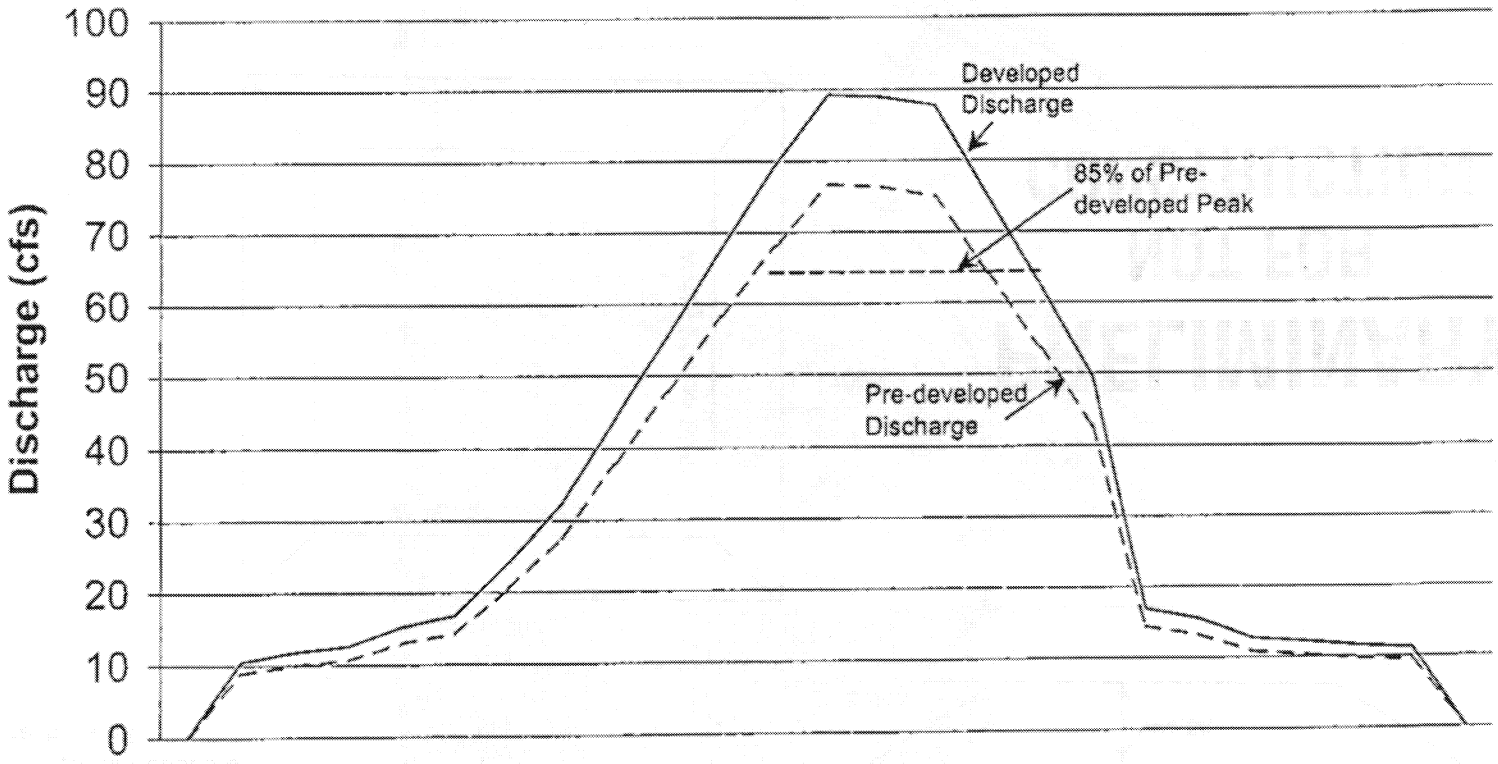
A_c=	1,729,000	ft^2	=	39.69238	acres
Reach Length			=	1650	ft
Elevation			=	92	ft
Slope			=	0.05515	
Soil Type No.			=	120	App. A
Imperviousness			=	0.92	App. F
Rain Zone			=	J	App. A
T_c			=	7	min.

PRELIMINARY

NOT FOR CONSTRUCTION

Time	I	K	Cu Undevel.	Cd Develop.	Cb Undevel.	Cb Develop.	Q (cfs) Undevelop	Q (cfs) Develop.	Limit to 85% of undevelop. peak	Developed minus 85% Undev. Q	Volume of Basin Ft^3
912	0.290	0.765	0.700	0.884	0.771	0.91126	9	10	9	2	8555
1000	0.326	0.760	0.700	0.884	0.772	0.91184	10	12	10	2	10857
1100	0.348	0.760	0.700	0.884	0.772	0.91184	11	13	11	2	2318
1120	0.420	0.743	0.700	0.884	0.777	0.913812	13	15	13	2	1367
1130	0.462	0.735	0.700	0.884	0.780	0.91474	14	17	14	2	1488
1140	0.660	0.707	0.690	0.8832	0.781	0.917422	20	24	20	4	1718
1148	0.883	0.688	0.690	0.8832	0.787	0.919642	28	32	28	5	280
1149	1.200	0.665	0.690	0.8832	0.794	0.922328	38	44	38	6	367
1150	1.517	0.648	0.680	0.8824	0.793	0.923795	48	56	48	8	474
1151	1.843	0.636	0.680	0.8824	0.796	0.925206	58	68	58	9	565
1152	2.160	0.626	0.670	0.8816	0.793	0.925882	68	79	65	14	863
1153	2.426	0.618	0.670	0.8816	0.796	0.926829	77	89	65	24	1455
1154	2.417	0.619	0.670	0.8816	0.796	0.92671	76	89	65	24	1434
1155	2.383	0.609	0.660	0.8808	0.793	0.927407	75	88	65	23	1363
1156	2.042	0.631	0.670	0.8816	0.792	0.92529	64	75	65	10	600
1157	1.701	0.641	0.680	0.8824	0.795	0.924618	54	62			33703
1158	1.351	0.659	0.690	0.8832	0.796	0.923029	43	49			
1165	0.466	0.735	0.700	0.884	0.780	0.91474	14	17			
1170	0.426	0.740	0.700	0.884	0.778	0.91416	13	15			
1180	0.351	0.755	0.700	0.884	0.774	0.91242	11	13			
1190	0.336	0.760	0.700	0.884	0.772	0.91184	10	12			
1200	0.319	0.753	0.700	0.884	0.774	0.912652	10	12			
1212	0.310	0.765	0.700	0.884	0.771	0.91126	9	11			

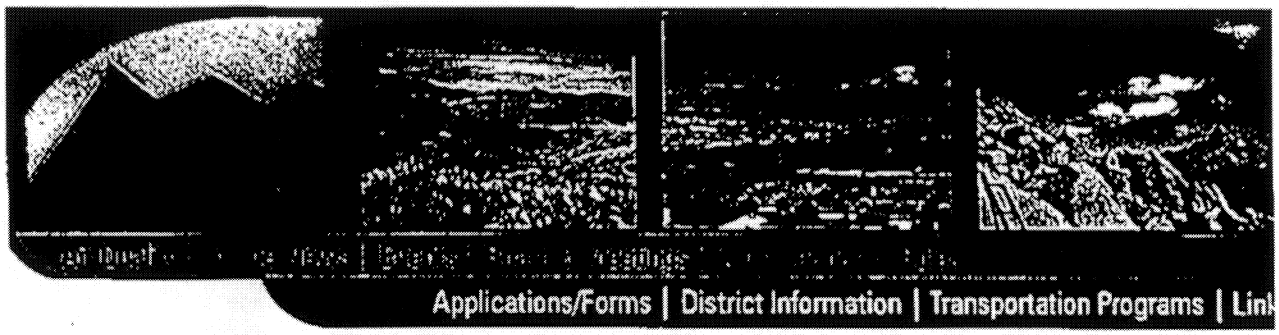
JACOBS



PRELIMINARY

NOT FOR CONSTRUCTION

APPENDIX 10.7:
AIR QUALITY DATA



Antelope Valley Air Quality Management District
Air Quality Data - Lancaster Site

Today's Forecast • Tomorrow's Forecast
Ozone Mapping • Hourly Air Quality Report (AQI) • Raw Hourly Data

Yearly Summaries: 1994 - 2002

OZONE				
Year	Days exceeding state standard	Days exceeding 1 hour federal standard	Days exceeding 8 hour federal standard	Max. 1 hr. reac million
1994	62	10	na	.1
1995	61	5	na	.1
1996	40	1	na	.1
1997	13	0	na	.1
1998	24	8	18	.1
1999	1	0	0	.1
2000	35	2	28	.1
2001	37	3	28	.1
2002	46	5	41	.1

State Standard: 0.09 ppm based on 1 hr. average.
Federal standard: 0.12 ppm based on 1 hr. average.
0.08 ppm based on 8 hr. average

PM-10			
Year	Days exceeding state standard	Days exceeding federal standard	Max. 24
1994	3	0	
1995	3	0	
1996	2	0	
1997	2	0	

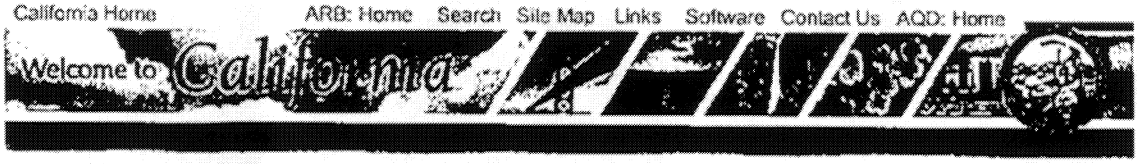
1998	2	0	
1999	2	0	
2000	6	0	
2001	5	0	
2002	1	0	

State Standard: 50 ug/m3 based on 24 hour average.
Federal Standard: 150 ug/m3 based on 24 hour average.

It's a breath of fresh air!

[Air Quality] • [In The News] • [Events] • [Board & Meetings] • [Kid's Section] • [Rules]
[Applications/Forms] • [District Information] • [Transportation Programs] • [Links]

Antelope Valley Air Quality Management District
43301 Division St. Suite 206
Lancaster, CA 93535-4649
661-723-8070 • 661-723-3450 Fax



Highest 4 Daily Maximum Hourly Ozone Measurements

Lancaster-43301 Division Street

Year:	2001		2002		2003	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Nov 6	0.052	Jul 9	0.157	Jul 11	0.156
Second High:	Nov 3	0.051	Sep 24	0.135	Jul 9	0.133
Third High:	Nov 2	0.050	Jun 29	0.130	Jul 19	0.127
Fourth High:	Nov 17	0.050	Jun 15	0.128	Jul 23	0.125
# Days Above Nat'l Standard:		0		5		4
# Days Above State Standard:		0		46		50
Year Coverage:		0		99		98

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All concentrations are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
National exceedances are also state exceedances.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
Blanks mean that there was insufficient data available to determine the value.

Switch: 8-Hour Ozone | PM10 | PM2.5 | Carbon Monoxide | Nitrogen Dioxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

View this page for another pollutant:

Hourly O_3

8-Hour O_3

PM 10

PM 2.5

CO

NO_2

SO_2

Lead

Start Over:

Data Statistics Home

Highest 4 Daily Maximum Hourly Ozone Measurements

and Number of Days Above the Hourly Standards at Lancaster-W Pondera Street

parts per million

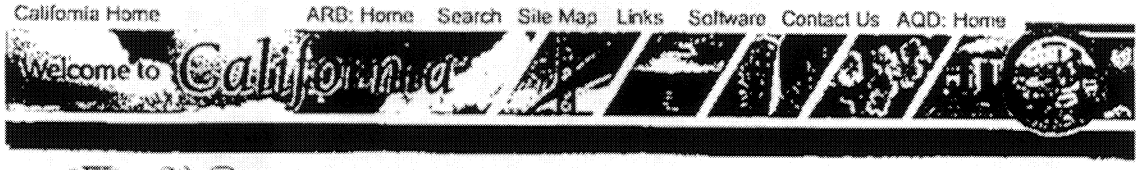
	1999		2000		2001	
High	Jun 29	0.097	Jul 25	0.141	Jul 02	0.146
2nd High	Jun 30	0.093	May 28	0.125	Jun 19	0.133
3rd High	Jun 18	0.089	Jun 15	0.120	Aug 27	0.128
4th High	May 08	0.087	Jul 31	0.120	Aug 18	0.124
*Days > State Standard		1		35		37
*Days > National Standard		0		2		3
**Year Coverage		97		97		97

Go Backward a Year | Go Forward a Year

Make a New Request

* The number of days at least one measurement was greater than the level of the state hourly standard (0.09 parts per million) or the national hourly standard (0.12 parts per million). The number of days above the standard is not necessarily the number of violations of the standard for the year.

** Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the year become available. Year Coverage is blank when the data history at the site is insufficient to determine when high concentrations are expected.



Air Resources Board

iADAM

Highest 4 Daily Maximum 8-Hour Ozone Averages

Lancaster-43301 Division Street

Year:	2001		2002		2003	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Nov 3	0.044	Aug 17	0.107	Jul 9	0.120
Second High:	Nov 6	0.043	Jul 31	0.106	Jul 11	0.120
Third High:	Nov 21	0.041	Aug 13	0.103	Jul 12	0.106
Fourth High:	Nov 17	0.040	Aug 18	0.102	Aug 15	0.104
# Days Above Nat'l Standard:		0		38		33
Year Coverage:		0		99		98

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All averages are expressed in parts per million.
National exceedances are shown in orange . An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
Blanks mean that there was insufficient data available to determine the value.

Switch: Hourly Ozone | PM10 | PM2.5 | Carbon Monoxide | Nitrogen Dioxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

View this page for another pollutant:

Hourly O_3
8-Hour O_3
PM 10
PM 2.5
CO
NO_2
SO_2
Pb

Start Over:

Data Statistics Home

Highest 4 Daily Maximum 8-Hour Ozone Averages

and Number of Days Above the 8-Hour Standard at Lancaster-W Pondera Street

parts per million

	1999		2000		2001	
High	Jun 29	0.083	Jul 25	0.117	Aug 18	0.102
2nd High	May 08	0.082	Jun 15	0.105	Aug 28	0.102
3rd High	Aug 13	0.078	Aug 12	0.100	Aug 27	0.101
4th High	Jun 30	0.076	Aug 22	0.099	Jun 01	0.100
*Days > Nat'l Standard	0		28		24	
**Year Coverage	97		97		97	

Go Backward a Year | Go Forward a Year

Make a New Request

* The number of days at least one overlapping 8-hour average was greater than the level of the national 8-hour standard (0.08 parts per million). The number of days above the standard is not the number of violations of the standard for the year.

** Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the year become available. Year Coverage is blank when the data history at the site is insufficient to determine when high concentrations are expected.

Highest 4 Daily Maximum 8-Hour Carbon Monoxide Averages

Lancaster-43301 Division Street

Year:	2001		2002		2003	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Dec 19	1.70	Sep 6	2.24	Dec 3	1.88
Second High:	Dec 20	1.64	Sep 6	2.21	Dec 18	1.77
Third High:	Nov 10	1.59	Sep 6	2.18	Jan 3	1.70
Fourth High:	Dec 13	1.54	Sep 4	2.03	Jan 14	1.61
California:						
First High:	Dec 18	1.70	Sep 6	2.24	Dec 3	1.88
Second High:	Dec 19	1.64	Sep 3	2.03	Dec 18	1.77
Third High:	Nov 9	1.59	Dec 12	2.00	Jan 2	1.70
Fourth High:	Dec 13	1.54	Jan 25	1.67	Jan 14	1.61
# Days Above Nat'l Standard:		0		0		0
# Days Above State Standard:		0		0		0
Year Coverage:		51		98		97

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All averages are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
Blanks mean that there was insufficient data available to determine the value.

Switch: Hourly Ozone | 8-Hour Ozone | PM10 | PM2.5 | Nitrogen Dioxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

View this page for another pollutant:
Hourly O_3
8-Hour O_3
PM 10
PM 2.5
CO
NO_2
SO_2
Toxics

Start Over:
Data Statistics Home

Highest 4 Daily Maximum 8-Hour Carbon Monoxide Averages

and Number of Days Above the 8-Hour Standards at Lancaster-W Pondera Street

parts per million

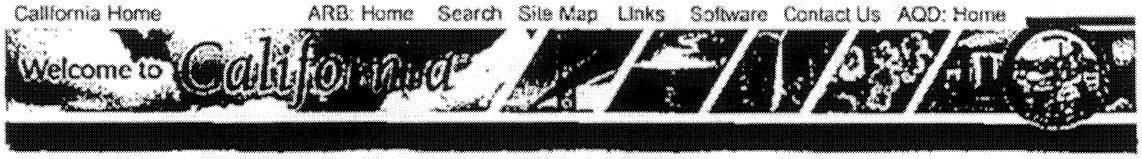
	1999		2000		2001	
High	Jan 06	5.41	Dec 30	4.34	Jan 07	3.33
2nd High	Jan 02	3.99	Dec 01	3.87	Jan 05	2.90
3rd High	Dec 17	3.97	Nov30	3.83	Jan 04	2.61
4th High	Jan 05	3.91	Dec 20	3.79	Oct 25	2.41
*Days > State Standard		0		0		0
*Days > Nat'l Standard		0		0		0
**Year Coverage		97		99		43

Go Backward a Year | Go Forward a Year

Make a New Request

* The number of days at least one non-overlapping 8-hour average was greater than the level of the state 8-hour standard (9.0 parts per million) or the national 8-hour standard (9 parts per million). The number of days above the standard is not necessarily the number of violations of the standard for the year.

** Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the year become available. Year Coverage is blank when the data history at the site is insufficient to determine when high concentrations are expected.



Air Resources Board

Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

Lancaster-43301 Division Street

Year:	2001		2002		2003	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Nov 16	0.060	Jun 29	0.101	May 23	0.067
Second High:	Nov 19	0.052	Nov 22	0.067	May 13	0.063
Third High:	Nov 20	0.049	Aug 13	0.066	Sep 15	0.062
Fourth High:	Nov 9	0.048	Aug 28	0.063	Jul 15	0.060
# Days Above State Standard:		0		0		0
Annual Average:				0.016		0.015
Year Coverage:		23		99		96

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All concentrations are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
Blanks mean that there was insufficient data available to determine the value.

Switch: Hourly Ozone | 8-Hour Ozone | PM10 | PM2.5 | Carbon Monoxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

View this page for another pollutant:

Hourly O_3
8-Hour O_3
PM 10
PM 2.5
CO
NO_2

Start Over:

Data Statistics Home

ARB Home | AQD Home | Search | Site Map | Contact Us

Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

and Number of Days Above the Hourly Standard

at Lancaster-W Pondera Street

parts per million

	1999		2000		2001	
High	Nov 04	0.083	Nov 29	0.065	Oct 26	0.075
2nd High	Jan 11	0.078	Oct 17	0.062	Oct 15	0.066
3rd High	Nov 02	0.074	Sep 06	0.061	Oct 14	0.063
4th High	Nov 05	0.068	Jul 25	0.061	Jan 06	0.060
*Days > State Standard		0		0		0
Annual Average		0.018		0.016		
**Year Coverage		92		98		70

Go Backward a Year

Make a New Request

* The number of days at least one measurement was greater than the level of the state hourly standard (0.25 parts per million). The number of days above the standard is not necessarily the number of violations of the standard for the year.

** Year Coverage indicates how extensive monitoring was during the time of year when high pollutant concentrations are expected. Year coverage ranges from 0 to 100. For example, a Year Coverage of 75 indicates that monitoring occurred 75% of the time when high pollutant concentrations are expected. For the current year, Year Coverage will be 0 at the beginning of the year and will increase as the data for the year become available. Year Coverage is blank when the data history at the site is insufficient to determine when high concentrations are expected.

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Palmdale Medical Center.urb
Project Name: Palmdale Medical Center
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2005 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	42.21	293.89	340.68	0.20	63.00	12.98	50.02
TOTALS (lbs/day, mitigated)	42.21	293.89	340.68	0.20	37.62	12.98	24.64

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	4.36	3.42	2.82	0.00	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	89.55	96.64	1,182.47	1.04	91.89
TOTALS (lbs/day, mitigated)	88.03	94.76	1,159.54	1.02	90.11

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	93.91	100.06	1,185.29	1.05	91.90

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Palmdale Medical Center.urb
Project Name: Palmdale Medical Center
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Winter)

CONSTRUCTION EMISSION ESTIMATES

*** 2005 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	42.21	293.89	340.68	0.20	63.00	12.98	50.02
TOTALS (lbs/day, mitigated)	42.21	293.89	340.68	0.20	37.62	12.98	24.64

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	4.16	3.40	1.38	0.00	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	99.50	165.85	1,281.76	0.91	91.89
TOTALS (lbs/day, mitigated)	97.56	162.63	1,256.75	0.89	90.11

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	103.67	169.26	1,283.14	0.91	91.90

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Palmdale Medical Center.urb
Project Name: Palmdale Medical Center
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

CONSTRUCTION EMISSION ESTIMATES

*** 2005 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (tpy, unmitigated)	3.19	22.29	25.15	0.00	13.52	0.99	2.20
TOTALS (tpy, mitigated)	3.19	22.29	25.15	0.00	9.04	0.99	1.08

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	0.78	0.62	0.38	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	16.95	21.85	221.84	0.18	16.77
TOTALS (tpy, mitigated)	16.65	21.42	217.53	0.18	16.44

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	17.73	22.47	222.22	0.18	16.77

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Air Resources Board

Highest 4 Daily PM10 Measurements

Lancaster-W Pondera Street

Year:	1999		2000		2001	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Dec 2	85.0				
Second High:	Jan 6	51.0				
Third High:	Nov 2	50.0				
Fourth High:	May 6	44.0				
California:						
First High:						
Second High:						
Third High:						
Fourth High:						
Measured:						
# Days Above Nat'l Standard:		0				
# Days Above State Standard:						
Estimated:						
3-Yr Avg # Days Above Nat'l Std:						
# Days Above Nat'l Standard:		0.0				
# Days Above State Standard:						
National 3-Year Average:						
National Annual Average:		28.7				
State 3-Yr Maximum Average:						
State Annual Average:						
Year Coverage:		95				

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All concentrations are expressed in micrograms per cubic meter.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
State statistics for 1998 and later are based on local conditions data (except for sites in the South Coast Air Basin, where statistics for all years are based on standard conditions data).
Measurements are usually collected every six days. Measured days counts the days that a measurement was greater than the level of the standard; Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.
3-Year statistics represent the listed year and the 2 years before the listed year.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
Blanks mean that there was insufficient data available to determine the value.

Switch: Hourly Ozone | 8-Hour Ozone | PM2.5 | Carbon Monoxide | Nitrogen Dioxide | Sulfur Dioxide | Hydrogen Sulfide

Go to: Data Statistics Home Page | Top 4 Summaries Start Page

Parenthetical URBEMIS2002 Assumptions
For: Palmdale Medical Center
Date: April 20, 2004

LAND USES

Amount	Land Use Type	Trip Rate	Unit Type
80	Congregate care facility	3.48	Dwelling Units
120	Medical office building	36.13	1,000 SF
300	Hospital	16.78	1,000 SF

CONSTRUCTION SOURCES

Overall Construction Settings:

Construction Start Year 2005

Period	Phase I	
	Start Date	Duration
Length of Construction Periods (Months)	January '05	12
Length of Phase I (Demolition)	n/a	0
Length of Phase 2 (Site Grading)	January '05	1.3
Length of Phase 3 (Building)	February '05	10.7
Length of Subphase 3		
Building	February '05	10.7
Asphalt	December '05	0.5
Mitigation (On/Off)		
Phase 1	Off	
Phase 2	On	
Phase 3	On	

Phase 1 - Demolition:

Off

Phase 2 - Site Grading:

Maximum Daily Acreage Disturbed

Total Acres – 37.19 acres
Total Disturbed – 37.19 acres

Fugitive Dust:

(URBEMIS2002 default all phases)

Soil Hauling

(URBEMIS2002 default all phases)

Equipment Exhaust:

2 Excavators	8 hour operation
1 Grader	8 hour operation
2 Off Highway Tractor	8 hour operation
4 Off Highway Trucks	8 hour operation
2 Other Equipment	8 hour operation
1 Rubber Tired Loader	8 hour operation
2 Scrapers	8 hour operation
2 Signal Boards	8 hour operation
2 Trenchers	8 hour operation

Phase 3 – Building Equipment:

Equipment Exhaust:

1 Concrete/Industrial Saw	8 hour operation
2 Cranes	8 hour operation
2 Other Equipment	8 hour operation
1 Rough Terrain Forklift	8 hour operation
2 Signal Board	8 hour operation

Phase 3 – Architectural Coatings:

Off

Phase 3 – Asphalt

Asphalt Paving Emissions

Acres – 25

Equipment Exhaust

1 Off Highway Truck	8 hour operation
3 Pavers	8 hour operation
5 Paving Equipment	8 hour operation
2 Rollers	8 hour operation
2 Signal Boards	8 hour operation
1 Surfacing Equipment	8 hour operation

Phase 3 - Worker Commute

(URBEMIS2002 default all phases)

Construction Mitigation:

Refer to URBEMIS2002 file output.

AREA SOURCES

Natural Gas Fuel Combustion:

(URBEMIS2002 default)

Wood Stoves Fuel Combustion:

Off

Fireplaces:

On

Landscape Maintenance Equipment:

Year of Completion – 2006
Summer Days – 180

Consumer Products:

(URBEMIS2002 default)

Area Source Mitigation:

Refer to URBEMIS2002 file output.

OPERATIONAL SOURCES

Vehicle Fleet %:

(URBEMIS2002 default all phases)

Year:

Year of Completion – 2006

Trip Characteristics:

(URBEMIS2002 Default all phases)

Temperature Data: (All phases)

30 to 95 degrees Fahrenheit

Variable Starts:

(URBEMIS2002 default all phases)

Road Dust: (All phases)

Paved – 100%
Unpaved – 0%

Pass By Trips:

Off

Double-Counting:

On

Operational Mitigation Measures:

Refer to URBEMIS 2002 file output.

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Palmdale Medical Center.urb
Project Name: Palmdale Medical Center
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)

Construction Start Month and Year: January, 2005
Construction Duration: 12
Total Land Use Area to be Developed: 37.19 acres
Maximum Acreage Disturbed Per Day: 5 acres
Single Family Units: 0 Multi-Family Units: 80
Retail/Office/Institutional/Industrial Square Footage: 420000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2005***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	50.00	-	50.00
Off-Road Diesel	41.76	292.95	330.97	-	12.97	12.97	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.45	0.94	9.71	0.00	0.03	0.01	0.02
Maximum lbs/day	42.21	293.89	340.68	0.00	63.00	12.98	50.02
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	12.34	95.57	90.56	-	4.36	4.36	0.00
Bldg Const Worker Trips	1.46	0.88	19.17	0.00	0.23	0.01	0.22
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	2.98	-	-	-	-	-	-
Asphalt Off-Road Diesel	21.84	162.91	165.19	-	7.30	7.30	0.00
Asphalt On-Road Diesel	0.72	14.33	2.65	0.20	0.33	0.32	0.01
Asphalt Worker Trips	0.13	0.08	1.68	0.00	0.02	0.00	0.02
Maximum lbs/day	25.66	177.31	169.52	0.20	7.85	7.63	0.22
Max lbs/day all phases	42.21	293.89	340.68	0.20	63.00	12.98	50.02

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '05
Phase 2 Duration: 4 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Excavators	180	0.580	8.0
1	Graders	174	0.575	8.0
2	Off Highway Tractors	255	0.410	8.0
4	Off Highway Trucks	417	0.490	8.0
2	Other Equipment	190	0.620	8.0
1	Rubber Tired Loaders	165	0.465	8.0
2	Scrapers	313	0.660	8.0
2	Signal Boards	119	0.820	8.0
2	Trenchers	82	0.695	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: May '05
Phase 3 Duration: 8 months
Start Month/Year for SubPhase Building: May '05
SubPhase Building Duration: 7 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Concrete/Industrial saws	84	0.730	8.0
2	Cranes	190	0.430	8.0
2	Other Equipment	190	0.620	8.0
1	Rough Terrain Forklifts	94	0.475	8.0

2	Signal Boards	119	0.820	8.0

SubPhase Architectural Coatings Turned OFF
Start Month/Year for SubPhase Asphalt: Dec '05
SubPhase Asphalt Duration: 1 months
Acres to be Paved: 25
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
3	Pavers	132	0.590	8.0
5	Paving Equipment	111	0.530	8.0
2	Rollers	114	0.430	8.0
2	Signal Boards	119	0.820	8.0
1	Surfacing Equipment	437	0.490	8.0

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.25	3.40	1.38	-	0.01
Wood Stoves	0.00	0.00	0.00	0.00	0.00
Fireplaces	0.00	0.00	0.00	0.00	0.00
Landscaping - No winter emissions					
Consumer Prdcts	3.91	-	-	-	-
TOTALS(lbs/day,unmitigated)	4.16	3.40	1.38	0.00	0.01

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Congregate care (Assisted	2.63	4.24	33.40	0.02	2.32
Medical office building	42.61	69.70	544.33	0.38	38.39
Hospital	54.26	91.91	704.02	0.51	51.18
TOTAL EMISSIONS (lbs/day)	99.50	165.85	1,281.76	0.91	91.89

Does not include correction for passby trips.
Includes a double counting reduction for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2006 Temperature (F): 30 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Congregate care (Assisted	3.48 trips / dwelling units	80.00	278.40
Medical office building	36.13 trips / 1000 sq. ft.	120.00	4,335.60
Hospital	16.78 trips / 1000 sq. ft.	300.00	5,034.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.60	2.20	97.30	0.50
Light Truck < 3,750 lbs	15.10	4.00	93.40	2.60
Light Truck 3,751- 5,750	15.90	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.00	1.40	95.70	2.90
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	10.00	20.00	70.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	0.00	91.70	8.30

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)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			
% of Trips - Commercial (by land use)						
Medical office building				7.0	3.5	89.5
Hospital				25.0	12.5	62.5

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Phase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 2x daily
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The landscape year changed from 2004 to 2006.

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URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\Palmdale Medical Center.urb
Project Name: Palmdale Medical Center
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: January, 2005
Construction Duration: 12
Total Land Use Area to be Developed: 37.19 acres
Maximum Acreage Disturbed Per Day: 5 acres
Single Family Units: 0 Multi-Family Units: 80
Retail/Office/Institutional/Industrial Square Footage: 420000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source *** 2005***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	50.00	-	50.00
Off-Road Diesel	41.76	292.95	330.97	-	12.97	12.97	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.45	0.94	9.71	0.00	0.03	0.01	0.02
Maximum lbs/day	42.21	293.89	340.68	0.00	63.00	12.98	50.02
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	12.34	95.57	90.56	-	4.36	4.36	0.00
Bldg Const Worker Trips	1.46	0.88	19.17	0.00	0.23	0.01	0.22
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	2.98	-	-	-	-	-	-
Asphalt Off-Road Diesel	21.84	162.91	165.19	-	7.30	7.30	0.00
Asphalt On-Road Diesel	0.72	14.33	2.65	0.20	0.33	0.32	0.01
Asphalt Worker Trips	0.13	0.08	1.68	0.00	0.02	0.00	0.02
Maximum lbs/day	25.66	177.31	169.52	0.20	7.85	7.63	0.22
Max lbs/day all phases	42.21	293.89	340.68	0.20	63.00	12.98	50.02

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '05
Phase 2 Duration: 4 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Excavators	180	0.580	8.0
1	Graders	174	0.575	8.0
2	Off Highway Tractors	255	0.410	8.0
4	Off Highway Trucks	417	0.490	8.0
2	Other Equipment	190	0.620	8.0
1	Rubber Tired Loaders	165	0.465	8.0
2	Scrapers	313	0.660	8.0
2	Signal Boards	119	0.820	8.0
2	Trenchers	82	0.695	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: May '05
Phase 3 Duration: 8 months
Start Month/Year for SubPhase Building: May '05
SubPhase Building Duration: 7 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Concrete/Industrial saws	84	0.730	8.0
2	Cranes	190	0.430	8.0
2	Other Equipment	190	0.620	8.0
1	Rough Terrain Forklifts	94	0.475	8.0

2	Signal Boards	119	0.820	8.0

SubPhase Architectural Coatings Turned OFF
Start Month/Year for SubPhase Asphalt: Dec '05
SubPhase Asphalt Duration: 1 months
Acres to be Paved: 25
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
3	Pavers	132	0.590	8.0
5	Paving Equipment	111	0.530	8.0
2	Rollers	114	0.430	8.0
2	Signal Boards	119	0.820	8.0
1	Surfacing Equipment	437	0.490	8.0

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.25	3.40	1.38	-	0.01
Wood Stoves - No summer emissions					
Fireplaces - No summer emissions					
Landscaping	0.20	0.02	1.44	0.00	0.00
Consumer Prdcts	3.91	-	-	-	-
TOTALS(lbs/day,unmitigated)	4.36	3.42	2.82	0.00	0.01

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Congregate care (Assisted	3.84	2.48	29.79	0.03	2.32
Medical office building	35.76	40.69	493.11	0.44	38.39
Hospital	49.95	53.47	659.56	0.58	51.18
TOTAL EMISSIONS (lbs/day)	89.55	96.64	1,182.47	1.04	91.89

Does not include correction for passby trips.
Includes a double counting reduction for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2006 Temperature (F): 95 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Congregate care (Assisted	3.48 trips / dwelling units	80.00	278.40
Medical office building	36.13 trips / 1000 sq. ft.	120.00	4,335.60
Hospital	16.78 trips / 1000 sq. ft.	300.00	5,034.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.60	2.20	97.30	0.50
Light Truck < 3,750 lbs	15.10	4.00	93.40	2.60
Light Truck 3,751- 5,750	15.90	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.00	1.40	95.70	2.90
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	10.00	20.00	70.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	0.00	91.70	8.30

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)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			
% of Trips - Commercial (by land use)						
Medical office building				7.0	3.5	89.5
Hospital				25.0	12.5	62.5

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Phase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
has been changed from off to on.
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Project Name: Palmdale Medical Center
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

Construction Start Month and Year: January, 2005
Construction Duration: 12
Total Land Use Area to be Developed: 37.19 acres
Maximum Acreage Disturbed Per Day: 5 acres
Single Family Units: 0 Multi-Family Units: 80
Retail/Office/Institutional/Industrial Square Footage: 420000

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (tons/year)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2005***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	2.20	-	2.20
Off-Road Diesel	1.84	12.88	14.56	-	0.56	0.56	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.04	0.40	0.00	0.00	0.00	0.00
Total tons/year	1.84	12.92	14.96	0.00	10.48	0.56	2.20
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	0.98	7.35	7.00	-	0.35	0.35	0.00
Bldg Const Worker Trips	0.09	0.07	1.32	0.00	0.00	0.00	0.00
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.03	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.24	1.79	1.82	-	0.08	0.08	0.00
Asphalt On-Road Diesel	0.01	0.16	0.03	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Total tons/year	1.35	9.37	10.19	0.00	3.04	0.43	0.00
Total all phases tons/yr	3.19	22.29	25.15	0.00	13.52	0.99	2.20

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jan '05
Phase 2 Duration: 4 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Excavators	180	0.580	8.0
1	Graders	174	0.575	8.0
2	Off Highway Tractors	255	0.410	8.0
4	Off Highway Trucks	417	0.490	8.0
2	Other Equipment	190	0.620	8.0
1	Rubber Tired Loaders	165	0.465	8.0
2	Scrapers	313	0.660	8.0
2	Signal Boards	119	0.820	8.0
2	Trenchers	82	0.695	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: May '05
Phase 3 Duration: 8 months
Start Month/Year for SubPhase Building: May '05
SubPhase Building Duration: 7 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Concrete/Industrial saws	84	0.730	8.0
2	Cranes	190	0.430	8.0
2	Other Equipment	190	0.620	8.0
1	Rough Terrain Forklifts	94	0.475	8.0

2	Signal Boards	119	0.820	8.0

SubPhase Architectural Coatings Turned OFF
Start Month/Year for SubPhase Asphalt: Dec '05
SubPhase Asphalt Duration: 1 months
Acres to be Paved: 25
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Off Highway Trucks	417	0.490	8.0
3	Pavers	132	0.590	8.0
5	Paving Equipment	111	0.530	8.0
2	Rollers	114	0.430	8.0
2	Signal Boards	119	0.820	8.0
1	Surfacing Equipment	437	0.490	8.0

AREA SOURCE EMISSION ESTIMATES

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.05	0.62	0.25	-	0.00
Wood Stoves	0.00	0.00	0.00	0.00	0.00
Fireplaces	0.00	0.00	0.00	0.00	0.00
Landscaping	0.02	0.00	0.13	0.00	0.00
Consumer Prdcts	0.71	-	-	-	-
TOTALS (tpy, unmitigated)	0.78	0.62	0.38	0.00	0.00

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Congregate care (Assisted	0.63	0.56	5.66	0.00	0.42
Medical office building	6.94	9.19	93.11	0.08	7.01
Hospital	9.38	12.10	123.07	0.10	9.34
TOTAL EMISSIONS (tons/yr)	16.95	21.85	221.84	0.18	16.77

Does not include correction for passby trips.
Includes a double counting reduction for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2006 Temperature (F): 95 Season: Annual

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Congregate care (Assisted	3.48 trips / dwelling units	80.00	278.40
Medical office building	36.13 trips / 1000 sq. ft.	120.00	4,335.60
Hospital	16.78 trips / 1000 sq. ft.	300.00	5,034.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.60	2.20	97.30	0.50
Light Truck < 3,750 lbs	15.10	4.00	93.40	2.60
Light Truck 3,751- 5,750	15.90	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.00	1.40	95.70	2.90
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	10.00	20.00	70.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	0.00	91.70	8.30

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)	35.0	40.0	40.0	40.0	40.0	40.0
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% of Trips - Commercial (by land use)						
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APPENDIX 10.8:
BIOLOGICAL REPORT

BonTerra
CONSULTING
An Environmental Planning/Resource Management Corporation

March 5, 2003

Mr. Alan Ashamine
RBF Consulting
14725 Alton Parkway
Irvine, CA 92616-2027

VIA FACSIMILE AND MAIL
(949) 472-8373

Subject: Biological Constraints Survey for an Approximately 40-acre Site in the City of Palmdale, Los Angeles County, California

Dear Mr. Ashamine:

This letter report summarizes the findings of a survey to assess the biological resources of an approximately 40-acre project site in the City of Palmdale, Los Angeles County (hereafter referred to as the project site). The purpose of the survey was to evaluate any potential biological constraints that may be present on the project site. The survey was conducted on February 4, 2003 by Sam Stewart of BonTerra Consulting.

Project Location and Description

The project site is an irregularly shaped parcel located to the southeast of the intersection of Tierra Subida Avenue and North Palmdale Boulevard (County Highway N2), north of Avenue 0-8, approximately one half-mile west of State Route 14 (SR-14). The project site is located on the U.S. Geological Survey's (USGS) Ritter Ridge, California Quadrangle at Township 4S, Range 6E, and includes a portion of Section 15 (USGS 1974). The regional location and local vicinity of the project site are presented in Exhibits 1 and 2, respectively.

The project site consists of an undeveloped parcel bordered to the south by Avenue 0-8 and single-family residential development; to the west by Tierra Subida Avenue and single-family residential development; to the north by County Highway N2, vacant land, and commercial development; and to the east by vacant land and commercial development. The site is approximately one mile east of the Amargosa Creek wash, one mile north of the Ana Verde Creek, three miles north of the east-west trending Sierra Pelona Hills, and six miles north of the Angeles National Forest.

Topography on the project site is relatively flat, sloping gradually downward from southwest to northeast, with elevations ranging from approximately 2,695 feet (ft) above mean sea level (msl) to 2,725 ft above msl. Substrate within the project site consists of poorly sorted, medium-grained (1/16 to 2 millimeter [mm] diameter), sub-angular sand (sphericity of 0.5-0.9 and roundess of 0.1-0.5) with scattered patches of pebbles (4-64 mm in diameter). One fluvial feature crosses the project site from southwest to northeast in the form of an incised channel (approximately 6-feet below grade) that gradually levels out to grade in the center of the site. The channel appears to have been formed by runoff from a storm drain outlet located immediately to the southwest of the project site. Flows on the project site appear to travel in a northeastern path, spreading out in a sheet flow in the center of the site. The site is not currently enclosed by fencing; however, disturbance from off-road vehicle use,

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pedestrian traffic, and refuse dumping is minimal. One off-road trail bisects the site from northwest to southeast.

Survey Methods

BonTerra Consulting conducted a search of available literature to identify special status plants, wildlife, and habitats known to occur in the vicinity of the project site. The California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2001 and 2002) and compendia of special status species published by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) were reviewed. In addition, the CDFG's California Natural Diversity Database was reviewed (CDFG 2002).

A general biological survey was conducted on February 4, 2003 by Mr. Stewart to describe the vegetation and evaluate the potential of habitats on the project site to support special status plant and wildlife species. The timing of the survey was not conducive to identifying many annual or bulbiferous plant species and wildlife species that hibernate during the winter; however, potential habitat to support these species could be identified.

All plant and wildlife species or signs of presence observed were recorded in field notes. Plant species were identified in the field or collected for future identification. Plants were identified using keys in Hickman (1993), Munz (1974), and Abrams (1923,1960). Taxonomy follows Hickman (1993) for scientific and common names. Taxonomy and nomenclature for wildlife generally follows AOU (1998) for birds and Laudenslayer et al. (1991) for all other terrestrial vertebrates. All wildlife species observed were recorded in field notes.

Survey Results

Vegetation

Vegetation on the project site consists of one type following the Sawyer/Keeler Wolf (1994) and Holland (1987) classification systems. This vegetation type consists of rabbitbrush scrub, which is present throughout the project site.

Rabbitbrush scrub is characterized by rubber rabbitbrush (*Chrysothamnus nauseosus*) as the sole or dominant shrub in the canopy with other plants growing at lower densities. Other shrubs present on the project site include big sagebrush (*Artemesia tridentata*), California buckwheat (*Eriogonum fasciculatum*), and boxthorn (*Lycium* sp.). The sub-shrub/ground cover layer on the project site is dominated by red-stemmed filaree (*Erodium cicutarium*) and lupine (*Lupinus* sp.) with fiddleneck (*Amsinckia intermedia*), cammissonia (*Cammissonia* sp.), cryptantha (*Cryptantha* sp.), buckwheat (*Eriogonum* sp.), Spanish needle (*Palafoxia linearis*), pectocarya (*Pectocarya linearis*), ragwort (*Senecio* sp.), and sisymbrium (*Sisymbrium altissimum*) occurring at lower densities. Non-native grasses occurring throughout the project site include oat (*Avena* sp.), red brome (*Bromus diandrus*), and Mediterranean schismus (*Schismus barbatus*).

Wildlife

Vegetation on the project site provides potential habitat for a number of wildlife species. Wildlife species found or expected on the project site include species associated with rabbitbrush scrub.

Common reptile species potentially occurring on the project site include side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), western whiptail (*Cnemidophorus tigris*), coachwhip (*Masticophis flagellum*), western patch-nosed snake (*Salvadora hexalepis*), gopher snake (*Pituophis melanoleucus*), California glossy snake (*Arizona elegans*), night snake

(*Hypsiglena torquata*), and southern Pacific rattlesnake (*Crotalus viridus helleri*). No fish or amphibian species would be expected to occur on the project site due to the lack of permanent or temporary surface water bodies within the project site and immediate vicinity.

Common bird species or evidence of their presence observed during the survey included ring-billed gull (*Larus delawarensis*), California gull (*Larus californicus*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), Say's phoebe (*Sayornis saya*), common raven (*Corvus corax*), great-tailed grackle (*Quiscalus mexicanus*), house wren (*Troglodytes aedon*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), lark sparrow (*Chondestes grammacus*), Lincoln's sparrow (*Melospiza lincolni*), western meadowlark (*Sturnella neglecta*), and house finch (*Carpodacus mexicanus*). Other year-round resident desert species potentially occurring on the project site include common ground dove (*Columbina passerina*), greater roadrunner (*Geococcyx californianus*), Anna's hummingbird (*Calypte anna*), loggerhead shrike (*Lanius ludovicianus*), horned lark (*Eremophila alpestris*), verdin (*Auriparus flaviceps*), Brewer's blackbird (*Euphagus cyanocephalus*), and house sparrow (*Passer domesticus*).

No raptor species or evidence of their presence was observed during the survey. However, the project site may provide potential foraging habitat for raptor species including turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), prairie falcon (*Falco mexicanus*), and American kestrel (*Falco sparverius*). No nesting habitat for these species is present on the project site. The project site provides potentially suitable habitat for the burrowing owl (*Athene cunicularia*). No burrowing owl or evidence of presence was observed on the project site; however, numerous California ground squirrel (*Spermophilus beecheyi*) burrows were observed throughout the project site. Burrowing owl is known to prey on California ground squirrel and occupy their vacated burrows. Therefore, the project site provides suitable foraging and breeding habitat for the burrowing owl.

One common mammal species, California ground squirrel, was observed in high numbers throughout the project site. Additionally, native canid scat was detected on the project site indicating the presence of both desert kit fox (*Vulpes velox*) and coyote (*Canis latrans*). Active burrows are present throughout the project site and could provide cover for a number of small mammal species. Other mammal species potentially occurring on the project site include black-tailed jackrabbit (*Lepus californicus*), little pocket mouse (*Perognathus longimembris*), western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), and house mouse (*Mus musculus*).

Special Status Biological Resources

BonTerra Consulting conducted a literature search to identify special status plants, wildlife, and habitats known to occur in the vicinity of the project site. Special status biological resources include plant and wildlife species, and habitats that have been afforded special status and/or recognition by federal and/or state resource agencies, as well as private conservation organizations. In general, the principal reason an individual taxon (e.g., species, subspecies, or variety) is given such recognition is the documented or perceived decline or limitation of its population size or geographic range and/or its distribution, resulting in most cases from habitat loss.

Special Status Plant Species

Of those plant species that occur in the region, thirteen species are listed or proposed for listing as Endangered or Threatened by the CDFG and/or the USFWS, or are CNPS List 1B, List 2, or List 3 species. Brief descriptions of these species are listed below alphabetically according to their scientific names. Additionally, these species along with their listing status and potential for occurrence are listed on Table 1.

TABLE 1
SPECIAL STATUS PLANT SPECIES KNOWN
TO OCCUR IN THE PROJECT REGION

Species	Status		Potential For Occurrence
	Federal/State	CNPS	
Arctostaphylos gabrielensis San Gabriel Manzanita	None	1B	None; lack of suitable habitat, below elevation range
Aster greatae Greata's aster	None	1B	None; lack of suitable habitat
Astragalus preussii var. *laxiflorus* Lancaster milk-vetch	None	1B	Low; marginally suitable habitat present
Calochortus clavatus var. *gracilis* Slender mariposa lily	None	1B	None; lack of suitable habitat
Calochortus striatus Alkali mariposa lily	None	1B	Low; limited marginally suitable habitat present
Castilleja gleasonii Mount Gleason Indian paintbrush	R	1B	None; lack of suitable habitat, below elevation range
Chorizanthe parryi var. *parryi* Parry's spineflower	None	3	Low; limited marginally suitable habitat present
Chorizanthe xanti var. *leucotheca* White-bracted spineflower	None	1B	Low to moderate; limited suitable habitat
Dodecahema leptoceras Slender-horned spineflower	FE/CE	1B	None; above elevation range
Lilium parryi Lemon lily	None	1B	None; lack of suitable habitat, below elevation range
Linanthus concinnus San Gabriel linanthus	None	1B	None; below elevation range
Opuntia basilaris var. *brachyclada* Short-joint beavertail	None	1B	None; not observed
Stylocline masonii Mason's neststraw	None	1B	Low; limited marginally suitable habitat present

Federal Designations:
FE = Listed by the federal government as an Endangered species.
FT = Listed by the federal government as a Threatened species.
SOC = Species of Concern (as noted by CNDDB 2000A), former FC2 species.

State Designations:
CE = Listed as Endangered by the State of California.
CT = Listed as Threatened by the State of California.
R = Considered "Rare" by the State of California

California Native Plant Society (CNPS):
CNPS 1A = Plants presumed extinct in California.
CNPS 1B = Plants considered Rare, Threatened or Endangered in California and elsewhere.
CNPS 2 = Plants Rare, Threatened or Endangered in California but more common elsewhere.
CNPS 3 = Plants about which we need more information - A review list.
CNPS 4 = Plants of limited distribution - A watch list.

Source: BonTerra Consulting, August 2003

San Gabriel Manzanita (*Arctostaphylos gabrielensis*)

The San Gabriel manzanita is a CNPS List 1B species that typically blooms in March. It is an evergreen shrub that occurs in chaparral with rocky soils at an elevation of approximately 4,900-feet above msl. It is known only from one population in the San Gabriel Mountains. Substrate on the project site consists of stabilized, medium to coarse-grained sands and gravels and does not represent favorable habitat for this species. Additionally, the project site is below the known

elevation range for this species. Therefore, the San Gabriel manzanita is not expected to occur on the project site.

Greata's Aster (*Aster greatae*)

The Greata's aster is a CNPS List 1B species that typically blooms between March and October. It is a rhizomatous, perennial herb that occurs in mesic areas within broadleaved upland forests, chaparral, cismontane woodland, coniferous forests, and riparian woodlands from approximately 985 to 6,600 feet above msl. The project site contains xeric scrub habitat that is not suitable for this species. Therefore, the Greata's aster is not expected to occur on the project site.

Lancaster Milk-Vetch (*Astragalus preusii* var. *laxiflorus*)

The Lancaster milk-vetch is a CNPS List 1B species that typically blooms between March and May. It is a perennial herb that occurs in chenopod scrub at approximately 2,300 feet above msl. This species is known only from one location in the vicinity of Lancaster. The project site contains xeric scrub habitat that is not considered suitable for this species. However, the project site is located in close proximity to areas known to be occupied by this species. Therefore, Lancaster milk-vetch is considered to have a low potential to occur on the project site.

Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

The slender mariposa lily is a CNPS List 1B species that typically blooms between March and May. It is a bulbiferous perennial herb that occurs in shaded foothill canyons containing chaparral or coastal scrub from approximately 1,180 to 3,280 ft above msl. The project site contains open, xeric scrub habitat that is not considered suitable for this species. Therefore, the slender mariposa lily is not expected to occur on the project site.

Alkali Mariposa Lily (*Calochortus striatus*)

The alkali mariposa lily is a CNPS List 1B species that typically blooms between April and June. It is a bulbiferous perennial herb that occurs in mesic, alkaline areas within chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps from approximately 230 to 5,235 feet above msl. The project site contains open, xeric scrub habitat that is not considered suitable for this species. However, the southwestern portion of the project site contains an incised channel that may provide the moisture and marginally suitable habitat to support this species. Therefore, the alkali mariposa lily is considered to have a low potential to occur on the project site.

Mount Gleason Indian Paintbrush (*Castilleja gleasonii*)

The Mount Gleason Indian paintbrush is a CNPS List 1B and California "Rare" species that typically blooms between May and June. It is a hemiparasitic, perennial herb that occurs in granitic soils within lower montane coniferous forest and pinyon and juniper woodland from approximately 3,805 to 7,120 feet above msl. This species is known from less than ten occurrences in the Los Angeles National Forest. The project site contains open, xeric scrub habitat that is not considered suitable for this species. Additionally, the project site is below the known elevation range of this species. Therefore, Mount Gleason Indian paintbrush is not expected to occur on the project site.

Parry's Spineflower (*Chorizanthe parryi* var. *parryi*)

The Parry's spineflower is a CNPS List 3 species that typically blooms between April and June. It is a perennial herb occurring in sandy or rocky openings of chaparral and coastal scrub from approximately 130 to 5,600 feet above msl. This species may already have been extirpated from

budget slope

Los Angeles County (CNPS 2001). The project site contains open, xeric scrub habitat that may be considered marginally suitable for this species. Therefore, Parry's spineflower is considered to have a low potential to occur on the project site.

White-Bracted Spineflower (*Chorizanthe xanti* var. *leucotheca*)

The white-bracted spineflower is a CNPS List 1B species that typically blooms between April and June. It is an annual herb that occurs in Mojavean desert scrub and pinyon and juniper woodland from approximately 985 to 3,940 feet above msl. The project site contains open, xeric scrub habitat that may be considered suitable for this species. Therefore, the white-bracted spineflower is considered to have a low to moderate potential to occur on the project site.

Slender-Horned Spineflower (*Dodecahema leptoceras*)

The slender-horned spineflower is a CNPS List 1B species and a state- and federally-listed Endangered species that blooms between April and June. It is an annual herb that occurs in sandy soils of chaparral, cismontane woodland, and coastal scrub from approximately 650 to 2,500 feet above msl. The project site contains open, xeric scrub habitat with sandy soils that may be considered marginally suitable for this species. However, the project site is above the known elevation range for this species. Therefore, the slender-horned spineflower is not expected to occur on the project site.

Lemon Lily (*Lilium parryi*)

The lemon lily is a CNPS List 1B species that typically blooms between July and August. It is a bulbiferous, perennial herb that occurs in mesic areas of lower and upper montane coniferous forest, meadows and seeps, and riparian scrub from approximately 4,265 to 8,530 feet above msl. The project site contains open, xeric scrub habitat that is not considered suitable for this species. Additionally, the project site is below the known elevation range for this species. Therefore, the lemon lily is not expected to occur on the project site.

San Gabriel Linanthus (*Linanthus concinnus*)

The San Gabriel linanthus is a CNPS List 1B species that typically blooms between April and July. It is an annual herb that occurs in rocky soils of lower and upper montane coniferous forest from approximately 5,575 to 9,185 feet above msl. The project site is well below the known elevation range for this species. Therefore, the San Gabriel linanthus is not expected to occur on the project site.

Short-Joint Beavertail Cactus (*Opuntia basilaris* var. *brachyclada*)

The short-joint beavertail cactus is a CNPS List 1B species that typically blooms between April and June. It is a perennial, stem succulent shrub that occurs in chaparral, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland from approximately 1,395 to 5,905 feet above msl. The project provides marginally suitable habitat for this species. However, the presence of this species would have been conspicuous during the constraints-level field visit, and it was not observed on-site. Therefore, the short-joint beavertail cactus is not expected to occur on the project site.

Mason's Neststraw (*Stylocline masonii*)

Mason's neststraw is a CNPS List 1B species that typically blooms between March and May. It is an annual herb that occurs in sandy soils of chenopod scrub and pinyon and juniper woodland from

approximately 325 to 3,935 feet above msl. The project site provides marginally suitable habitat for this species. Therefore, the Mason's neststraw has a low potential to occur on the project site.

Special Status Wildlife Species

Of the wildlife species that occur in the region, seven species listed as Threatened and/or Endangered or considered species of concern by the USFWS and/or CDFG have the potential to occur on the project site. Brief descriptions of these species are listed below alphabetically according to their scientific name. Additionally, these species along with their listing status and potential for occurrence are listed on Table 2.

Fish

Three special status fish species, including the Threatened Santa Ana sucker (*Catostomus santaanae*), the Endangered unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), and arroyo chub (*Gila orcutti*), are known to occur in the project region. However, none are expected to occur on the project site, given the lack of hydrological conditions necessary to support these species (i.e., permanent watercourses or water bodies).

Amphibians

Special status amphibian species, including the Endangered arroyo toad (*Bufo californicus*), the Threatened California red-legged frog (*Rana aurora draytonii*), and the Endangered mountain yellow-legged frog (*Rana muscosa*) are known to occur in the project region. However, none are expected to occur on the project site, given the lack of hydrological conditions necessary to support these species (i.e., permanent watercourses or water bodies).

Reptiles

Silvery Legless Lizard (*Anniella pulchra pulchra*)

The silvery legless lizard is a federal Species of Concern and a California Species of Special Concern. It is a small, secretive lizard that spends most of its life beneath the soil, under stones, logs, debris, or in leaf litter. The silvery legless lizard inhabits areas with moist sandy soil, including dry washes, woodlands, riparian, and scrub communities at elevations ranging from sea level to about 5,000 feet above msl (Stebbins 1985). However, the project site does not contain loose sandy soils and leaf litter necessary to support this species. Therefore, the silvery legless lizard is not expected to occur on the project site.

Southwestern Pond Turtle (*Clemmys marmorata pallida*)

This southwestern pond turtle is a federal Species of Concern and a California Species of Special Concern. It is a freshwater turtle that occurs primarily in freshwater rivers, streams, lakes, ponds, vernal pools, and seasonal wetlands, and requires basking sites such as logs, banks, or other suitable areas above water level. The western pond turtle occurs from Monterey Bay south through the Coast Ranges to northern Baja California (Holland 1991). The project site does not contain the hydrological conditions necessary to support this species (i.e., permanent watercourses or water bodies). Therefore, the southwestern pond turtle is not expected to occur on the project site.

Coast Horned Lizard (*Phrynosoma coronatum*)

The coast horned lizard is a federal Species of Concern and a California Species of Special Concern. It is a small, spiny, somewhat rounded lizard that occurs primarily in open or sparse scrub

and chaparral communities. This species prefers loose, friable soil for burrowing. Three factors have contributed to its decline: loss of habitat, overcollecting, and the introduction of exotic ants. In some places, especially adjacent to urban areas, the introduced ants have displaced the native species upon which the lizard feeds (Jennings and Hayes 1994). The project site does not contain loose, friable soils necessary to support this species. Therefore, the coast horned lizard is not expected to occur on the project site.

TABLE 2
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT REGION

Species	Status		Potential For Occurrence
	Federal	State	
Fish			
Catostomus santaanae Santa Ana sucker	FT	SSC	None; lack of suitable habitat
Gasterosteus aculeatus williamsoni Unarmored threespine stickleback	FE	FE	None; lack of suitable habitat
Gila orcutti Arroyo chub	None	SSC	None; lack of suitable habitat
Amphibians			
Bufo californicus Arroyo toad	FE	None	None; lack of suitable habitat
Rana aurora draytonii California red-legged frog	FT	None	None; lack of suitable habitat
Rana muscosa Mountain yellow-legged frog	FE	None	None; lack of suitable habitat
Reptiles			
Anniela pulchra pulchra Silvery legless lizard	SOC	SSC	None; lack of suitable habitat
Clemmys marmorata pallida Southwestern pond turtle	SOC	SSC	None; lack of suitable habitat
Phrynosoma coronatum Coast horned lizard	SOC	SSC	None; lack of suitable habitat
Thamnophis hammondii Two-striped garter snake	SOC	SSC	None; lack of suitable habitat
Birds			
Accipter cooperii Cooper's hawk	None	SSC	None; lack of suitable habitat
Buteo swainsoni Swainson's hawk	SOC	ST	None; lack of suitable habitat
Athene cunicularia Burrowing Owl	SOC	SSC	Moderate; not observed but suitable habitat present onsite
Toxostoma lecontei Le Conte's thrasher	SOC	SSC	None; lack of suitable habitat
Mammals			
Perognathus inornatus inornatus San Joaquin pocketmouse	SOC	None	None; marginally suitable habitat, outside historic range
Spermophilus mohavensis Mohave ground squirrel	SOC	ST	None; marginally suitable habitat, outside historic range

TABLE 2 (continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT REGION

Species	Status		Potential For Occurrence
	Federal	State	
LEGEND			
Federal (USFWS)		**State (CDFG)**	
FE Endangered		E Endangered	
FT Threatened		T Threatened	
PE Proposed Endangered		PE Proposed Endangered	
PT Proposed Threatened		PT Proposed Threatened	
C Candidate Species		SSC Species of Special Concern	
SOC Species of Concern[1]		FP Fully Protected	
		P Protected	
[1]Note: This designation, although not an active term, has been reinstated for informational purposes only.			

Two-striped Garter Snake (*Thamnophis hammondii*)

The two-striped garter snake is a federal Species of Concern and a California Species of Special Concern. It occurs primarily in wetlands and is found in freshwater marsh and riparian habitats with perennial water. The project site does not contain the hydrological conditions necessary to support this species (i.e., permanent watercourses or water bodies). Therefore, the two-striped garter snake is not expected to occur on the project site.

Birds

Cooper's Hawk (*Accipiter cooperii*)

The Cooper's hawk is a California Species of Special Concern. Both resident and migratory populations exist in Los Angeles County. Wintering Cooper's hawks are often seen in wooded urban areas and native woodland communities. Preferred nesting habitats are oak and riparian woodlands dominated by sycamores and willows. Cooper's hawks in the region prey on small birds and rodents that live in woodland and occasionally scrub and chaparral communities. No trees providing potential roosting or nesting habitat for this species occur on the project site or in the immediate vicinity of the project site. Therefore, the Cooper's hawk is not expected to occur on the project site.

Swainson's Hawk (*Buteo swainsoni*)

The Swainson's hawk is a federal Species of Concern and a state Threatened species. This raptor is a very rare migrant along the coast of southern California (Garrett and Dunn 1981). The Swainson's hawk formerly bred along the coast in southern California, but breeding is now mostly limited to the Sacramento and San Joaquin valleys, in extreme northeast California, and Mono and Inyo counties, in eastern California (England et al. 1997). Preferred nesting habitat consists of trees in open habitat such as grasslands and agricultural fields. Prey consists of small mammals and reptiles in early summer and large insects at other seasons (Kaufman 1996). No trees providing potential roosting or nesting habitat for this species occur on the project site. Therefore, the Swainson's hawk is not expected to occur on the project site.

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is a federal Species of Concern and California Species of Special Concern. It is a year-round resident in appropriate habitat throughout the state, excluding the humid northwest coastal forests and high mountains. Appropriate habitat consists of short-grass prairies, grasslands, lowland scrub, agricultural lands, coastal dunes, and desert floors (Haug et. al. 1993). They require open expanses of sparsely vegetated areas on gently rolling or level terrain with an abundance of active small mammal burrows. They require the use of rodent or other burrows for roosting and nesting cover. They may also dig their own burrow in soft, friable soils, or use pipes and culverts where burrows are scarce. The project site consists of flat, sparse scrub with numerous California ground squirrel burrows and represents favorable habitat for the burrowing owl. However, no burrowing owls or evidence of presence were observed on the project site. Therefore, the burrowing owl has a moderate potential to occur.

Le Conte's Thrasher (*Toxostoma lecontei*)

The Le Conte's thrasher is a federal Species of Concern and California Species of Special Concern. It occurs in open desert scrub and alkali desert scrub where it forages on the ground for arthropods, occasionally feeding on seeds and small vertebrates. This species nests in the center of tall, robust saltbushes (*Atriplex* sp.). Its distribution is dependent on the presence of saltbush within a habitat type (Shepard 1970). Its range in California includes a portion of the San Joaquin Valley south through the Mojave and Sonoran deserts. No breeding habitat for the Le Conte's thrasher (i.e., saltbush) was encountered on the project site during the constraints-level survey. Therefore, this species is not expected to occur on the project site.

Mammals

San Joaquin Pocket Mouse (*Perognathus inornatus inornatus*)

The San Joaquin pocket mouse is a California Species of Special Concern. It occurs in dense grasslands or weedy areas with fine-textured, sandy soils. The current and historical distribution of the San Joaquin pocket mouse includes the San Joaquin Valley extending roughly from Glenn County south to the north face of the Tehachapi Mountains at the border of Kern and Los Angeles counties. Substrate and vegetation on the site consists of packed, medium-grained sand with scrub habitat that could provide marginally suitable habitat for this species. However, given the poor quality of the habitat and the fact that the project site is beyond the historic range for this species, it is not expected to occur.

Mohave Ground Squirrel (*Spermophilus mohavensis*)

The Mohave ground squirrel is a federal Species of Concern and a state-listed Threatened species. It occurs in sandy to rocky soils of relatively flat, sparse, desert scrub habitats in the western Mojave Desert, including creosote bush scrub, desert saltbush scrub, desert sink scrub, desert greasewood scrub, shadscale scrub, and Joshua tree woodland (Gustafson 1993). The project site represents marginally suitable habitat for this species. However, the historic range of this species does not extend far enough to the west to include the project site. Additionally, the project site is occupied by a relatively large population of California ground squirrel. The ranges of these two species do not overlap and they would not be expected to coexist on the project site due to competition and possible predation by the considerably larger California ground squirrel. Therefore, the Mohave ground squirrel is not expected to occur on the project site.

Recommendations

Special Status Plants

Five special status plant species, Lancaster milk-vetch, alkali mariposa lily, Parry's spineflower, white-bracted spineflower, and Mason's neststraw have the potential to occur on the project site. Spring botanical surveys for special status plants conducted during the appropriate survey "window" for these species would be necessary to determine their presence or absence on the project site.

The above-mentioned species are CNPS List 1B and 3 species which are not protected by the state or federal Endangered Species Acts (ESA). Therefore, impacts on these species would not require state or federal resources agency authorizations. However, impacts to these species would be considered significant according to California Environmental Quality Act (CEQA) guideline 15065(a) if a population is found and if the size and the status of that population warrant a finding of significance.

If a population of special status plant species is found within the project impact area, and the impact is found to be significant, impacts to these species would require mitigation according to CEQA. If construction of the proposed project is expected to commence prior to the survey window for the special status plant species, the CEQA document for the proposed project would have to address these species as potentially present, and make a finding of potentially significant based on habitat suitability alone. This would require the development and implementation of mitigation measures to be conducted prior to construction.

Special Status Wildlife

One special status wildlife species, the burrowing owl, has the potential to occur on the project site. The burrowing owl is considered a Species of Concern by the USFWS and a Species of Special Concern by the CDFG. Nesting pairs are protected under Fish and Game Code Section 3503.5 which prohibits the disturbance of burrowing owl burrows. The following mitigation measures (MMs) are recommended to ensure compliance with Fish and Game Code Section 3503.5.

MM-1 If construction occurs between March 1 and August 31, seven days prior to the onset of construction activities, a qualified biologist shall survey within the limits of project disturbance and adjacent areas for the presence of any active burrowing owl burrows. Any active burrows found during survey efforts shall be mapped on the construction plans. If no active burrowing owl burrows are found, no further mitigation would be required. Results of the surveys shall be provided to the CDFG.

If nesting activity is observed at any burrowing owl burrow, the active site shall be protected until nesting activity has ended to ensure compliance with Section 3503.5 of the California Fish and Game Code. Nesting activity for burrowing owls in the region of the project site normally occurs from March 1 to August 31 with a peak in breeding activity generally occurring in April and May. To protect nest sites, the following restrictions on construction shall be required between March 1 and August 31 (or until nests are no longer active as determined by a qualified biologist): 1) clearing limits shall be established with a minimum of 300 feet, or as otherwise determined by a qualified biologist, in any direction from any occupied burrow exhibiting nesting activity; and 2) access and surveying shall not be allowed within 100 feet of any burrow exhibiting nesting activity. Any encroachment into the 300/100-foot buffer area around the known nest shall only be allowed if it is determined by a qualified biologist that the proposed activity shall not disturb the nest occupants.

MM-2 If construction occurs between September 1 and January 31, at least three days prior to site preparation for construction, burrowing owls should be excluded from occupied burrows in the immediate impact zone and within a 150-foot buffer zone by installing one-way doors in burrow entrances. One-way doors should be left in place for 48 hours to ensure owls have left the burrow before excavation. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags should be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

Please contact either Ann Johnston or Sam Stewart at (714) 444-9199 if you have any questions or comments.

Sincerely,

BONTERRA CONSULTING

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Enclosures: Exhibits 1 and 2

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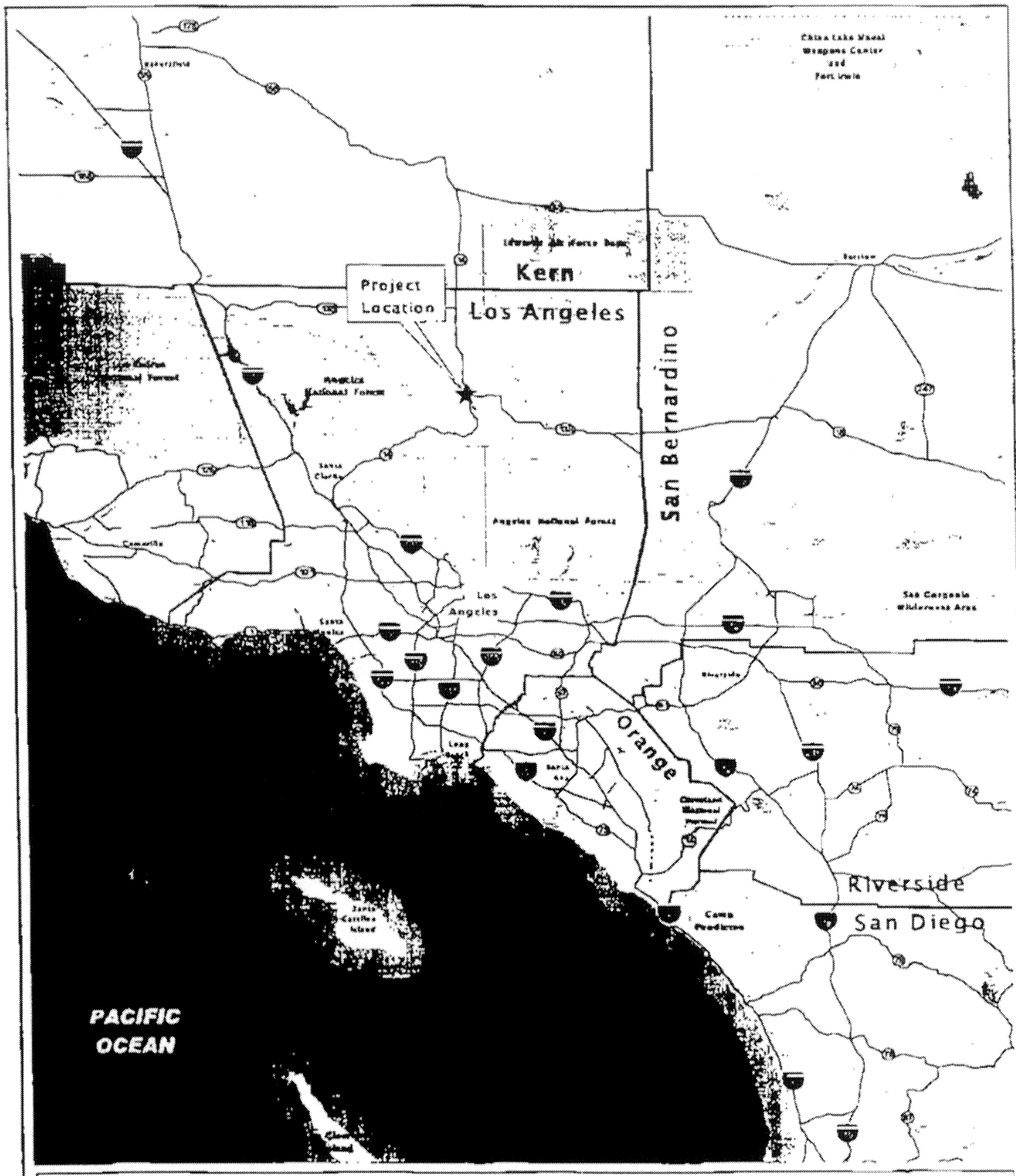
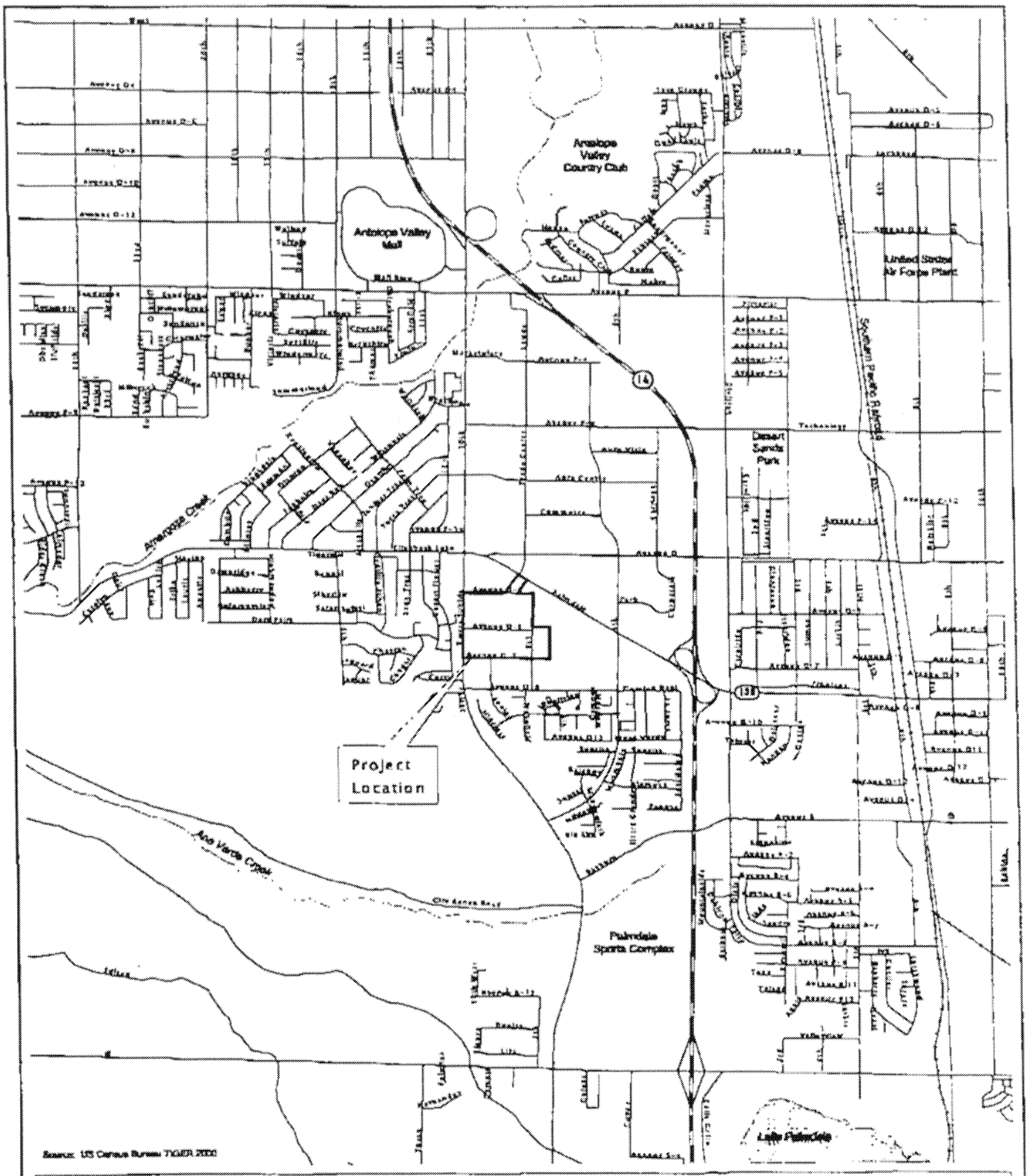


Regional Location

Exhibit 1

Palmdale Medical Facility

Bonterra CONSULTING



Local Vicinity

Exhibit 2

Palmdale Medical Facility

Bonterra CONSULTING

APPENDIX 10.9:
CULTURAL RESOURCES REPORTS

HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT

PALMDALE MEDICAL CENTER/ UNIVERSAL HEALTH SERVICES, INC.

City of Palmdale
Los Angeles County, California

Submitted to:

Alan Ashimine
RBF Consulting
14725 Alton Parkway
Irvine, CA 92618-2027

Submitted by:

Bai Tang, Principal Investigator
Michael Hogan, Principal Investigator
Mariam Dahdul, Archaeologist/Report Writer
Harry M. Quinn, Archaeologist
CRM TECH
4472 Orange Street
Riverside, CA 92501

June 10, 2003

CRM TECH Contract #1003
Approximately 40 Acres
USGS Ritter Ridge, Calif., 7.5' Quadrangle
Section 27, T6N R12W, San Bernardino Base Meridian

MANAGEMENT SUMMARY

Between January and June, 2003, at the request of RBF Consulting, CRM TECH performed a cultural resources study on approximately 40 acres of vacant land in the City of Palmdale, Los Angeles County, California. The subject property of the study is located at the southeast corner of Avenue Q-5 and Tierra Subida Avenue, in the northwest quarter of Section 27, T4S R7E, San Bernardino Base Meridian. The study is part of the environmental review process for the proposed Palmdale Medical Center/Universal Health Services, Inc., project, involving the construction of a general hospital. The City of Palmdale, as Lead Agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA).

The purpose of the study is to provide the City of Palmdale with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any historical/archaeological resources that may exist in or around the project area, as mandated by CEQA. In order to identify and evaluate such resources, CRM TECH conducted a historical/archaeological resources records search, pursued historical background research, and carried out an intensive-level field survey.

Through the various avenues of research, this study did not encounter any "historical resources," as defined by CEQA, within or adjacent to the project area. Therefore, CRM TECH recommends that the City of Palmdale may reach a finding of *No Impact* regarding cultural resources. No further cultural resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are encountered during construction activities, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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INTRODUCTION

Between January and June, 2003, at the request of RBF Consulting, CRM TECH performed a cultural resources study on approximately 40 acres of vacant land in the City of Palmdale, Los Angeles County, California (Fig. 1). The subject property of the study is located at the southeast corner of Avenue Q-5 and Tierra Subida Avenue, in the northwest quarter of Section 27, T4S R7E, San Bernardino Base Meridian (Fig. 2). The study is part of the environmental review process for the proposed Palmdale Medical Center/Universal Health Services, Inc., project, involving the construction of a general hospital. The City of Palmdale, as Lead Agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.).

CRM TECH performed the present study to provide the City of Palmdale with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any historical/archaeological resources that may exist in or around the project area, as mandated by CEQA. In order to identify and evaluate such resources, CRM TECH conducted a historical/archaeological resources records search, pursued historical background research, and carried out an intensive-level field survey. The following report is a complete account of the methods, results, and final conclusion of the study.

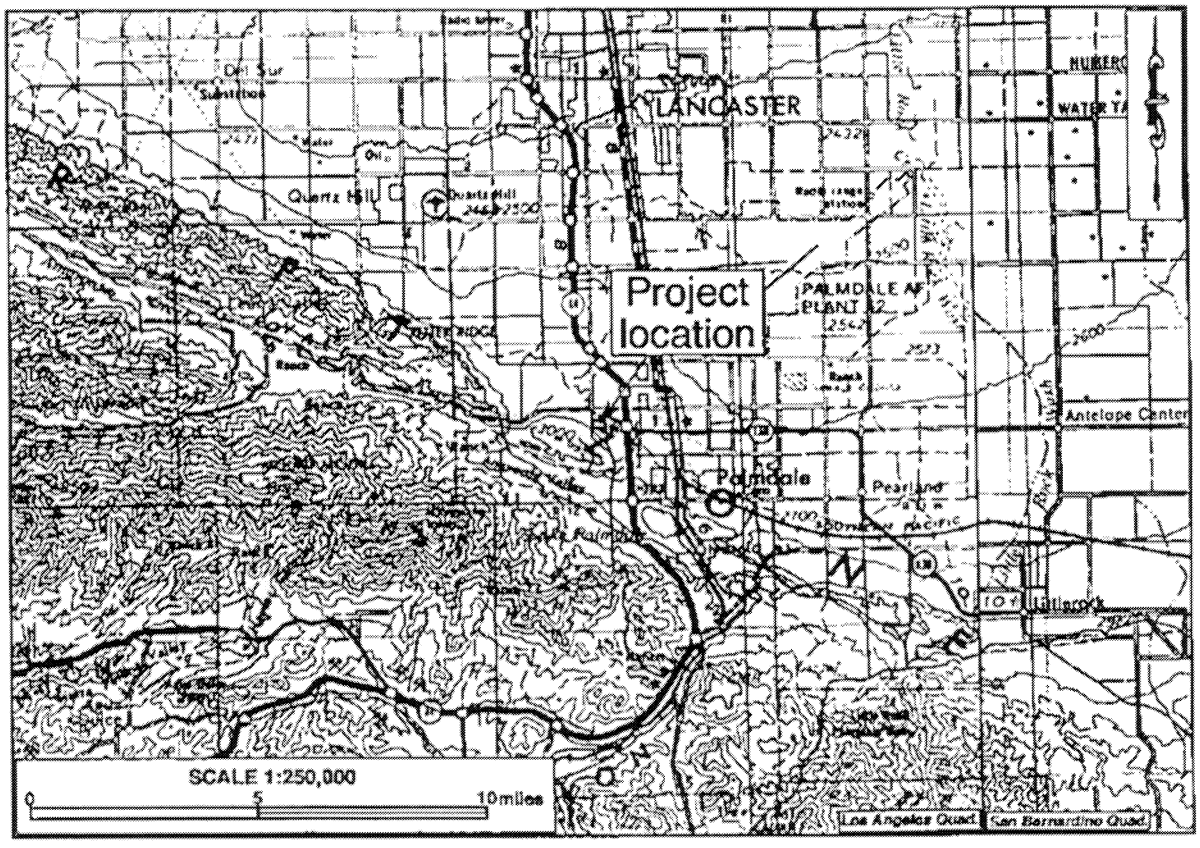

Figure 1. Project vicinity. (Based on USGS San Bernardino and Los Angeles, Calif., 1:250,000 quadrangles [USGS 1969; 1975])

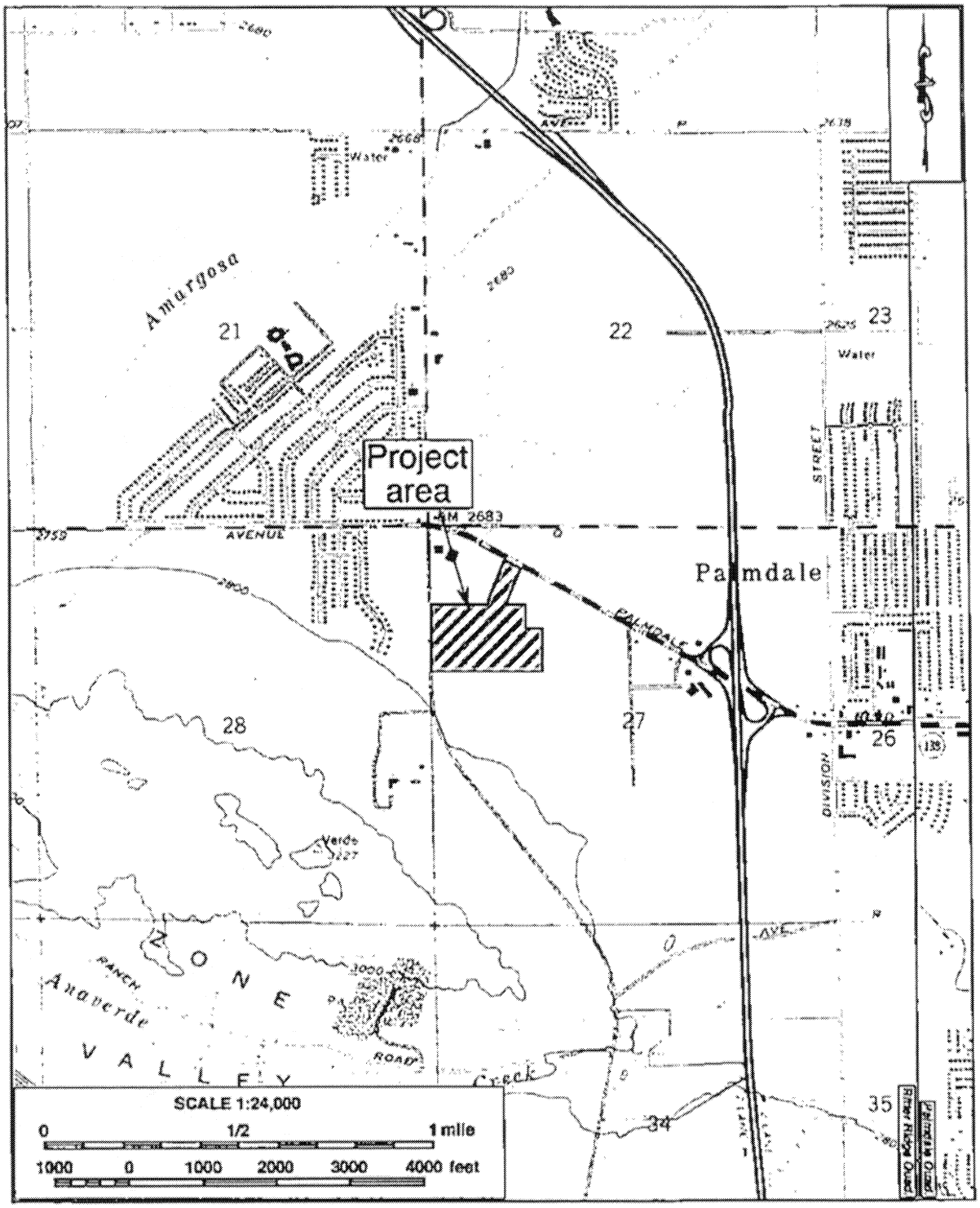

Figure 2. Project area. (Based on USGS Palmdale and Ritter Ridge, Calif., 1:24,000 quadrangles [USGS 1974a; 1974b])

SETTING

CURRENT NATURAL SETTING

The project area is situated in the southwestern periphery of the City of Palmdale and the southern edge of the Antelope Valley, which constitutes the westernmost extension of the Mojave Desert. Regarding the natural environment of the Palmdale area, the City's General Plan states:

> The City of Palmdale is located in the High Desert region of Los Angeles County, approximately 60 freeway miles north of downtown Los Angeles. Palmdale is one of two incorporated cities and several unincorporated communities within the Antelope Valley. . . The climate of Palmdale and the Antelope Valley is dominated by the region's Pacific high pressure system, which contributes to the area's hot, dry summers and relatively mild winters. The climate is characterized by its wide swings in temperature between day and night. Temperatures in the area average lows and highs of 71°F and 95°F, respectively, in the summer months and 36°F and 58°F, respective in the winter months. Average annual precipitation is eight (8) inches. (City of Palmdale 1993:I-1)

Specifically, the project area lies on a relatively level alluvial fan between Anaverde Creek and Amargosa Creek, at an elevation of approximately 2,720 feet above mean sea level (Fig. 3). The property is surrounded mostly by undeveloped land, but some residential and commercial development has occurred in the vicinity. The alluvial soils present in the area are covered by a dense growth of wild flowers, grasses, and weeds, including California Poppy, Bush Lupine, Fiddleneck, Coreopsis, and Blue Dick Lilly. A large gully is located in

Figure 3. Overview of the current natural setting of the project area. (Photo taken on March 28, 2003)

the southwestern portion of the project area. Past disking for farming or weed control is still evident in portions of the property, and a few large earthen mounds have been erected in the northwestern portion as bicycle jumps.

CULTURAL SETTING

Prehistoric Context

In order to understand Native American cultures prior to European contact, archaeologists have devised chronological frameworks on the basis of artifacts and site types dating back some 12,000 years. One of the more frequently used time frames for the Mojave Desert divides the region's prehistory into five periods marked by changes in archaeological remains, reflecting different ways in which Native peoples adapted to their surroundings. According to Warren (1984) and Warren and Crabtree (1986), these five periods are the Lake Mojave Period (12,000-7,000 years ago), the Pinto Period (7,000-4,000 years ago), the Gypsum Period (4,000-1,500 years ago), the Saratoga Springs Period (1,500-800 years ago), and the Protohistoric Period (800 years ago to European contact).

This time frame is based on general technological changes that progressed from large stone projectile points with few milling stones for grinding food products, to smaller projectile points with an increase in milling stones. The scheme also notes increases in population, changes in food procurement and resource exploitation strategies, and more cultural complexity over time. During the Protohistoric Period, there is evidence of contact with the Colorado River tribes and the introduction of pottery across the Mojave Desert.

Ethnohistorical Context

The project area lies in the northeastern edge of the traditional homeland of the Tataviam, a small Native American group located principally in the upper reaches of the Santa Clara River drainage, on south-facing slopes of the Liebre and Sawmill Mountains (King and Blackburn 1978:535). The general ecological adaptation and subsistence technology of the Tataviam differed little from that of their neighbors, such as the Kitanemuk, Chumash, and Gabrielino. Their language is thought to belong to the Takic family, although it appears to have diverged from other languages in the family around 1,000 B.C. and became unrecognizable to neighboring groups in historic times (*ibid.*). Little historical information is available today on this small group, which had less than 1,000 members at the time of historic contact (*ibid.*:536).

Historical Context

In 1772, a group of Spanish soldiers, led by Captain Pedro Fages, became the first white men to set foot in the Antelope Valley. Over the next 70 years, a number of famous explorers, including Father Francisco Garcés, Jedediah Smith, Kit Carson, and John C. Fremont, traversed the Antelope Valley, but their explorations led to little change in the region. Nor did the earliest gold discovery in California, which took place in nearby Placerita Canyon in 1842, have a significant impact. The Antelope Valley continued to be used as hunting grounds—for its legendary herds of antelopes—and a route for travelers. Don Alexander and Phineas Banning's first stage line between Los Angeles and northern California, for example, ran through the southern edge of the Antelope Valley.

During the 1870s, settlers began to set up homesteads wherever surface water was found. In 1876, the Southern Pacific (SP) Railroad completed its Antelope Valley line, finally ending the isolation of the region. During the next decade, a string of new towns were created around the SP stations along the line. Palmdale, however, was not among the original railway stations. Rather, it had its roots in two earlier communities, Harold and Palmenthal. Harold, also known as Alpine and Trejo, was one of the original SP stations. The small community, consisting of five buildings in the early 1890s, was located at today's intersection of Barrel Springs Road and Sierra Highway, and populated mainly by railroad employees. In the late 1890s, the SP abandoned Harold in favor of Palmdale when it needed a larger station on flat land to accommodate its booster engines for the San Gabriel Mountain grade.

Palmenthal came into being in 1886, when 50 or 60 families of German and Swiss descent, predominantly from Nebraska and Illinois, settled near the intersection of Avenue R-8 and 27th Street East. In 1888, the Palmenthal post office was established in the thriving little community, which by then boasted a church, a school, a general store, and several other businesses. By the end of the nineteenth century, however, due to the severe drought of 1894-1897 and problems with its land title, Palmenthal was almost completely abandoned. Even the post office was discontinued in Palmenthal and it was moved to the budding town at the new SP station named Palmdale.

Around 1900, a group of residents who later organized the Palmdale Water District in 1918 constructed a seven-mile ditch from Little Rock Creek to present-day Lake Palmdale, known then as Harold Reservoir, in order to irrigate the arid land near the new townsite. With the completion of the Los Angeles Aqueduct in 1914 and the adoption of electric water pumps, irrigated agriculture became the primary means of livelihood in the area. Alfalfa and deciduous fruits, especially pear and apple, comprised the staple crops throughout the early 20th century, while poultry-raising also grew into an important aspect of the local economy by the 1930s and 1940s.

After the Second World War, with the establishment of U. S. Air Force Plant 42, Palmdale became a center of aerospace and defense industry, which remains the largest industry in the Antelope Valley today. In 1962, Palmdale was incorporated as the Antelope Valley's first city. During the 1980s, Palmdale was named the fastest growing city in California, mainly because of the availability of affordable housing, as a "bedroom community" in support of the Greater Los Angeles area.

RESEARCH METHODS

RECORDS SEARCH

The South Central Coastal Information Center (SCCIC) at the California State University, Fullerton, provided the records search service for this study. During the records search, Stacy St. James, SCCIC Assistant Coordinator, checked the Center's recorded historic and prehistoric archaeological sites in or near the project area, and existing cultural resources reports and historic maps pertaining to the vicinity. Previously identified historical/ archaeological resources include properties designated as California Historical Landmarks or Points of Historical Interest, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resource Information System.

HISTORICAL RESEARCH

Historical background research for this study was conducted by CRM TECH historian Bai "Tom" Tang (see App. 1 for qualifications) on the basis of published literature in local and regional history and historic maps depicting the project vicinity. Among maps consulted for this study were the U.S. General Land Office's (GLO) land survey plat maps dated 1855, and the U.S. Geological Survey's (USGS) topographic maps dated 1917, 1937, and 1958. These maps are collected at the Science Library of the University of California, Riverside, and the California Desert District of the U.S. Bureau of Land Management, located in Moreno Valley. The results of this research are presented below.

FIELD SURVEY

On March 28, 2003, CRM TECH archaeologist Harry M. Quinn (see App. 1 for qualifications) carried out the intensive-level, on-foot field survey of the project area. During the survey, Quinn walked parallel north-south and east-west transects spaced 15 meters (ca. 50 feet) apart. In this way, the ground surface in the entire project area was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic periods (i.e., 50 years ago or older). The results of the survey are discussed below.

RESULTS AND FINDINGS

RECORDS SEARCH RESULTS

According to records on file at the South Central Coastal Information Center, the project area was covered by a previous cultural resources study in 1990, but no archaeological sites or other potential historical resources was recorded on or adjacent to the property. Outside the project boundaries but within a one-mile radius, SCCIC records show more than 20 previous studies on various tracts of land and linear features (Fig. 4), which resulted in the identification of six archaeological sites. One of the sites was prehistoric—i.e., Native American—in nature and consisted of a chipped stone and groundstone scatter as well as a steatite carving. The other sites dated to the historic period and included trash scatters, remnants of a homestead, and remains of mining operations. Since none of these previously recorded sites was located in the immediate vicinity of the project area, none of them requires further consideration during this study.

HISTORICAL RESEARCH RESULTS

Historic maps consulted for this study suggest that the project area apparently experienced no settlement or land development activities during the historic period (Figs. 5-7). In the early 20th century, the only man-made features noted in the vicinity were the forerunners of today's Avenue Q and 10th Street West, both lying a short distance to the north of the project location (Fig. 6). By the early 1930s, a winding dirt road became the earliest man-made feature noted within the project boundaries (Fig. 7). Palmdale Boulevard, which defined the northeastern boundary of the project area, came into being by the mid-1950s, but as late as then, no evidence of any settlement or land development activities was found within the project area (USGS 1958). Based on its depiction in these historic maps, the project area has evidently remained vacant and undeveloped to the present time.

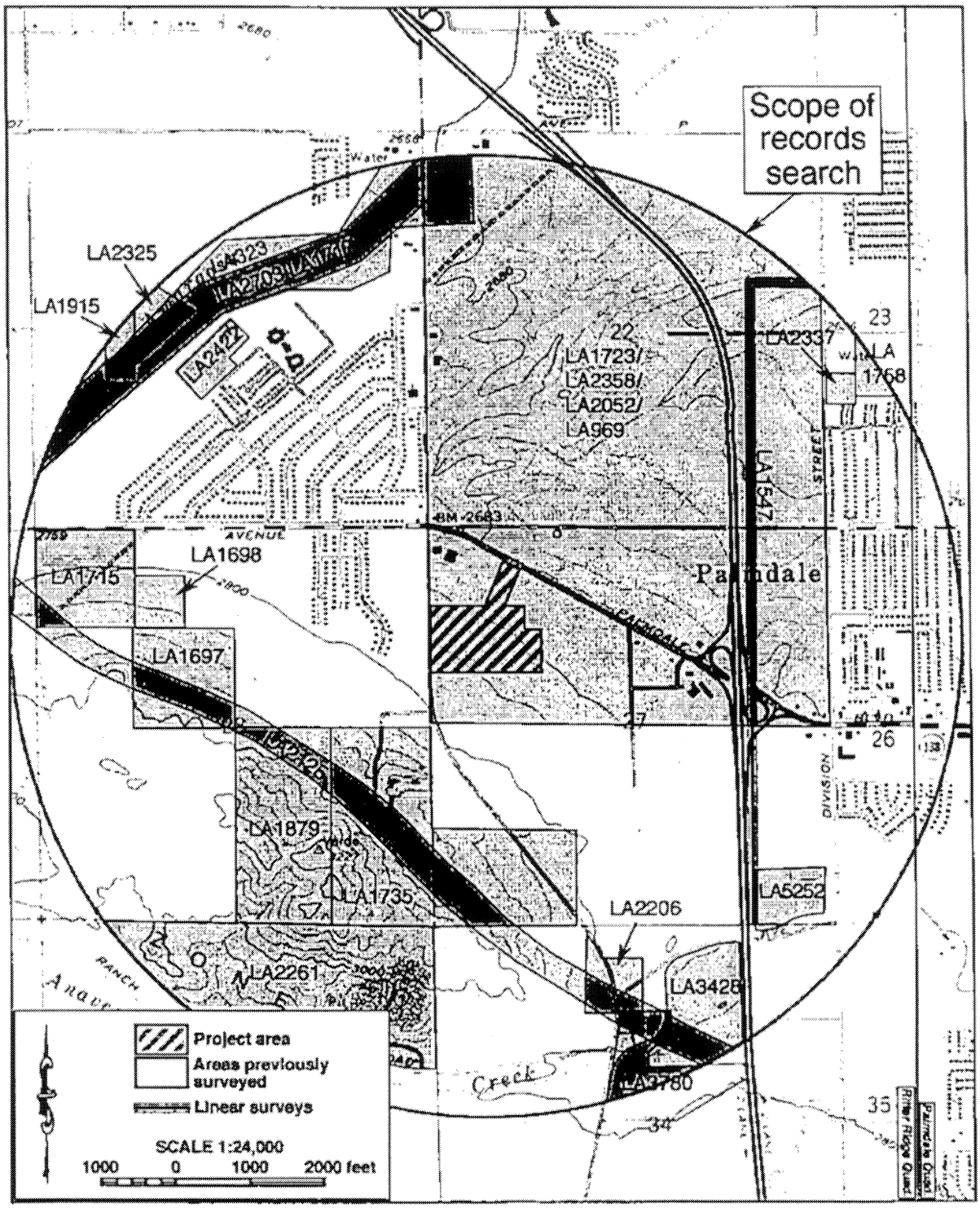

Figure 4. Previous cultural resources surveys in the vicinity of the project area, listed by SCCIC file number. Locations of historical/archaeological sites are not shown as a protective measure.

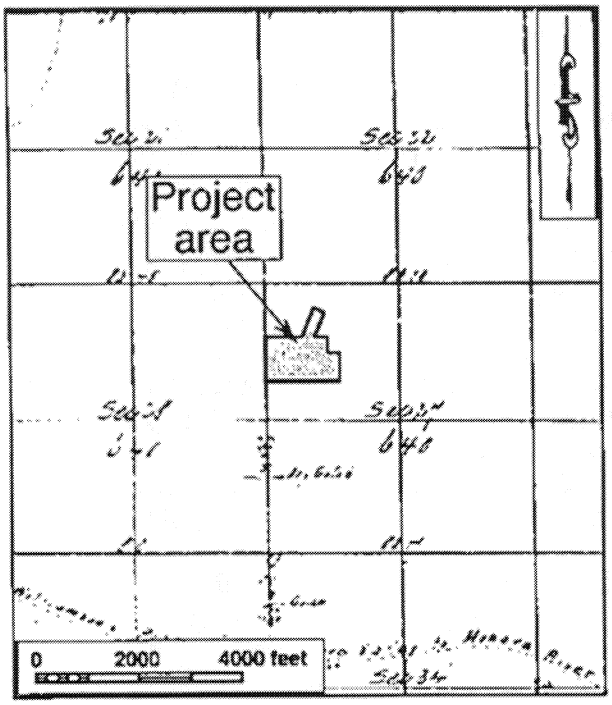

Figure 5. The project area and vicinity in 1853-1855. (Source: GLO 1855)

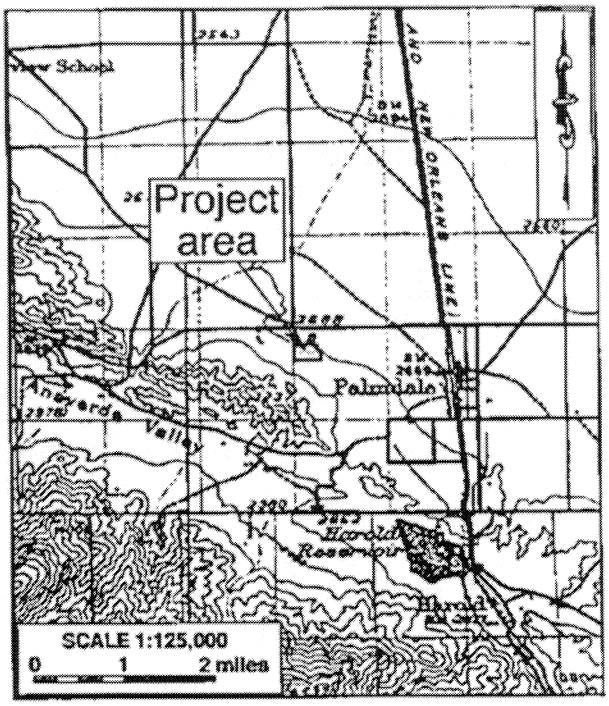

Figure 6. The project area and vicinity in 1915. (Source: USGS 1917)

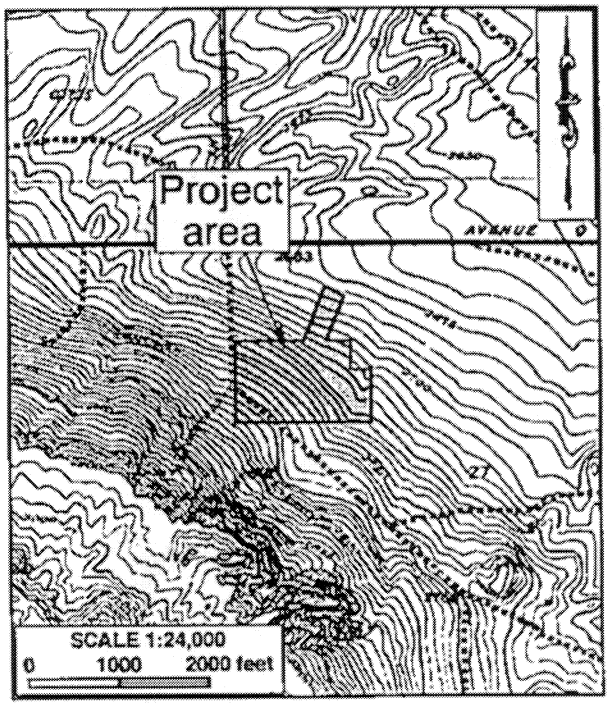

Figure 7. The project area and vicinity in the early 1930s. (Source: USGS 1937)

FIELD SURVEY RESULTS

The intensive-level field survey produced completely negative results for potential cultural resources. The entire project area was closely inspected for any evidence of human activities dating to the prehistoric or historic periods, but none was found. Some disturbance of the ground surface is evident on the property, exemplified by the mounds of soil, rodent burrows, and past disking. Trash was found scattered in some parts of the property, while a possible homeless encampment area was noted in the gully. However, no buildings, structures, objects, sites, features, or artifacts more than 50 years of age were encountered during the survey.

DISCUSSION

The purpose of this study is to identify any cultural resources within or adjacent to the project area, and to assist the City of

Palmdale in determining whether such resources meet the official definitions of "historical resources," as provided in the California Public Resources Code, in particular CEQA.

According to PRC §5020.1(j), "'historical resource' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR §15064.5(a)(1)-(3)).

Regarding the proper criteria for the evaluation of historical significance, CEQA guidelines mandate that "a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

As discussed above, the records search, the historical research, and the field survey have all produced negative results, and no potential "historical resources," as defined above, were encountered in the project area. Based on these findings, and in light of the criteria listed above, this study concludes that *no historical resources exist within or adjacent to the project area.*

RECOMMENDATIONS

CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

Since no historical resources were encountered during the course of this study, CRM TECH presents the following recommendations to the City of Palmdale:

- No historical resources exist within or adjacent to the project area, and thus the project as currently proposed will cause no substantial adverse change to any known historical resources.

- No further cultural resources investigation is necessary for the proposed project unless construction plans undergo such changes as to include areas not covered by this study.
- If buried cultural materials are discovered during construction, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

CONCLUSION

The foregoing report has provided background information on the project area, outlined the methods used in the current study, and presented the results of the various avenues of research. Throughout the course of the study, no "historical resources," as defined by CEQA, were encountered within or adjacent to the project area. Therefore, the City of Palmdale may reach a finding of *No Impact* regarding cultural resources, with the condition that any buried cultural materials unearthed during construction activities be examined and evaluated by a qualified archaeologist prior to further disturbances.

REFERENCES

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1978 Tataviam. In Robert F. Heizer (ed.): *Handbook of North American Indians*, Vol. 8: *California*; pp. 535-537. Smithsonian Institution, Washington, D.C.

GLO (General Land Office, U.S. Department of the Interior)
1855 Plat Map: Township No. VI North Range No. XII West, San Bernardino Meridian; surveyed in 1853-1855.

USGS (United States Geological Survey, U.S. Department of the Interior)
1917 Map: Elizabeth Lake, Calif. (30', 1:125,000); surveyed in 1915.
1937 Map: Palmdale, California (7.5', 1:24,000); surveyed in 1931-1932.
1958 Map: Lancaster, Calif. (15', 1:62,500); aerial photos taken in 1956.
1969 Map: San Bernardino, Calif. (1:250,000); 1958 edition revised.
1974a Map: Palmdale, Calif. (7.5', 1:24,000); 1958 edition photorevised in 1974.
1974b Map: Ritter Ridge, Calif. (7.5', 1:24,000); 1958 edition photorevised in 1974
1975 Map: Los Angeles, Calif. (1:250,000); aerial photos taken in 1972.

Warren, Claude N.
1984 The Desert Region. In Michael J. Moratto (ed.): *California Archaeology*; pp. 339-430. Academic Press, Orlando, Florida.

Warren, Claude N., and Robert H. Crabtree
1986 Prehistory of the Southwestern Area. In Warren L. d'Azevedo (ed.): *Handbook of North American Indians*, Vol. 11: *Great Basin*; pp. 183-193. Smithsonian Institution, Washington, D.C.

APPENDIX 1:
PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR/HISTORIAN
Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, UC Riverside.
1987	M.A., American History, Yale University, New Haven, Connecticut.
1982	B.A., History, Northwestern University, Xi'an, China.
2000	"Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.
1994	"Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside, California.
1993-2002	Project Historian/Architectural Historian, CRM TECH, Riverside, California.
1993-1997	Project Historian, Greenwood and Associates, Pacific Palisades, California.
1991-1993	Project Historian, Archaeological Research Unit, UC Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, UC Riverside.
1988-1993	Research Assistant, American Social History, UC Riverside.
1985-1988	Research Assistant, Modern Chinese History, Yale University.
1985-1986	Teaching Assistant, Modern Chinese History, Yale University.
1982-1985	Lecturer, History, Xi'an Foreign Languages Institute, Xi'an, China.

Honors and Awards

1988-1990	University of California Graduate Fellowship, UC Riverside.
1985-1987	Yale University Fellowship, Yale University Graduate School.
1980, 1981	President's Honor List, Northwestern University, Xi'an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (With Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

Membership

California Preservation Foundation.

PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST
Michael Hogan, Ph.D., RPA*

Education

1991	Ph.D., Anthropology, University of California, Riverside.
1981	B.S., Anthropology, University of California, Riverside; with honors.
1980-1981	Education Abroad Program, Lima, Peru.
2002	Section 106 – National Historic Preservation Act: Federal Law at the Local Level. UCLA Extension Course # 888.
2002	"Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist.
2002	"Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.
1992	"Southern California Ceramics Workshop," presented by Jerry Schaefer.
1992	"Historic Artifact Workshop," presented by Anne Duffield-Stoll.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside, California.
1999-2002	Project Archaeologist/Field Director, CRM TECH, Riverside.
1996-1998	Project Director and Ethnographer, Statistical Research, Inc., Redlands.
1992-1998	Assistant Research Anthropologist, University of California, Riverside
1992-1995	Project Director, Archaeological Research Unit, U. C. Riverside.
1993-1994	Adjunct Professor, Riverside Community College, Mt. San Jacinto College, University of California, Riverside, Chapman University, and San Bernardino Valley College.
1991-1992	Crew Chief, Archaeological Research Unit, U. C. Riverside.
1984-1998	Archaeological Technician, Field Director, and Project Director for various southern California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

Cultural Resources Management Reports

Author and co-author of, contributor to, and principal investigator for numerous cultural resources management study reports since 1986.

Memberships

* Register of Professional Archaeologists.
Society for American Archaeology.
Society for California Archaeology.
Pacific Coast Archaeological Society.

PROJECT ARCHAEOLOGIST/REPORT WRITER
Mariam Dahdul, M.A., RPA*

Education

2002 M.A., Anthropology, California State University, Fullerton.
- Thesis title: Beads and Ornaments from the Coachella Valley;
- Thesis Advisor: Dr. Phyllisa Eisentraut.

1993 B.A., Geography, California State University, Fullerton.

2003 "Ceramics Analysis," seminar presented by Dr. Delaney-Rivera, California State University, Fullerton.

2002 "Section 106-National Historic Preservation Act: Federal Law at the Local Level," presented by UCLA Extension.

2002 "Historic Archaeology Workshop," presented by Richard H. Norwood, Base Archaeologist, Edwards Air Force Base.

Professional Experience

2000- Project Archaeologist, CRM TECH, Riverside.
- Preparing cultural resources management reports, maps, and site records;
- Analyzing beads, ornaments, and shell;
- Conducting archaeological field surveys;
- Participating in various archaeological testing and mitigation programs.

Laboratory and Field Experience

2001 Archaeological field school under the direction of Dr. Brian Byrd.
- Test excavations of sites at the San Elijo Lagoon Reserve, including flotation of soil samples and sorting and cataloguing of artifacts.

2000 Archaeological field class under the direction of Dr. Claude Warren.
- Excavated units at Soda Lake in the Mojave Desert and produced lake bottom stratigraphic profiles.

1999-2000 Archaeology Laboratory, CSU, Fullerton.
- Assisted in the cataloguing of artifacts.

1999 Field survey course under the direction of Dr. Phyllisa Eisentraut.
- Surveyed and mapped prehistoric site in the Mojave Desert.

Papers Presented

2002 "Shell Beads from the Coachella Valley," Sixth Annual Symposium of the Coachella Valley Archaeological Society.

2002 "Shell Beads from the Coachella Valley," Kelso Conference on the Archaeology of the California and Mojave Deserts.

Cultural Resources Management Reports

Co-author of and contributor to numerous cultural resources management study reports since 2000.

* Register of Professional Archaeologists

PROJECT ARCHAEOLOGIST/FIELD DIRECTOR
Harry M. Quinn, M.S.

Education

1978 Certificate in Archaeology, University of California, Los Angeles.
1968 M.S., Geology, University of Southern California, Los Angeles.
1964 B.S., Geology, Long Beach State College, Long Beach.
1962 A.A., Los Angeles Harbor College, Wilmington.

2001 "The Art and Science of Flintknapping," presented by Jeanne D. Binning, Zzyzx.
1999 "Certified Local Government Preservation Commission, Board, and Staff Training Program," presented by the California Preservation Foundation, Long Beach and Palm Springs.
1998 "Historic Archaeology Workshop," presented by Richard Norwood, Torres-Martinez Indian Reservation.
1997 "Native American Archaeology," presented by Russell Kaldenberg, College of the Desert, Palm Desert.
1996-1998 "Project Archaeology," presented by BLM and DOE, North Palm Springs.
1996 "Mojave Desert Heritage Interagency Workshop," Palm Springs,.
1996 "Cultural Resources and CEQA: Your Responsibility," presented by the Association of Environmental Professionals, Hemet.
1991 "Ceramic Workshop," presented by Dr. Jerry Schaefer, Palm Springs.
1990 "Introduction to Coachella Valley Archaeology," presented by Anne Duffield, Palm Desert.
1989 "Prehistoric Rock Art and Archaeology of the Southern California Deserts," presented by Anne Duffield, UC Riverside Extension, Palm Springs.

Professional Experience

1998- Project Archaeologist/Field Director, CRM TECH, Riverside.
1994-1996 Environmental Geologist, E.C.E.S., Inc., Redlands.
1992-1998 Independent Geological/Archaeological/Environmental Consultant, Pinyon Pines.
1988-1992 Project Geologist/Director of Environmental Services, STE Associates/Soil and Testing Engineers, San Bernardino.
1966-1988 Geologist/Senior Geologist, Texaco, Inc., Los Angeles; Tenneco Oil Exploration and Production, Englewood, Colorado; Loco Exploration, Inc., Aurora, Colorado, Jirsa Environmental Services, Norco.

Memberships

Society for American Archaeology; Society for California Archaeology; Archaeological Survey Association of Southern California; Coachella Valley Archaeological Society (President, 1993-1994, 2000; Vice President, 1992, 1995-1999, 2001; Basic Archaeology Training Course Instructor, 1996-2000; Environmental Assessment Committee Chair, 1997-1999); Coachella Valley Historical Society; Malki Museum; Southwest Museum; El Paso Archaeological Society; Ohio Archaeological Society; West Virginia Archaeological Society; Museum of the Fur Trade; Cahokia Mounds Association.

Publications in Archaeology and History

More than 55 articles in the publications of the Southwest Museum, the American Rock Art Research Association, The Colorado Archaeological Society, the Utah Rock Art Research Association, the Coachella Valley Archaeological Society, Anza Valley Outlook, and the Coachella Valley Historical Society. Co-author of more than 100 cultural resource management reports.

PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

PALMDALE MEDICAL CENTER/ UNIVERSAL HEALTH SERVICES, INC.

City of Palmdale
Los Angeles County, California

Submitted to:

Alan Ashimine
RBF Consulting
14725 Alton Parkway
Irvine, CA 92618-2027

Submitted by:

Harry M. Quinn, Geologist/Paleontologist
Mariam Dahdul, Archaeologist/Report Writer
CRM TECH
4472 Orange Street
Riverside, CA 92501

Bai Tang, Principal Investigator
Michael Hogan, Principal Investigator

June 9, 2003

CRM TECH Contract #1004
Approximately 40 Acres
USGS Ritter Ridge, Calif., 7.5' Quadrangle
Section 27, T6N R12W, San Bernardino Base Meridian

MANAGEMENT SUMMARY

Between January and June, 2003, at the request of RBF Consulting, CRM TECH performed a paleontological resource assessment on approximately 40 acres of vacant land in the City of Palmdale, Los Angeles County, California. The subject property of the study is located near the southeast corner of Avenue Q-5 and Tierra Subida Avenue, lying within the northwest quarter of Section 27, T4S R7E, San Bernardino Base Meridian. The study is part of the environmental review process for the proposed construction of a general hospital known as the Palmdale Medical Center/Universal Health Services, Inc. The City of Palmdale, as Lead Agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA).

The purpose of the study is to provide the City of Palmdale with the necessary information and analysis to determine whether the proposed project would potentially disrupt or adversely affect any paleontological resources, as mandated by CEQA, and to design a paleontological salvage program for the project, if necessary. In order to identify any paleontological resource localities that may exist in or near the project area and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH initiated records searches at the San Bernardino County Museum and the Natural History Museum of Los Angeles County, conducted a literature search, and carried out a field survey of the project area, in accordance with the guidelines of the Society of Vertebrate Paleontology.

Based on the results of the records, the literature search, and the field inspection, the proposed project's potential impact on paleontological resources in surficial Quaternary alluvium of Holocene age is determined to be low, but possible impacts to fossils of Pleistocene and older alluvial sediments is high. Therefore, a paleontological resource recovery program and monitoring of earth-moving activities is therefore recommended for the project area.

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INTRODUCTION

Between January and June, 2003, at the request of RBF Consulting, CRM TECH performed a paleontological resource assessment on approximately 40 acres of vacant land in the City of Palmdale, Los Angeles County, California (Fig. 1). The subject property of the study is located near the southeast corner of Avenue Q-5 and Tierra Subida Avenue, lying within the northwest quarter of Section 27, T4S R7E, San Bernardino Base Meridian (Fig. 2). The study is part of the environmental review process for the proposed construction of a general hospital known as the Palmdale Medical Center/Universal Health Services, Inc. The City of Palmdale, as Lead Agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.).

CRM TECH performed the present study to provide the City of Palmdale with the necessary information and analysis to determine whether the proposed project would potentially disrupt or adversely affect any paleontological resources, as mandated by CEQA, and to design a paleontological salvage program for the project, if necessary. In order to identify any paleontological resource localities that may exist in or near the project area and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH initiated records searches at the San Bernardino County Museum and the Natural History Museum of Los Angeles County, conducted a literature search, and carried out a field survey of the project area, in accordance with the guidelines of the Society of Vertebrate Paleontology. The following report is a complete account of the methods, results, and final conclusion of this study.

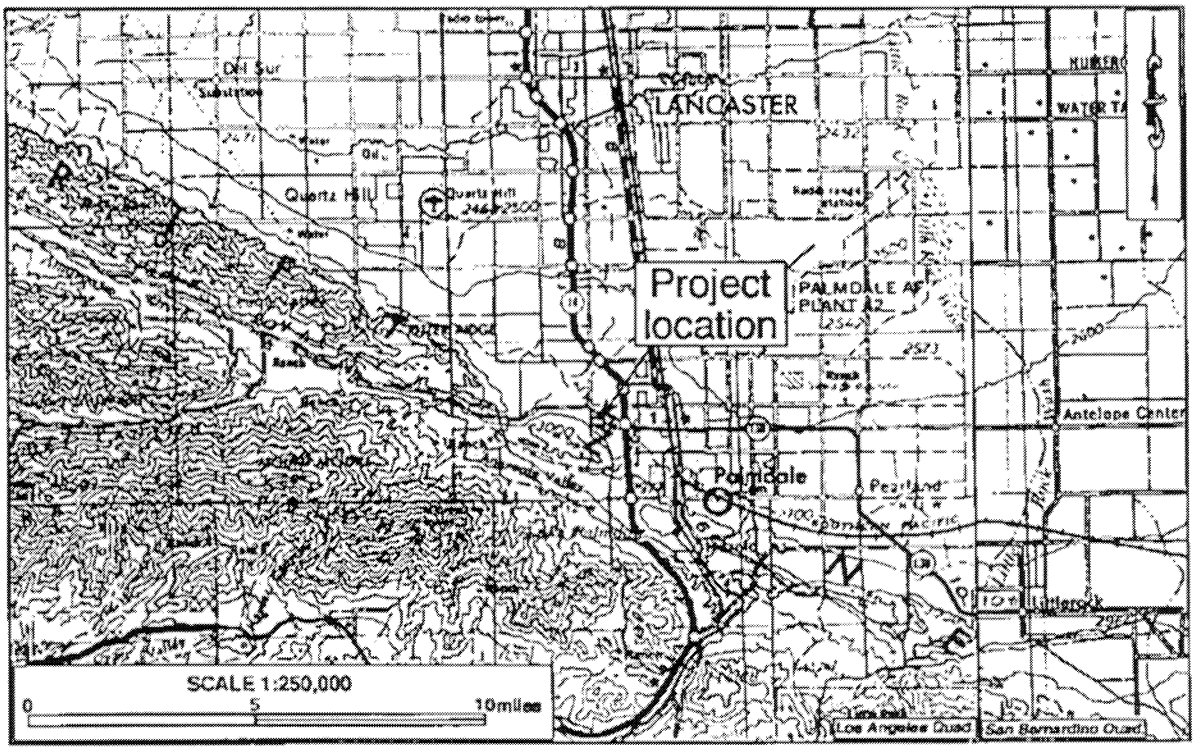

Figure 1. Project vicinity. (Based on USGS San Bernardino and Los Angeles, Calif., 1:250,000 quadrangles [USGS 1969; 1975])

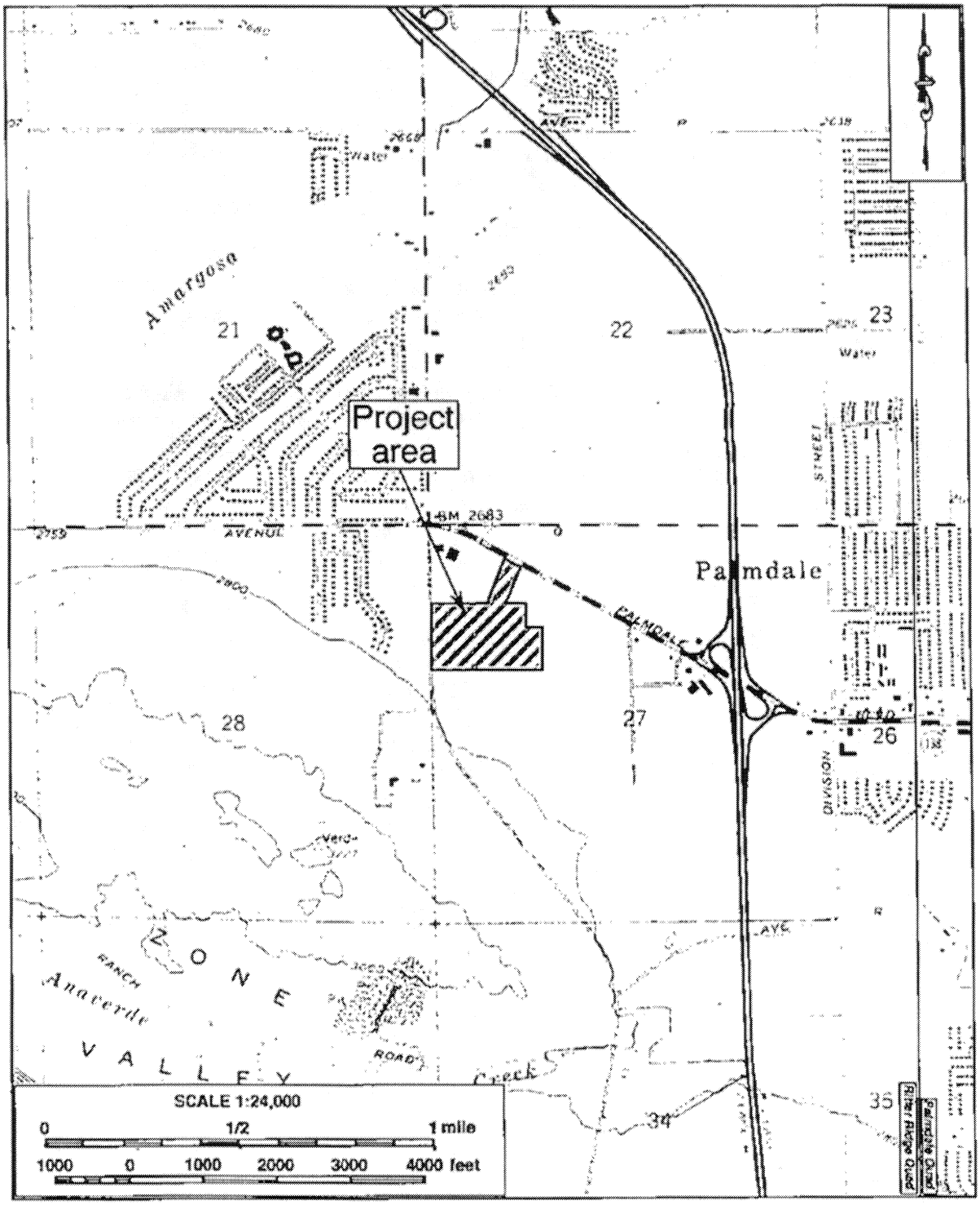

Figure 2. Project area. (Based on USGS Palmdale and Ritter Ridge, Calif., 1:24,000 quadrangles [USGS 1974a; 1974b])

SETTING

The project area is situated in the southern portion of the Antelope Valley in the western Mojave Desert (Woodruff et al. 1970; Dibblee 1967). The Mojave Desert Geomorphic/Geologic Province is separated from the Sierra Nevada and Basin-and-Range Provinces on the north by the Garlock Fault system and from portions of the Transverse Ranges and Colorado Desert Provinces to the south by the San Andreas Fault system (Jenkins 1980:41). The property is located within an uplifted area that is adjacent to the northern side of the San Andreas Fault Zone (Dibblee 1967:57). This portion of the San Andreas Fault is shown to have last ruptured in 1857 (Jennings 1994). Because uplifting along the north side of the fault has been occurring in this region for many years, including into historic times, older rocks have been brought to the surface where they are often found exposed and/or covered by thin layers of Recent Alluvium.

Alluvial soils in this area of the Antelope Valley have been mapped as Pleistocene to early Holocene in age by Ponti (1985:82-83). Ponti shows the alluvial soils, which he terms the Palmdale and Tylerhorse units, to include the Shoemaker and Nadeau Gravels of Noble (1953; 1954) and some finer-grained sediments of similar age that have been mapped by Noble and Dibblee (1967) as old terrace deposits and old alluvium. Ponti (1985:80) shows two of his soil-sample sites (Site D3-1 and S3-1) to be north of the project area. Both of these sites are considered to contain materials from the Upper Tylerhouse Unit (Ponti 1985:86).

Elevations in the project area range around 2,720 feet above mean sea level. Undeveloped land surrounds most of the subject property, but some residential and commercial development has been noted in the vicinity. The alluvial soils present in the property are covered by a dense growth of wild flowers and grasses as well as weeds (Fig. 3). The vegetation in the area has been identified as California Poppy, Bush Lupine, Fiddleneck, Coreopsis, and Blue Dick Lilly. A large gully is situated in the southwest portion of the project area. Past disking for farming or weed control is still evident in portions of the property and some large mounds were constructed in the northwest—possibly for bicycle jumps.

METHODS AND PROCEDURES

RECORDS SEARCHES

The records search service was provided by the Regional Paleontologic Locality Inventory located at the San Bernardino County Museum in Redlands (Scott 2003) and the Natural History Museum of Los Angeles County in Los Angeles (McLeod 2003). These institutions maintain on file regional paleontological site records as well as supporting maps and documents. The records search results are used to identify previously performed paleontological resource assessments and known paleontological localities near the project area. In addition, a literature search was conducted using materials in the CRM TECH library and the personal library of the author, including unpublished reports produced during surveys of other properties in the area.

Figure 3. Overview of the current natural setting of the project area. (Photo taken on March 28, 2003)

FIELD SURVEY

On March 28, 2003, CRM TECH geologist/paleontologist Harry M. Quinn (see App. 1 for qualifications) conducted the field assessment of the project area. Quinn carried out the on-foot survey of the project area by walking parallel north-south and east-west transects spaced 15 meters (ca. 50 feet) apart.

RESULTS AND FINDINGS

EXISTING DATA SUMMARY

The paleontology records searches conducted by the San Bernardino County Museum (Scott 2003) and Natural History Museum of Los Angeles County (McLeod 2003) indicate that no fossil localities are known to be situated within the project boundaries. However, several paleontological localities were identified within a 1 to 1.5 mile radius of the subject property (Scott 2003). Several other localities were found outside this scope that are known to have produced fossils from stratigraphic sequences similar to subsurface rocks that may be present in the project area (McLeod 2003; Scott 2003; Reynolds 1989:44; Savage et al. 1954:53). Based on the record searches, the Quaternary Alluvium deposits have a "low potential" for containing significant vertebrate fossils. However, should older rocks of the Pliocene Anaverde Formation or the Pleistocene Nadeau Gravels or Harold Formation be encountered below the Quaternary Alluvium deposits, they are to be considered as having a "high paleontologic sensitivity" (McLeod 2003; Scott 2003). Excavations within these deposits have a "high potential to impact significant nonrenewable fossil resources" (*ibid.*).

GEOLOGY

Dibblee (1967:Plate 1, West Half & 57) shows the project area to be located in an area of alluvium as well as scattered outcroppings of the crystalline bedrock and Anaverde formation less than a half mile to the south of the property. Dibblee (*ibid.*:Plate 4) shows the Anaverde Formation in the Palmdale area to rest unconformable on crystalline bedrock and to be overlain unconformable by older alluvium. Some of this older alluvium is shown to be Pleistocene in age. The Anaverde formation has been subdivided into four main rock types (*ibid.*:56): a basal dioritic breccia, a pink arkosic sandstone and conglomerate, a buff arkosic sandstone, and an upper clay shale sequence. Nineteen species of fossil plants were found in the basal portion of the clay shale sequence about 3.5 miles west of Palmdale (*ibid.*).

To the southeast of Palmdale in the Pearland Quadrangle, Noble (1953) found the Anaverde formation to be a distinct mappable formation above the Punchbowl formation and below the Harold formation. In this area the Anaverde formation has been subdivided into three main rock types: a conglomeratic sandstone and siltstone, a gypsiferous shale, and an overlying conglomeratic sandstone and siltstone. Noble (1954) shows the Shoemaker gravel to questionably unconformably overlay the Harold formation in the Valyermo quadrangle. He considers the Shoemaker gravel to be possibly correlative with the Nadeau gravel of the Pearland quadrangle to the west.

Bailey and Jahns (1954:Plate 4) map the area along the north side of the San Andreas fault near Palmdale as gr, pc, and Q. The gr is described as plutonic rocks of granitic to quartz diorite composition of Mesozoic age, the pc as continental clastic rocks of Pliocene age, and the Q as alluvium, terrace, talus, and landslide deposits of possible Pleistocene age.

Axelrod (Savage et al. 1954:53) described a Hemphillian age flora (Anaverde flora) from the Anaverde formation rocks near Palmdale, the exact location of which is not disclosed. The Hemphillian Stage constitutes a lower middle Pliocene age for the Anaverde formation (*ibid.*). McLeod (2003) refers to the Anaverde formation as being equivalent to the Harold formation. However, Noble (1953) mapped the Anaverde formation as being a distinct lithologic unit from the overlying Harold formation. He considered the Anaverde formation to be transitional from lower to middle Pliocene age and the Harold formation to be Pleistocene and probably upper Pleistocene in age.

The surface soils in the project area have been mapped as HcC and RcB (Woodruff et al. 1970:Sheets 66-67). The HcC type soils belong to the Hanford Series, specifically the Hanford sandy loam, 2 to 9 percent slopes (*ibid.*:28). These soils form on well-drained to excessively-drained areas that form from granitic alluvium (*ibid.*:26). The RcB type soils belong to the Ramona Series, specifically the Ramona coarse sandy loam, 2 to 5 percent slopes (*ibid.*:47). These soils form in well-drained areas on undulating terraces formed from alluvium derived from granitic materials (*ibid.*:46).

The current surface survey found the exposed surface soils to be recent alluvium. A gully cut into the surface soils in the southwestern portion of the project area exposed a profile cut that extended to about 8 feet below the surface. Based on the examination of the material exposed in the gully walls, the surface soils are of recent alluvial origin down to

the base of the exposures. The property has been staked for drilling of soil borings, which will greatly help in determining the composition of the subsurface soils below the point where they were exposed in the gully.

PALEONTOLOGY

The field survey confirmed the presence of recent alluvium on the ground surface. As expected, no fossil remains were found to be present in the project area during the field inspection.

DISCUSSION

While no fossil localities were found to be present within the project area, some localities are known to exist nearby from the same rocks that are mapped as being present in the subject property (McLeod 2003; Scott, 2003). The surficial Holocene alluvial sediments have been assigned a low potential to adversely impact significant nonrenewable fossil remains. However, Pleistocene and older alluvial sediments have a high sensitivity for paleontological resources.

RECOMMENDATIONS

Based on the study results presented above, the proposed project's potential impact on paleontological resources is determined to be low for surficial Holocene alluvial sediments but high for Pleistocene and older alluvial sediments. Therefore, monitoring of earth-moving activities for paleontological resources during grading and a program to mitigate impacts to the resources that might be exposed or unearthed during all such excavation is recommended. Such a program should be developed in accordance with the provisions of CEQA as well as the proposed guidelines of the Society of Vertebrate Paleontology, and should include, but not be limited to the following, as outlined by Scott (2003).

1. Monitoring of excavations in the project area by a qualified paleontologic monitor. Paleontologic monitors should be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens.
2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.
3. Identification and curation of specimens into a museum repository with permanent retrievable storage. The paleontologist should have a written repository agreement in hand prior to the initiation of mitigation activities.
4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency, would signify completion of the program to mitigate impacts to paleontologic resources.

CONCLUSION

CEQA Appendix G provides that "a project may be deemed to have a significant effect on the environment if it will . . . disrupt or adversely affect a . . . paleontological site except as a part of a scientific study." The present study, conducted in compliance with this provision, was designed to identify any significant, non-renewable paleontological resources that may exist within or adjacent to the project area, and to assess the possibility for such resources to be encountered in future excavation and construction activities.

Based on the study results presented above, the proposed project's potential impact on paleontological resources in surficial Quaternary alluvium of Holocene age is determined to be low, but possible impacts to fossils of Pleistocene and older alluvial sediments is high. Therefore, a paleontological resource recovery program and monitoring of earth-moving activities is therefore recommended for the project area.

REFERENCES

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1967 Areal Geology of the Western Mojave Desert, California. U.S. Geological Survey, Professional Paper 522. Washington, D.C.

Jenkins, Olaf P.
1980 Gemorphic Provinces Map of California. *California Geology* 32(2):40-41. California Division of Mines, San Francisco, California.

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1953 Geology of the Pearland Quadrangle, California. U.S. Geological Survey, Geologic Quadrangle Maps of the United States (GQ-24), Scale 1:24,000. Washington, D.C.
1954 Geology of the Valyermo Quadrangle and Vicinity, California. U.S. Geological Survey, Geologic Quadrangle Maps of the United States (GQ-50), Scale 1:24,000. Washington, D.C.

Ponti, Daniel J.
1985 The Quaternary alluvial sequence of the Antelope Valley, California. Geological Society of America, Special Paper 203, pp. 79-96. Boulder, Colorado.

Reynolds, Robert E.
1989 Mid-Pleistocene faunas of the West-Central Mojave Desert. In Reynolds (ed.): The West-Central Mojave Desert: Quaternary Studies between Kramer and Afton Canyon, San Bernardino County Museum Association Special Publication, pp. 44-48. Redlands, California.

Savage, Donald E, Theodore Downs, and Owen J. Poe
1954 Cenozoic Land Life of Southern California. In Jahns (ed.): Geology of Southern California, Chapter III, Part 6, pp. 43-58. California Division of Mines, Bulletin 170. San Francisco, California.

Scott, Eric
2003 Paleontology Records Review, Palmdale Med, City of Palmdale, Los Angeles, California. Letter report prepared by the San Bernardino County Museum, Section of Geological Sciences, Redlands.

USGS (United States Geological Survey, U.S. Department of the Interior)
1969 Map: San Bernardino, Calif. (1:250,000); 1958 edition revised.
1974a Map: Palmdale, Calif. (7.5', 1:24,000); 1958 edition photorevised in 1974.
1974b Map: Ritter Ridge, Calif. (7.5', 1:24,000); 1958 edition photorevised in 1974
1975 Map: Los Angeles, Calif. (1:250,000); aerial photos taken in 1972.

Woodruff, George A., William J. McCoy, and Wayne B. Sheldon
1970 Soil Survey of the Antelope Valley, California. Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C.

APPENDIX 1:

PERSONNEL QUALIFICATIONS

PROJECT ARCHAEOLOGIST/REPORT WRITER
Mariam Dahdul, M.A.

Education

2002 M.A., Anthropology, California State University, Fullerton.
Thesis title: Beads and Ornaments from the Coachella Valley
Thesis Advisor: Dr. Phyllisa Eisentraut
1993 B.A., Geography, California State University, Fullerton

2002 "Section 106-National Historic Preservation Act: Federal Law at the Local Level," UCLA Extension Course
2002 "Historic Archaeology Workshop," presented by Richard H. Norwood, Base Archaeologist, Edwards Air Force Base

Professional Experience

2000- Project Archaeologist, CRM TECH, Riverside
- Prepare cultural resources management reports, maps, and site records
- Analyze beads, ornaments, and shell
- Conduct archaeological surveys
- Participate in various testing, evaluation, and mitigation programs

Laboratory and Field Experience

2001 Archaeological field school under the direction of Dr. Brian Byrd
- Test excavations of sites at the San Elijo Lagoon Reserve, including flotation of soil samples and sorting and cataloguing of artifacts.

2000 Archaeological field class under the direction of Dr. Claude Warren
- Excavated units at Soda Lake in the Mojave Desert and produced lake bottom stratigraphic profiles.

1999-2000 Archaeology Laboratory, CSU, Fullerton
- Assisted in the cataloguing of artifacts

1999 Field survey course under the direction of Dr. Phyllisa Eisentraut
- Surveyed and mapped prehistoric site in the Mojave Desert

Papers Presented

2002 "Shell Beads from the Coachella Valley," Coachella Valley Archaeological Society's 6th Annual Symposium
2002 "Shell Beads from the Coachella Valley," Kelso Conference on the Archaeology of the California and Mojave Deserts

Cultural Resources Management Reports

Co-author of and contributor to numerous cultural resources management study reports since 2000.

APPENDIX 2:

RESULTS OF PALEONTOLOGICAL RECORDS REVIEW

NATURAL HISTORY MUSEUM
OF LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325
FAX: (213) 746-7431
e-mail: smcleod@usc.edu

23 January 2003

CRM Tech
4472 Orange Street
Riverside, CA 92501

Attn: Laura Hensley Shaker

re: Paleontological resources for the 1004: Palmdale Med Paleo project area

Dear Laura:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the 1004: Palmdale Med Paleo project area as outlined on the section of the Ritter Ridge quadrangle map that you faxed to me on 23 January 2003. We do not have any vertebrate fossil localities that lie within the project boundaries, but we do have localities somewhat nearby in similar deposits to those in the proposed project area and other localities nearby from rock units that may occur as subsurface deposits within the proposed project area.

The surficial deposits in the proposed project area are composed exclusively of Quaternary Alluvium beneath soil. These types of sedimentary deposits usually do not contain significant vertebrate fossils, at least in the uppermost layers. Some miles to the east-southeast of the proposed project area, however, along Avenue S from Little Rock east we have localities LACM 5942-5953 from pipeline excavations in the Quaternary Alluvium and older Quaternary sediments that produced a fauna of small vertebrates including gopher snake, *Pituophis*, kingsnake, *Lampropeltis*, leopard lizard, *Gambelia wislizenii*, cottontail rabbit, *Sylvilagus*, pocket mouse, *Chaetodipus*, kangaroo rat, *Dipodomys*, and pocket gopher, *Thomomys*.

Subsurface deposits in the proposed project area may include the terrestrial Pliocene Harold Formation (possibly also known as the Anaverde Formation). Our closest localities in the Harold Formation are LACM (CIT) 399, 451 and 589 as well as LACM 5761, all southeast of the proposed project area east of California Highway 14 around the San Andreas Fault zone. All these localities have produced fossil specimens of mastodont, *Mammut*, and horse, *Equus*. The more general locality of LACM (CIT) 589 has produced a more diverse fauna with birds, carnivores, rabbits identified as both *Lepus* and *Sylvilagus*, and rodents of the genera *Reithrodontomys*, *Peromyscus* and *Neotoma*.

The surficial deposits in the proposed project area are composed of Quaternary Alluvium beneath soil, which has only a modest chance of producing substantial fossil vertebrates. If subsurface excavations extend below the Quaternary Alluvium they may encounter deposits of the terrestrial Pliocene Harold Formation. In that case, there is a very good chance that subsurface excavation in the proposed project area will expose significant vertebrates fossils, as this time period is poorly sampled in the southern California region. Thus any substantial subsurface excavation in the project area should be closely monitored to quickly and professionally collect any vertebrate fossil remains without impeding development. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

SAN BERNARDINO COUNTY MUSEUM

2024 Orange Tree Lane • Redlands, California USA 92374-4560
(909) 307-2669 • Fax (909) 307-0539 • www.sbcountymuseum.org

COUNTY OF SAN BERNARDINO
ECONOMIC DEVELOPMENT
AND PUBLIC SERVICES GROUP

ROBERT L. McKERNAN
Director

4 February 2003

CRM Tech
attn: Laura Hensley Shaker
4472 Orange Street
Riverside, CA 92501

re: **PALEONTOLOGY RECORDS REVIEW, PALMDALE MED, CITY OF PALMDALE, LOS ANGELES COUNTY, CALIFORNIA**

Dear Laura,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a records search for the above-referenced ~40-acre area in the Palmdale region of Los Angeles County. The study area is located south of Palmdale Boulevard between State Highway 14 and 10th Street West. Specifically, the property is located in the northwestern quadrant of section 27, Township 6 North, Range 12 West, San Bernardino Base and Meridian, as seen on the Ritter Ridge, California 7.5' United States Geological Survey topographic quadrangle map (1959 edition, photorevised 1980).

Previous mapping of the Palmdale region (Jennings and Strand, 1969) indicates that the Palmdale Med study area is located upon surface exposures of Quaternary alluvium deposited during the Holocene Epoch, ≤ 11,000 years before present (BP). These alluvial sediments have low potential to contain significant nonrenewable paleontologic resources, and so are assigned low paleontologic sensitivity. However, these Holocene sediments may overlie older Quaternary sediments deposited during the Pleistocene Epoch, between ~1.8 million years BP and ~11,000 years BP. If present in the subsurface, these older Pleistocene sediments would have high paleontologic sensitivity.

The Pleistocene older alluvium in the Mojave Desert and the Palmdale area has been subdivided into the Nadeau Gravels and the Harold Formation (Noble, 1954). These sediments are interpreted to have high potential to contain significant nonrenewable paleontologic resources subject to adverse impact during development-related excavation. Pleistocene vertebrate fossils have previously been reported from these sedimentary units in the Palmdale area (Jefferson, 1989; Reynolds, 1989). The age of these sediments might be indicated by the development of soil profiles, and may correspond to the age of sediments in the Antelope Valley that contain the well-developed Tylerhorse series of soils, perhaps 500,000 years old (Ponti, 1985). However, time-diagnostic taxa dating to the Pleistocene have not been reported from undifferentiated Pleistocene older alluvium in the Palmdale area (Jefferson, 1989; Reynolds, 1989), and so the actual age of the recovered specimens from these sediments is based exclusively upon lithologic correlations.

JOHN F. MICHAELSON
County Administrative Officer

JOHN GOSS
Assistant County Administrator
Economic Development and
Public Services Group

Board of Supervisors
BILL POSTMUS ..... First District
JON D. MIKELS ..... Second District
DENNIS HANSBERGER ..... Third District
FRED AGUIAR ..... Fourth District
JERRY EAVES ..... Fifth District

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this records search indicated that several localities (SBCM 9.2.3 - 9.2.7 and 9.2.15 - 9.2.31) are located within 1 to 1½ miles of the proposed Palmdale Med property. These localities have yielded fossil root casts and remains of rodents and other small vertebrates from subsurface alluvium of presumed Pleistocene age (although, as stated previously, none of the taxa represented are time diagnostic). Additionally, locality SBCM 9.2.2, located ~2 miles south of the proposed project property, yielded fossil remains of extinct mastodon from exposures of the Pliocene Anaverde Formation.

Approximately three (3) miles to the southwest, localities SBCM 9.1.2 - 9.1.4 have yielded fossil remains including gastropods, snakes, and rodents as well as some large mammal bone. Additionally, locality SBCM 9.1.1, the extremely significant Barrel Springs site, is located approximately five (5) miles southeast of the proposed Palmdale Med property, in exposures of the fossiliferous Harold Formation. Taxa recovered from this Pleistocene Epoch locality suggest that the Harold Formation was deposited during the early Irvingtonian North American Land Mammal Age, roughly 1.5 - 1 million years BP. These taxa include:

Microtus californicus (meadow mouse)
Neotoma (*Teanopus*) "*prefuscipes*" (extinct wood rat)
Camelops sp. (extinct large camel)
Equus sp. (extinct horse)
Mammuthus sp. (extinct mammoth)
Mammut sp. (extinct mastodon)

The relative proximity of these localities to the Palmdale area and the proposed Palmdale Med site indicates that subsurface Pleistocene alluvium, if encountered, will have high potential to contain significant fossil resources. These localities therefore support an interpretation of high paleontologic sensitivity for these sediments.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation into surficial Quaternary alluvium of Holocene age for the proposed property in Palmdale has low potential to adversely impact significant nonrenewable paleontologic resources. These sediments have low paleontologic sensitivity. Monitoring of excavation to recover significant fossil resources is not recommended for excavation in this lithologic unit.

However, should Pleistocene older alluvial sediments be encountered at depth, these sediments would have high potential to contain significant nonrenewable fossil resources. These sediments, if present in the subsurface, are therefore assigned high paleontologic sensitivity. If excavation is of sufficient depth to encounter these older Pleistocene sediments, a qualified vertebrate paleontologist must be retained to develop a program to mitigate adverse impacts to nonrenewable paleontologic resources. This mitigation program should be consistent with the provisions of the

California Environmental Quality Act, as well as with regulations currently implemented by the County of Los Angeles and the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Based upon the results of this review, areas of concern include any undisturbed subsurface Pleistocene older alluvium. It is not known a priori at what depths such older Pleistocene sediments might be encountered. Paleontologic monitoring is recommended only for those undisturbed sediments wherein fossil plant or animal remains are found with no associated evidence of human activity or an archaeological context. Paleontologic monitors should be equipped to salvage fossils as they are unearthed to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.

3. Identification and curation of specimens into a museum repository with permanent retrievable storage (e.g., Natural History Museum of Los Angeles County). The paleontologist should have a written repository agreement in hand prior to the initiation of mitigation activities.

4. Preparation of a report of findings with an appended itemized inventory of specimens. It is recommended that this report incorporate the full results of this literature review, as well as the full results of the (recommended) review of the records of the Vertebrate Paleontology Department of the Natural History Museum of Los Angeles County. The report and inventory, when submitted to the appropriate Lead Agency, would signify completion of the program to mitigate impacts to paleontologic resources.

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

APPENDIX 10.10:
PHASE I ENVIRONMENTAL SITE ASSESSMENT

PHASE I ENVIRONMENTAL SITE ASSESSMENT AND LIMITED SUBSURFACE EVALUATION

BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA

GEOCON

CONSULTANTS, INC

ENVIRONMENTAL
GEOTECHNICAL
MATERIALS

PREPARED FOR

CITY OF PALMDALE REDEVELOPMENT AGENCY

PALMDALE, CALIFORNIA

FEBRUARY 26, 2002

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Project No. 09178-06-01
March 7, 2002

VIA FASCMILE AND U.S. MAIL

Mr. Michael Adams
City of Palmdale Redevelopment Agency
38250 Sierra Highway
Palmdale, California 93550

Subject: PHASE I/II ENVIRONMENT SITE ASSESSMENT
BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA

Reference: *Phase I Environmental Site Environmental and Limited Subsurface Assessment, Bonino Trust Property, Palmdale, California*, dated February 26, 2002

Dear Mr. Adams:

The study outlined in the above-referenced report consisted of a Phase I Environmental Site Assessment (ESA) and limited subsurface evaluation. The limited subsurface evaluation included the manual excavation of ten, relatively shallow small-diameter borings, obtaining soil samples, and analyzing the soil samples for potential contaminants. The limited subsurface evaluation qualifies as a "Phase II" ESA.

Geocon appreciates this opportunity to be of continued service. If you should have any further questions, please contact the undersigned.

Sincerely,
GEOCON CONSULTANTS, INC.

Phillip S. Rosenberg, CEG, CHG
Senior Geologist

6970 Flanders Drive ■ San Diego, California 92121-2974 ■ Telephone (858) 558-6100 ■ Fax (858) 558-6437

GEOCON
CONSULTANTS, INC
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Project No. 09178-06-01
February 26, 2002

OVERNIGHT DELIVERY

Mr. Michael Adams
City of Palmdale Redevelopment Agency
38250 Sierra Highway
Palmdale, California 93550

Subject: BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA
PHASE I ENVIRONMENTAL SITE ASSESSMENT
AND LIMITED SUBSURFACE EVALUATION

Dear Mr. Adams:

In accordance with your request, Geocon Consultants, Inc. has conducted a Phase I Environmental Site Assessment (ESA) and limited subsurface evaluation consisting of soil sampling and analysis at the above referenced site.

The accompanying report presents the details of the study and summarizes the findings relative to the potential presence of hazardous materials and wastes and/or hazardous conditions at the site at levels likely to warrant mitigation action pursuant to current regulatory guidelines. Please contact us if you have any questions regarding the contents of this report.

Sincerely,

GEOCON CONSULTANTS, INC.

Daniel A. Weis, MPH
Staff Scientist

Phillip S. Rosenberg, CEG CHG
Senior Geologist

REGISTERED GEOLOGIST
PHILLIP S. ROSENBERG
No. 1721
EXP. 10/31/02
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

DAW:PSR:sc

(2) Addressee

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AND LIMITED SUBSURFACE EVALUATION

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PHASE I ENVIRONMENTAL SITE ASSESSMENT AND LIMITED SUBSURFACE EVALUATION

1. INTRODUCTION

1.1 Purpose

This report presents the results of a Phase I Environmental Site Assessment (ESA) and limited subsurface evaluation conducted at the Bonino Trust Property, located east of Tierra Subida and north of Avenue Q-8 in the City of Palmdale, Los Angeles County, California (the Site). The Site is identified by County of Los Angeles Assessor's Parcel Numbers (APNs) 3004-023-001, -002, -003, -004, -005, & -006. Geocon Consultants, Inc. (Geocon) prepared the report in accordance with the request of Mr. Michael Adams of the City of Palmdale Redevelopment Agency (the Client).

This ESA was conducted in general accordance with the American Society for Testing and Materials (ASTM) 2000 Standard Practice for Environmental Site Assessments, Designation E1527-00. The main components of this report, as specified by the ASTM Standards, include the following:

- **Site Reconnaissance:** The objective of the site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with the Site. The site reconnaissance was for the Site only and did not include moving on-site debris, vehicles, or other objects to allow for observation of the underlying ground surface. Off-site properties and features were viewed from the Site and a drive-by reconnaissance of the surrounding area.

- **Physical Setting:** Physical setting references were reviewed to obtain information concerning the topographic, geologic, and hydrogeologic characteristics of the Site and vicinity. Such information may be indicative of the direction and/or extent that a contaminant could migrate in the event of a spill or release.

- **Site History:** The purpose of consulting historical references is to develop a history of the previous uses of the Site and surrounding area in order to help identify the likelihood of past uses having led to recognized environmental conditions in connection with the Site. Historical sources reviewed included aerial photographs, site ownership and/or use information (as made available by the Client). In addition, Geocon conducted interviews with persons who were reasonably expected to be knowledgeable about historical and/or current conditions at and uses of the Site.

- **Records Review:** The purpose of the records review is to obtain and review records that will help identify recognized environmental conditions at or potentially affecting the Site. Geocon reviewed client-provided and publicly available federal, state, and local regulatory agency records pertaining to the Site.

1.2 Scope of Services

The general scope of services proposed for the ESA is described in Section 1.1. The ESA did not include the following:

- Chain-of-title reports pertaining to the Site were not reviewed.
- Historical fire insurance maps were not reviewed since no historical map coverage was available.
- South Coast Air Quality Management District records pertaining to Notices-of-Violation (NOVs) and air emission permits for the Site were not reviewed since agency personnel indicated that an exact address was needed to conduct the search, and no addresses were provided for the Site.
- County of Los Angeles Department of Agriculture-Weights and Measures records were not reviewed since agency personnel indicated that an exact address was needed to conduct the search.
- City of Palmdale Fire Prevention Department records regarding underground storage tank (UST) permits were not reviewed since agency personnel indicated that an exact address was needed to conduct the search.

1.3 Site Location and Legal Description

The Site is located generally south of Palmdale Boulevard, east of Tierra Subida, west of Route-138, and north of Avenue Q-8 in the City of Palmdale, Los Angeles County, California. The approximate location of the Site is shown on the Vicinity Map presented as Figure 1. Although Avenues Q-5, Q-6, Q-7, and 7th Street West are shown in Figure 1 within the site boundaries, these improvements do no exist as of the date of this report.

The Site is identified by Los Angeles County Assessor's parcel numbers 3004-023-001, 002, 003, 004, 005, and 006. The legal description of area encompassing the Site is as follows:

Lots 1 thru 6 of Tract No. 41874, as per map recorded in Book 1029, Page 27 of Maps, in the office of the County Recorder of Los Angeles County, State of California.

2. SITE RECONNAISSANCE

A representative of Geocon conducted a reconnaissance of the Site, obtained soil samples, and performed observations of adjacent properties on February 4, 2002. Observations noted during the site reconnaissance are summarized below.

2.1 On-Site Reconnaissance

The Site consists of approximately 18 acres and was undeveloped and vacant at the time of the site reconnaissance. Topography of the Site appeared to be trend towards the north. Vegetation at the Site consisted of sage brush and grasses. Surficial soils observed on-site were generally brown, fine to medium-grained sands with some silt. Stockpiles of soil were observed along the northwestern property line of the Site.

Scattered trash and debris was observed on-site, which included miscellaneous paper and plastic products. No odors, pools of liquid, drums, significantly stained soil, distressed vegetation, unidentified substance containers, pits, or ponds were observed. A Site Plan illustrating the noted site features is included as Figure 2. Photographs taken during the site reconnaissance are presented in Appendix A.

2.2 Off-Site Observations

Observed and reported current uses of adjacent properties and surrounding areas are described below:

Direction	Adjacent Properties	Surrounding Area
North	Vacant land.	Strip mall complex; Palmdale Boulevard; residential and commercial development.
East	Vacant land; residential development (southeast).	Residential and commercial development; Palmdale Boulevard; Route-138.
South	Vacant land; residential development (southeast).	Avenue Q-8; residential development.
West	Tierra Subida, residential development.	Residential development.

3. PHYSICAL SETTING

3.1 Topographic Features

The U.S. Geological survey (USGS) topographic map for the Ritter Ridge, California quadrangle, dated 1958 (photo revised 1974) was reviewed to obtain information concerning the topography and previous development of the Site and properties located in the vicinity of the Site. According to the map, area topography is approximately 2,720 to 2,760 feet above Mean Sea Level (MSL). Topography of the Site appears to trend generally toward the northeast. On-site structures are not depicted on the map. Two structures are depicted on the northern adjacent property of the Site. In the general vicinity, "light-duty," "medium duty," and "heavy duty" roads were depicted, including Tierra Subida Avenue, Palmdale Boulevard, and Routes 14/138. Topographic features as depicted on the map are generally representative of observed site conditions during Geocon's site reconnaissance. A reproduction of a portion of the USGS map is presented as Figure 3.

3.2 Geologic Conditions

The Site is situated in the Mojave Desert Geomorphic Province of Southern California, adjacent to the Transverse Ranges. The Mojave Desert occupies approximately 25,000 square miles of Southern California. The Mojave Desert is landlocked, enclosed on the southwest by the San Andreas Fault and Transverse Ranges; on the north and northeast by the Garlock Fault, the Tehachapi Mountains, and the basin and range; on the east by the Colorado River; and on the south by the San Bernardino-Riverside County Line.

The region of the Mojave Desert is dominated by broad alluviated basins that are mostly aggrading surfaces, receiving non-marine continental deposits from adjacent uplands. The western Mojave Desert is transected by numerous faults and fault zones, trending northwest, parallel to the San Andreas Fault. The Site is underlain at depth by alluvium and alluvial fan deposits, related to erosion of the mountain ranges to the south of the site.

3.3 Regional Groundwater Quality and Occurrence

The *Water Quality Control Plan for the Lahontan Region* published by the Lahontan Regional Water Quality Control Board (6B) dated March 31, 1995 was reviewed for information pertaining to groundwater quality and occurrence in the vicinity of the Site. According to the Plan, the Site is located within the Lancaster Hydrologic Area of the Antelope Valley Groundwater Basin. Groundwater occurring within the Lancaster Hydrologic Area has existing beneficial use designations for municipal, agricultural, and industrial supply purposes.

According to the online database of the California Department of Water Resources (DWP), Central District (http://well.water.ca.gov/), several DWP wells are located in the general vicinity of the Site. Groundwater depths in the wells are generally greater than 100 feet beneath the ground surface. Based on general knowledge of the local hydrology in the area, groundwater flow direction is variable due to local faulting.

4. SITE HISTORY

4.1 Aerial Photographs

Aerial photographs, provided by Continental Aerial Photo for the years 1953, 1972, 1980, 1987, 1988, 1993, and 1995 were reviewed. Observations noted during the review are discussed below.

Year	Observations	
	Subject Site	Adjacent and Vicinity Properties
1953	The Site appears to be utilized for agricultural purposes (presence of linear ground patterns). Structures are not visible on-site. The Site is traversed by unimproved roads/pathways.	Agricultural property is visible to the north. Residential development is visible to the northwest and east. Palmdale Boulevard and Sierra Highway are visible to the east.
1972	The Site appears to be vacant and undeveloped.	Tierra Subida is visible. Commercial structures are visible to the northwest of the Site. Additional residential development is visible in the general vicinity. Route 14/138 is visible to the east. The California Aqueduct is visible to the south.
1980	Similar to the 1972 photograph.	Similar to the 1972 photograph. A small area of agricultural development is visible on the southwestern adjacent property of the Site. Graded housing pads and additional commercial structures are visible to the east.
1987	Similar to the 1980 photograph.	Similar to the 1980 photograph. Additional structures are visible in the general vicinity.
1988	Similar to the 1987 photograph.	Similar to the 1987 photograph.
1993	Similar to the 1988 photograph.	Similar to the 1988 photograph.
1995	Similar to the 1993 photograph.	Similar to the 1993 photograph.

4.2 Historical Ownership Information

The Site is currently owned by the Bonino Family, LP. A 50-year chain-of-title study for the Site was not conducted.

4.3 Interviews

The Client was contacted for information regarding current and historical uses of the Site. The Client indicated that the Site has not been previously developed. The Client was not aware of any hazardous waste/material storage and use or the presence of USTs on the property.

5. REGULATORY AGENCY RECORDS

5.1 Database Review

Fidelity National Information Solutions performed a search of federal, state, and local databases for the Site and surrounding areas. A reproduction of the key elements of the report (ID:750801901), dated January 24, 2002 is presented as Appendix B. The following table lists databases that were searched and the number of listings.

Database Name	Search Radius (Mile)	Number of Listings
FEDERAL DATABASES		
NPL (National Priority List)	1	0
CORRACTS (RCRA Corrective Actions)	1	0
TSD CORRACTS	1	0
CERCLIS/NFRAP (Sites currently or formerly under review by USEPA)	½	0
TSD (RCRA permitted treatment, storage, disposal facilities)	½	0
WATER WELLS (Federal and State Drinking Water Sources)	½	0
RCRA Viol (RCRA Violations/enforcement actions)	¼	0
TRIS (Toxic Release Inventory database)	¼	0
ERNS (Emergency Response Notification System of Spills)	⅛	0
GNRTR (RCRA registered small or large generators of hazardous waste)	⅛	0
NOTIFIER (RCRIS Notifiers)	⅛	0
STATE DATABASES		
SPL (State equivalent priority list)	1	0
SCL (State equivalent CERCLIS list)	½	0
LUST (Leaking Underground Storage Tanks)	½	2
SWLF (Permitted as solid waste landfills, incinerators, or transfer stations)	½	0
DEED RSTR (Sites with deed restrictions)	½	0
CORTESE (State index of properties with hazardous waste)	½	1
TOXIC PITS (Toxic Pits Cleanup facilities)	½	0
SPILLS (State spills list)	½	0
UST/AST (Registered underground or aboveground storage tanks)	¼	2
LOCAL DATABASES		
UNIQUE CO (Los Angeles County Site Mitigation Complaint Control Log)	⅛	0

5.1.1 Site

The Site was not listed in any of the searched databases.

5.1.2 Adjacent Properties

No properties located within a 1/8-mile radius of the Site were listed in the searched databases. There are two leaking underground storage tank (LUST) cases listed for EDS Exxon SVC, located at 400 West Palmdale Boulevard, and ARCO Petroleum Products, located at 411 West Palmdale Boulevard, respectively. According to the Fidelity report, these properties are located between ¼-½ mile from the Site. The status of the LUST cases at these properties is "closed."

5.2 California Department of Conservation Division of Oil and Gas

Geocon reviewed the California Department of Conservation Division of Oil and Gas (DOG) *Wildcat Map* W1-1 to estimate the distance and direction to the nearest oil or gas wells from the Site. According to the Wildcat Map, no wells are interpreted to be located within a 2-mile radius of the Site.

5.3 Water and Sewer Agencies

A representative of Geocon contacted the Palmdale Water District to obtain information pertaining to the reported source of water and method of sewage disposal for the Site, the location and depth of wells for the area, and any reported local drinking water contamination problems. A District representative indicated that water for the Site is supplied primarily from the California State Project, local groundwater wells, and local surface water supplied by Littlerock Dam and Palmdale Lake. The representative was not aware of reported drinking water contamination problems. Municipal sewage in the area is treated by the City of Palmdale.

5.4 Southern California Edison

Transformers were not observed on the Site. Documented discussions with Southern California Edison (Edison) representatives regarding transformers indicate that Edison has never specified polychlorinated biphenyl (PCB)-containing transformers for its electrical distribution system. Regardless, Edison has determined that some older (pre-1970s) mineral transformers were inadvertently contaminated with PCBs by the manufacturer. Based on a statistical sampling and testing program reportedly performed by Edison, it is unlikely that transformers found within its service area are PCB-contaminated.

5.5 City of Palmdale Building Department

Geocon contacted the City of Palmdale for information regarding on-site structures. A department representative indicated that permits were not found for the Site.

6. LIMITED SUBSURFACE EVALUATION

Pursuant to the authorization and request of the Client, Geocon conducted limited soil sampling and analysis at the Site. The purpose of the soil sampling and analysis was to evaluate the near-surface soil at the Site for potential impacts resulting from prior site usage.

6.1 Soil Sampling Activities

A total of ten soil samples to an approximate depth of six inches were manually collected with a hand auger from the Site on February 4, 2002. Sampling locations were selected using random statistical analysis. The samples were sealed in appropriate containers, chilled, and transported to a State of California certified analytical laboratory under chain-of-custody protocol. The samples were analyzed for the following constituents:

- Organochlorine pesticides by EPA Method 8081
- Title 22 Metals by EPA Method 6010B and 7471A
- Total recoverable petroleum hydrocarbons (TRPH) by EPA Method 6164

Sampling locations are presented on Figure 4. Prior to the collection of each soil sample, the hand auger was cleaned with tap water and a trisodium phosphate solution, and rinsed with two deionized water rinses.

6.2 Findings

Organochlorine pesticides were not detected in the soil samples obtained from the Site. TRPH was detected in sample E-6 at a concentration of 50 milligrams per kilogram (mg/kg). TRPH was not detected in the remaining nine samples obtained from the Site. The concentration of TRPH found in sample E-6 is at the lower limit of detection for the analytical method used and is below generally accepted regulatory action levels for this analyte.

Analytical results of metals analyses were compared to USEPA Region IX Preliminary Remediation Goals (PRGs) for residential soil. PRGs are often used in limited assessments in lieu of a health based risk assessment to assess the need for further evaluation of sites with concentrations of known cancer and non-cancer causing contaminants. Concentrations of heavy metals were below generally accepted U.S. EPA PRGs for residential soil.

Based on a review of a document entitled *Background Concentrations of Trace Major Elements in California Soils*, dated March 1996 and prepared by G.R. Bradford et al. and background metals data specific to Palmdale obtained by Geocon, metals concentrations found in on-site surficial soils are generally consistent with background concentrations of heavy metals typically found in the City of Palmdale and Southern California soils. Analytical metals data is present in Table I. The laboratory report and chain-of-custody documentation are presented in Appendix C.

SUMMARY OF FINDINGS

The Site was undeveloped and vacant at the time of the site reconnaissance. Scattered trash and debris was observed on-site, which included miscellaneous paper and plastic products. No odors, pools of liquid, drums, significantly stained soil, distressed vegetation, unidentified substance containers, pits, or ponds were observed.

Neither the Site nor its adjacent properties located within a 1/8-mile radius of the Site were listed on searched regulatory databases.

Organochlorine pesticides were not detected in the soil samples obtained from the Site. TRPH was detected in one sample collected from the southeastern portion of the Site. The reported concentration of TRPH was below generally accepted regulatory action levels. Concentrations of metals detected in on-site soils were below PRGs.

8. CONCLUSIONS

Geocon did not recognize the presence of adverse recognized environmental conditions for the Site during the preparation of this ESA. Based on the findings outlined herein, the potential for the existing presence of environmental impairment to the Site from hazardous substances/wastes on-site or on properties in the vicinity is considered low. Additional environmental assessment is not considered warranted at this time.

Based on the presumed depth and flow of groundwater in the area and the apparent distance and status of the listings of the properties listed on the regulatory databases, significant adverse impacts from the adjacent properties is not expected at the Site.

9. LIMITATIONS

The preliminary conclusions presented in this report are based upon reasonable visual observations made at the site and research of available materials within the scope and budget of the contract. The information presented is relevant to the dates of our site visit and should not be relied upon to represent conditions at later dates. The opinions expressed herein are based on our experience with similar studies and information obtained during our effort. If additional information becomes available, we request the opportunity to review the information and modify our opinions, if necessary.

The visual observations made by Geocon were limited to the surface area of the subject parcel and the contiguous sites. Aside from the widely-spaced soil samples obtained, subsurface exploration, soil and groundwater sampling, and analytical laboratory testing were not within the scope of this study. In addition, this study did not include a review of a 50-year chain of title report, and information

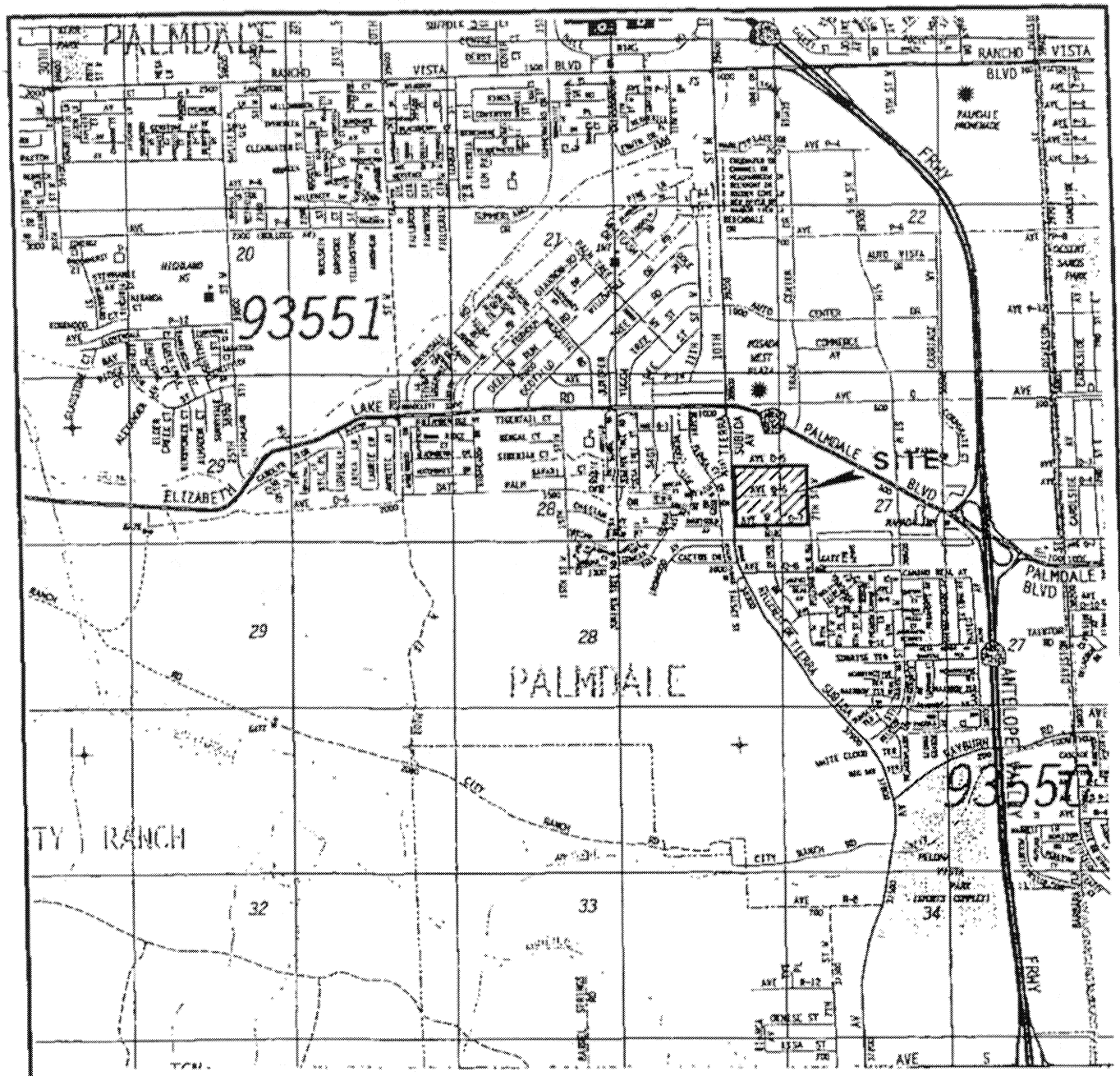
pertaining to lead in drinking water, methane gas, and wetlands. The Phase I ESA at the subject property was conducted by Geocon expressly and solely for the City of Palmdale Redevelopment Agency. Any reliance upon the information, conclusions, or recommendations contained in this report for purposes other than the transfer of the subject property shall be at the sole liability of the party undertaking such use.

Our services have been conducted using the degree of care and skill ordinarily exercised, under similar circumstances, by environmental sciences consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional opinions presented in this report. Geocon is not responsible for the conclusions, opinions, or recommendations made by others based on this information.

This report was compiled based partially on information supplied to Geocon from outside sources, other information that is in the public domain, and visual observations made at the property. The preliminary conclusions and recommendations herein are based solely on the information Geocon obtained in compiling the report. Geocon makes no warranty as to the accuracy of statements made by others which may be contained in the report, nor are any other warranties or guarantees, expressed or implied, included or intended by the report except that it has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. This report is intended to be used by the party authorizing the audit for the transfer of the property audited. None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

This evaluation does not address the presence of the following conditions unless specifically stated otherwise:

- Chemical compounds which naturally occur in the environment
- Commonly used household cleaning products, building materials, and consumables that may be hazardous; and
- Contaminants or contaminant concentrations that are not currently a concern but may be under future regulatory standards.



SOURCE : 2002 THOMAS BROTHERS MAP
SAN DIEGO COUNTY, CALIFORNIA

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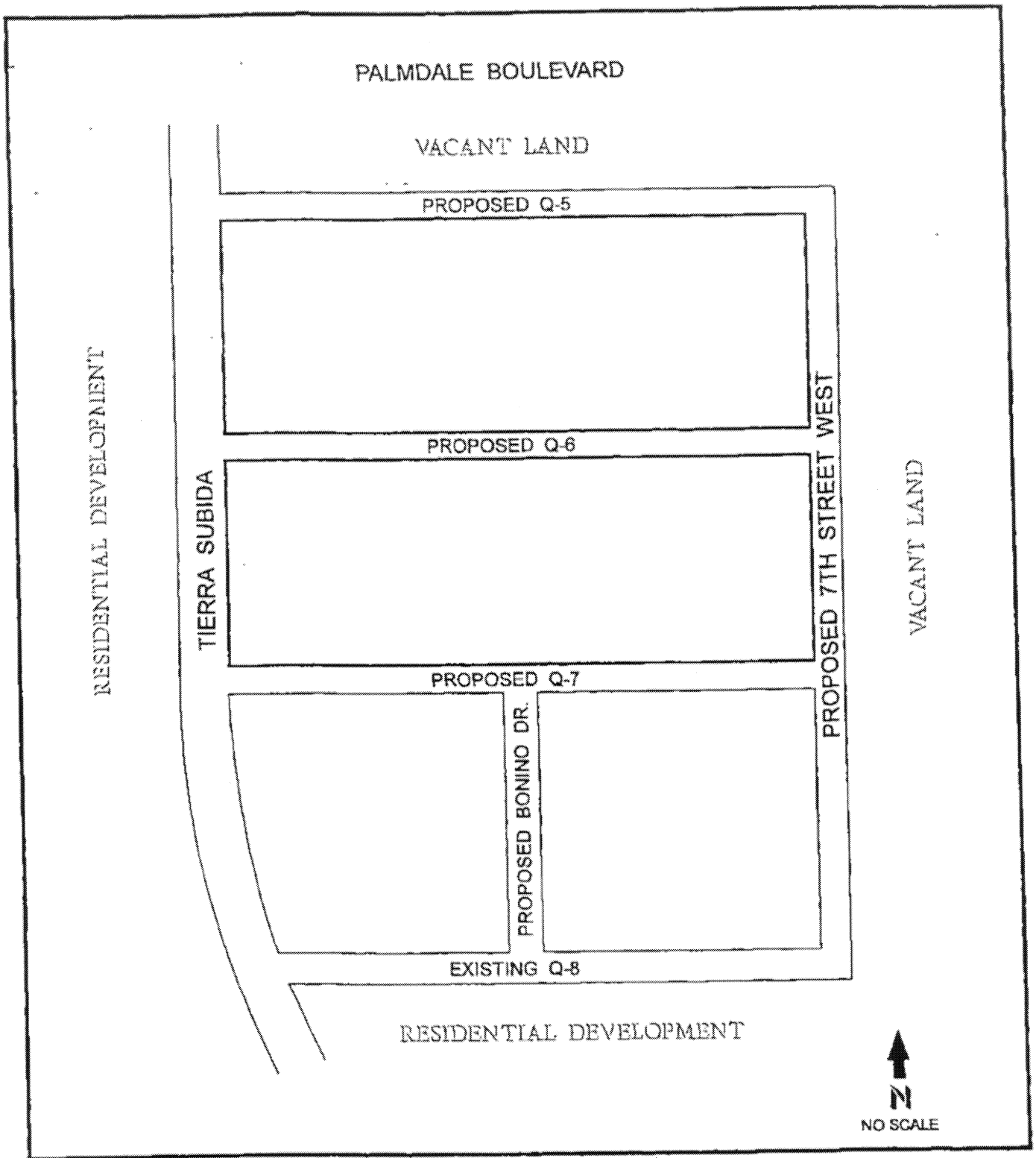
VICINITY MAP

BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA

DATE 2-26-2002	PROJECT NO. 09178-06-01	FIG. 1

1EVICMAP



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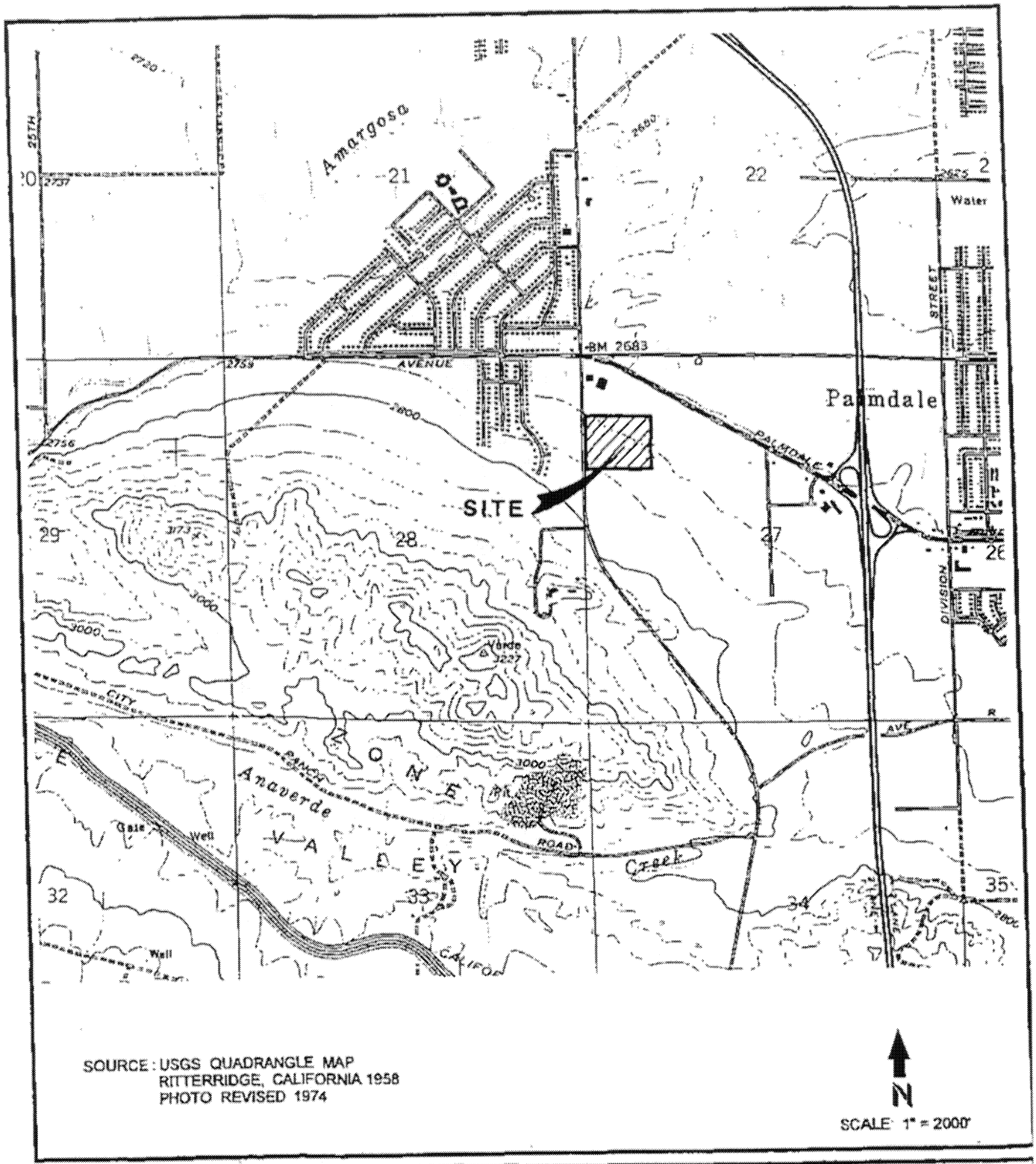
SITE PLAN

BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA

DATE 2-26-2002 | PROJECT NO. 09178-06-01 | FIG. 2

09178DW2 / RSS



SOURCE: USGS QUADRANGLE MAP
RITTERRIDGE, CALIFORNIA 1958
PHOTO REVISED 1974

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PHONE 858 558-6100 - FAX 858 558-8437

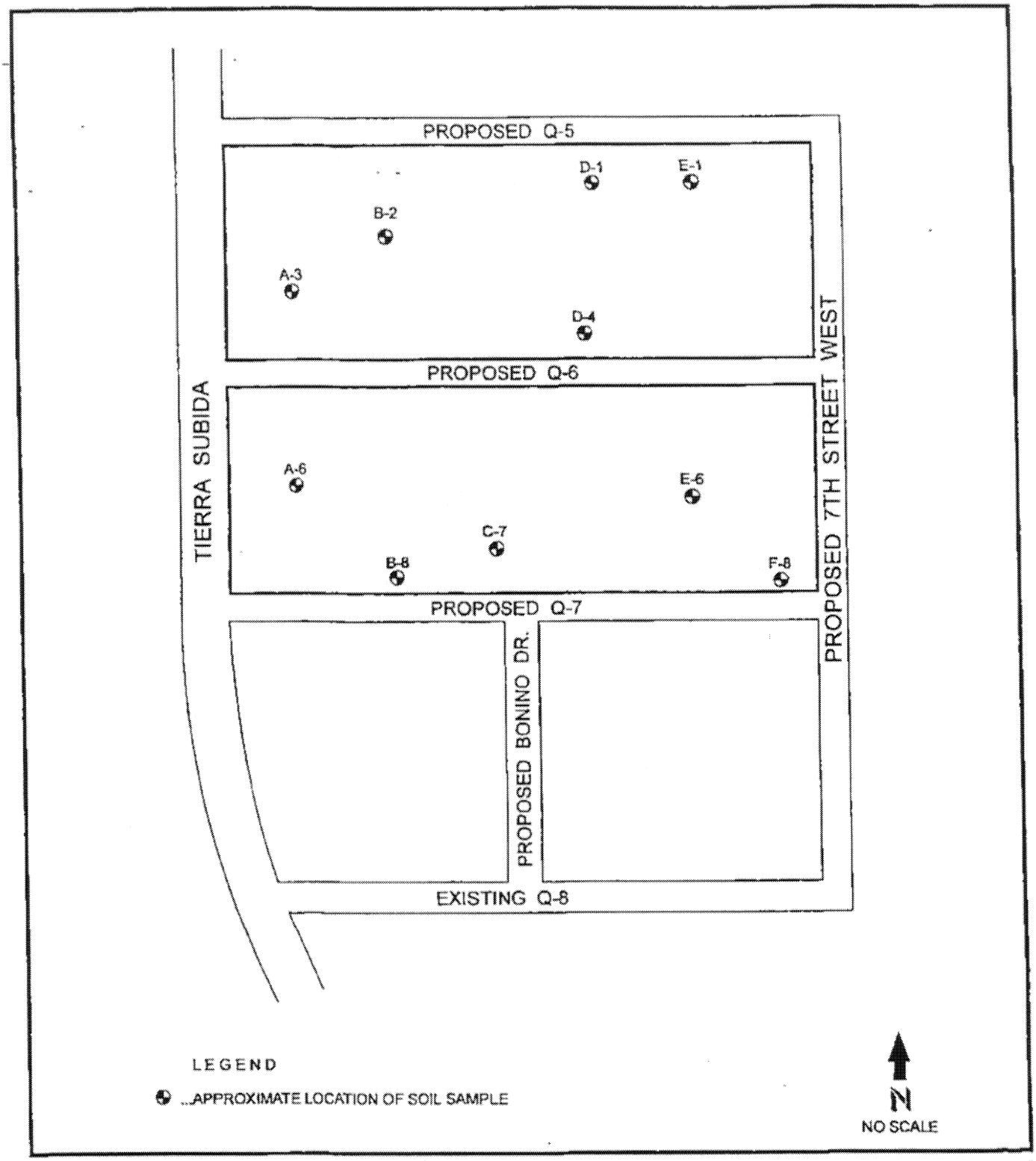
DAW / RSS

TOPOGRAPHIC MAP

BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA

DATE 2-26-2002 | PROJECT NO. 09178-06-01 | FIG. 3

1QUAD



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SAMPLING LOCATION PLAN

BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA

DATE 2-26-2002 | PROJECT NO. 09178-06-01 | FIG. 4

9178DW4 / RSS

TABLE I
SOIL ANALYTICAL DATA
TITLE 22 METALS

METAL	SAMPLE IDENTIFICATION/CONCENTRATION (MG/KG)										PRG (mg/kg)
	A-3	A-6	B-2	B-8	C-7	D-1	D-4	E-1	E-6	F-8	
Antimony	ND	0.25	ND	0.38	0.36	0.50	0.36	0.36	0.34	0.50	31
Arsenic	4.5	4.0	4.5	4.5	5.0	5.0	5.5	5.0	5.5	6.0	22
Barium	37	33	34	31	35	41	34	38	40	33	5,400
Beryllium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	150
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	37
Chromium	5.0	5.0	5.0	5.0	5.5	6.0	5.0	5.5	5.0	4.5	210
Cobalt	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.5	4.5	4.0	4,700
Copper	6.5	6.5	5.5	6.0	7.0	7.5	7.5	7.5	7.5	7.5	2,900
Lead	4.5	15	4.5	4.0	5.0	7.0	4.5	4.5	5.0	4.5	400
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23
Molybdenum	0.42	0.33	ND	ND	0.27	0.29	ND	0.26	0.29	0.47	390
Nickel	4.0	4.0	3.5	3.5	4.0	4.5	3.5	4.5	4.0	3.0	1,600
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	390
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	390
Thallium	0.50	0.50	0.50	0.50	0.50	1.0	0.50	0.50	0.50	1.0	5.2
Vanadium	16	16	16	20	20	20	18	18	22	22	550
Zinc	26	30	24	24	28	30	32	28	30	30	23,000

mg/kg Milligrams per kilogram
PRG U.S. EPA Region IX Preliminary Remediation Goals for residential soil

APPENDIX A

Photograph #1
View of the Northeastern Portion of the Site.
View is from the South.

Photograph #2
View of the Northwestern Portion of the Site.
View is from the South.

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DAW/SC | CP-#1-2-0202

COLOR PHOTOGRAPHS

BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA

DATE 2-26-2002 | PROJECT NO. 09178-08-01 | FIG. A-1

Photograph #3
View of the Site from the North.
Palmdale Boulevard is visible.

Photograph #4
Stockpiles of Soil Observed Along the Northwestern Boundary of the Site.

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DAW/SC	CP-#3-4-0202

COLOR PHOTOGRAPHS

BONINO TRUST PROPERTY
PALMDALE, CALIFORNIA

DATE 2-26-2002	PROJECT NO. 09178-06-01	FIG. A-2

APPENDIX B

SITE ASSESSMENT PLUS REPORT

PROPERTY INFORMATION	CLIENT INFORMATION
Project Name/Ref #: 09178-06-01 Bonino Property 500 palmdale boulevard Palmdale, CA 93550 Latitude/Longitude: (34.582033, 118.145662)	Daniel Weis Geocon Consultants Inc 6970 Flanders Drive San Diego, CA 92121

Site Distribution Summary Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
A) Databases searched to 1 mile:						
US EPA	NPL	National Priority List	0	0	0	0
US EPA	CORRACTS	RCRA Corrective Actions (w/o TSD)	0	0	0	0
US EPA	TSD CORRACTS	RCRA Corrective Actions and associated TSD	0	0	0	0
STATE	SPL	State equivalent priority list	0	0	0	0
B) Databases searched to 1/2 mile:						
STATE	SCL	State equivalent CERCLIS list	0	0	0	-
US EPA	CERCLIS / NFRAP	Sites currently or formerly under review by US EPA	0	0	0	-
US EPA	TSD	RCRA permitted treatment, storage, disposal facilities	0	0	0	-
STATE REG CO	LUST	Leaking Underground Storage Tanks	0	0	2	-
STATE/ REG/CO	SWLF	Permitted as solid waste landfills, incinerators, or transfer stations	0	0	0	-
STATE	DEED RSTR	Sites with deed restrictions	0	0	0	-
STATE	CORTESE	State index of properties with hazardous waste	0	0	1	-
STATE	TOXIC PITS	Toxic Pits cleanup facilities	0	0	0	-
USGS/STATE	WATER WELLS	Federal and State Drinking Water Sources	0	0	0	-
STATE	SPILLS	State spills list	0	0	0	-

Site Distribution Summary

Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
C) Databases searched to 1/4 mile:						
US EPA	RCRA Viol	RCRA violations/enforcement actions	0	0	-	-
US EPA	TRIS	Toxic Release Inventory database	0	0	-	-
STATE	UST/AST	Registered underground or aboveground storage tanks	0	2	-	-
COUNTY	UNIQUE CO	Unique county databases	0	0	-	-
D) Databases searched to 1/8 mile:						
US EPA	ERNS	Emergency Response Notification System of spills	0	-	-	-
US EPA	GNRTR	RCRA registered small or large generators of hazardous waste	0	-	-	-
US EPA	NOTIFIER	RCRIS Notifiers	0	-	-	-

This report meets the ASTM standard E-1527 for standard federal and state government database research in a Phase I environmental site assessment. A (-) indicates a distance not searched because it exceeds these ASTM search parameters.

LIMITATION OF LIABILITY
Customer proceeds at its own risk in choosing to rely on VISTA services, in whole or in part, prior to proceeding with any transaction. VISTA cannot be an insurer of the accuracy of the information, errors occurring in conversion of data, or for customer's use of data. VISTA and its affiliated companies, officers, agents, employees and independent contractors cannot be held liable for accuracy, storage, delivery, loss or expense suffered by customer resulting directly or indirectly from any information provided by VISTA.

NOTES

SITE ASSESSMENT PLUS REPORT

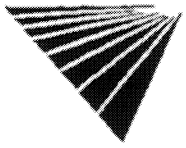
SITE INVENTORY

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	VISTA ID / DISTANCE / DIRECTION	A				B											C				D		
			NPL	CORRACTS	TSD CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	SPILLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	NOTIFIERS
No Records Found																								

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID / DISTANCE / DIRECTION	A				B											C				D		
			NPL	CORRACTS	TSD CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	SPILLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	NOTIFIERS
1	SOUTHLAND CORP SS 24483 703 E PALMDALE BLVD PALMDALE, CA 93551	64606795 0.23 MI NE																	X					
1	THE SOUTHLAND CORP SS 24483 703 N PALMDALE PALMDALE, CA 93551	4038117 0.23 MI NE																	X					

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID / DISTANCE / DIRECTION	A				B											C				D		
			NPL	CORRACTS	TSD CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	SPILLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	NOTIFIERS
2	EDS EXXON SVC 400 W PALMDALE PALMDALE, CA 93551	1226287 0.48 MI E								X			X						•					
2	ARCO PETROLEUM PROD CO # 1369 411 W PALMDALE PALMDALE, CA 93551	1607385 0.48 MI E								X									•					

MAP ID	SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)	A				B										C				D		
	VISTA ID DISTANCE DIRECTION	NPL	CORRACTS	TSD CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	SPILLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	NOTIFIERS
No Records Found																						



X = search criteria; * = tag-along (beyond search criteria).
For more information call VISTA Information Solutions, Inc. at **1 - 800 - 767 - 0403.**
Report ID. **750801901** Date of Report: **January 24, 2002**
Version 2.7 *Page #7*

UNMAPPED SITES	VISTA ID	A				B										C				D		
		NPL	CORRACTS	TSD CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	SPILLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	NOTIFIERS
LANCASTER RED MUNITIONS LANCASTER, CA 93536	5032823B9						X															

SITE ASSESSMENT PLUS REPORT

DETAILS

PROPERTY AND THE ADJACENT AREA (within 1/8 mile)

No Records Found

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)

VISTA Address*:	SOUTHLAND CORP SS 24483 703 E PALMDALE BLVD PALMDALE, CA 93551	VISTA ID#:	64606795
		Distance/Direction:	0.23 MI / NE
		Plotted as:	Point

Map ID 1

County UST - County Underground Storage Tank / SRC# 142		Agency ID:	010202

Agency Address:	SOUTHLAND CORP SS 24483 703 E PALMDALE BLVD PALMDALE, CA 93550
Facility ID #:	010202
Facility Name:	SOUTHLAND CORP SS 24483
Facility Address:	703 E PALMDALE BLVD PALMDALE, CA 93550
Facility County:	LOS ANGELES
Total Underground Tanks:	1
Total Aboveground Tanks:	NOT REPORTED
Total Tanks Removed:	0
File ID #:	010077
Facility Status:	PERMIT
Permit #:	000015217
Permit Status:	TANK INTERIM PERMIT
Permit Category:	TANKS
Permit Type:	TANK OPERATING PERMIT

VISTA Address*:	THE SOUTHLAND CORP SS 24483 703 N PALMDALE PALMDALE, CA 93551	VISTA ID#:	4038117
		Distance/Direction:	0.23 MI / NE
		Plotted as:	Point

Map ID 1

STATE UST - State Underground Storage Tank / SRC# 45		EPA/Agency ID:	N/A

Agency Address:	THE SOUTHLAND CORP SS 24483 703 N PALMDALE PALMDALE, CA 0
Facility Name:	THE SOUTHLAND CORP SS 24483
Facility Address:	703 N PALMDALE PALMDALE, CA
Facility County:	19000
Total Underground Tanks:	3

* VISTA address includes enhanced city and ZIP.
For more information call VISTA Information Solutions, Inc. at 1 - 800 - 767 - 0403.

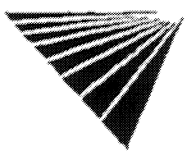
SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile) CONT.

Total Aboveground Tanks:	NOT REPORTED
Total Tanks Removed:	0
Tank ID #:	007U
Tank Contents:	UNKNOWN
Tank Age:	0
Tank Capacity:	0 GALLONS
Tank Status:	ACTIVE/IN SERVICE
Leak Monitor:	MONITOR PRESENT
Piping Type:	UNKNOWN
Tank Material:	UNKNOWN
Tank ID #:	007U
Tank Contents:	UNKNOWN
Tank Age:	0
Tank Capacity:	0 GALLONS
Tank Status:	ACTIVE/IN SERVICE
Leak Monitor:	MONITOR PRESENT
Piping Type:	UNKNOWN
Tank Material:	UNKNOWN
Tank ID #:	007U
Tank Contents:	UNKNOWN
Tank Age:	0
Tank Capacity:	0 GALLONS
Tank Status:	ACTIVE/IN SERVICE
Leak Monitor:	MONITOR PRESENT
Piping Type:	UNKNOWN
Tank Material:	UNKNOWN

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)

				Map ID
VISTA Address*:	EDS EXXON SVC 400 W PALMDALE PALMDALE, CA 93551	VISTA ID#:	1226287	2
		Distance/Direction:	0.48 MI / E	
		Plotted as:	Point	
CORTESE / SRC# 53		EPA/Agency ID:	N/A	

Agency Address:	EXXON #7-1501 400 PALMDALE PALMDALE, CA 0
Agency ID:	6B19003961
Facility Name:	EXXON #7-1501
Facility Address:	400 PALMDALE
Facility City:	PALMDALE
Facility State:	CA
Facility County:	19
Tracking Program:	LEAKING TANK
Site ID:	6B19003961



* VISTA address includes enhanced city and ZIP.
For more information call VISTA Information Solutions, Inc. at 1 - 800 - 767 - 0403.

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile) CONT.

Fields Not Reported by the Source Agency for this Site:	*Epa ID(1), Facility Zip(1), Is Sites(1)*

STATE LUST - State Leaking Underground Storage Tank / SRC# 128 | Agency ID: | 6B1900396T

Agency Address:	*EXXON #7-1501* *400 PALMDALE BLVD W* *PALMDALE, CA 93550*
Case ID #:	*6B1900396T*
Site Name:	*EXXON #7-1501*
Site Address:	*400 PALMDALE BLVD W* *PALMDALE, CA* *93550*
Site County:	*LOS ANGELES*
Substance Released:	*GASOLINE*
Media Affected:	*SOIL ONLY*
Discovery Date:	*4/17/92*
Date Reported:	*7/14/92*
Lead Agency:	*REGIONAL BOARD LEAD*
Remediation Status:	*CASE CLOSED* *CODE LOOKUP: CD-CAP SITE/CB-CONTAINMENT BARRIER/ED-EXCAVATE AND DISPOSE/ET-EXCAVATEAND TREAT/FP-REMOVE FREE PRODUCT/GT-PUMP AND TREATGW/RS-REPLACE SUPPLY/HU-TREATMENTAT HOOKUP/VS-VENT SOIL/VE-VACUUM EXTRACT/AS-AIR SPARGING/IT-ENHANCED BIODEGRADATION/OT-OTHER/NT-NO ACTION TAKEN/UK-UNKNOWN/NA-NO ACTION REQUIRED*
Fields Not Reported by the Source Agency for this Site:	*Remediation Status(1), Abatement Method(1)*

STATE LUST - State Leaking Underground Storage Tank / SRC# 164 | EPA/Agency ID: | N/A

Agency Address:	*EXXON #7-1501* *400 PALMDALE BLVD W* *PALMDALE, CA 93550*
Site Name:	*EXXON #7-1501*
Site Location:	*400 PALMDALE BLVD W* *PALMDALE CA 93550-*
Site County:	*LOS ANGELES*
Water Quality Control Board Region:	*06*
Case ID #:	*6B1900396T*
Media Affected:	*SOIL ONLY*
Lead Agency:	*REGIONAL BOARD LEAD*
Remediation Status:	*CASE CLOSED*
Substance Leaked:	*GASOLINE* *CODE LOOKUP: CD-CAP SITE/CB-CONTAINMENT BARRIER/ED-EXCAVATE AND DISPOSE/ET-EXCAVATEAND TREAT/FP-REMOVE FREE PRODUCT/GT-PUMP AND TREATGW/RS-REPLACE SUPPLY/HU-TREATMENTAT HOOKUP/VS-VENT SOIL/VE-VACUUM EXTRACT/AS-AIR SPARGING/IT-ENHANCED BIODEGRADATION/OT-OTHER/NT-NO ACTION TAKEN/UK-UNKNOWN/NA-NO ACTION REQUIRED*
Enforcement Type:	*NONE TAKEN*
How was Leak Discovered:	*SUBSURFACE MONITORING*
MTBE Tested:	*SITE NOT TESTED FOR MTBE*
Program Type:	*RB LEAD UNDERGROUND STORAGETANK*
Repsonsible Party:	*EXXON*
Cause of Leak:	*UNKNOWN*

Source of Leak:	UNKNOWN
Longitude:	34 5794909
Latitude:	-118.1206369
Summary:	WORK PERFORMED THIS QTR INCLUDES A SUBMITTAL OF MTBE ANALYSIS AND SVE SYSTEM RESTARTED
Date Leak was Confirmed:	4/17/92
Date Preliminary Site Assessment Began:	4/15/92
Date Remediation Plan Submitted:	3/3/94
Date Case was Closed:	8/10/98
Date Leak was Discovered:	4/17/92
Reported Date:	7/14/92
Fields Not Reported by the Source Agency for this Site:	Cross Street(1), Local Case ID #(1), Remediation Status(1), Abatement Method(1), Funding By(1), How was Leak Discovered(1), How was Leak Stopped(1), MTBE Tested(1), Substance Quantity Leaked (G)(1), Cause of Leak(1), Source of Leak(1), Date Preliminary Site Assessment Workpla(1), Date Pollution Characterization Began(1), Date Remedial Action Underway(1), Date Post Remedial Action Monitoring Beg(1), Date of Enforcement Action(1), MTBE Date(1), Date Leak was Stopped(1)

VISTA Address*:	ARCO PETROLEUM PROD CO # 1369 411 W PALMDALE PALMDALE, CA 93551	VISTA ID#:	1607385
		Distance/Direction:	0.48 MI / E
		Plotted as:	Point

Map ID: 2

STATE LUST - State Leaking Underground Storage Tank / SRC# 128 | Agency ID: 6B1900181T

Agency Address:	ARCO #1369 411 PALMDALE BLVD W PALMDALE, CA 93550
Case ID #:	6B1900181T
Site Name:	ARCO #1369
Site Address:	411 PALMDALE BLVD W PALMDALE, CA 93550
Site County:	LOS ANGELES
Substance Released:	GASOLINE
Media Affected:	SOIL ONLY
Discovery Date:	11/29/88
Date Reported:	3/12/90
Lead Agency:	REGIONAL BOARD LEAD
Remediation Status	CASE CLOSED CODE LOOKUP CD-CAP SITE/CB-CONTAINMENT BARRIER/ED-EXCAVATE AND DISPOSE/ET-EXCAVATEAND TREAT/TP-REMOVE FREE PRODUCT/GT-PUMP AND TREATGW/RS-REPLACE SUPPLY/HU-TREATMENTAT HOOKUP/VS-VENT SOIL/VE-VACUUM EXTRACT/AS-AIR SPARGING/IT-ENHANCED BIODEGRADATION/OT-OTHER/NT-NO ACTION TAKEN/UK-UNKNOWN/NA-NO ACTION REQUIRED
Fields Not Reported by the Source Agency for this Site:	Remediation Status(1), Abatement Method(1)

STATE LUST - State Leaking Underground Storage Tank / SRC# 164 | EPA/Agency ID: N/A

Agency Address:	ARCO #1369 411 PALMDALE BLVD W PALMDALE, CA 93550
Site Name:	ARCO #1369
Site Location:	411 PALMDALE BLVD W PALMDALE CA 93550-

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile) CONT.

Site County:	LOS ANGELES
Water Quality Control Board Region:	06
Case ID #:	6B19001817
Media Affected:	SOIL ONLY
Lead Agency:	REGIONAL BOARD LEAD
Remediation Status	CASE CLOSED
Substance Leaked:	GASOLINE
	CODE LOOKUP: CD-CAP SITE/CB-CONTAINMENT BARRIER/ED-EXCAVATE AND DISPOSE/ET-EXCAVATEAND TREAT/FP-REMOVE FREE PRODUCT/GT-PUMP AND TREATGW/RS-REPLACE SUPPLY/HU-TREATMENTAT HOOKUP/VS-VENT SOIL/VE-VACUUM EXTRACT/AS-AIR SPARGING/TI-ENHANCED BIODEGRADATION/OT-OTHER/NT-NO ACTION TAKEN/UK-UNKNOWN/NA-NO ACTION REQUIRED
Enforcement Type:	CONSENT ORDER/ENFORCEABLE AGRREMENT TO RESPONSIBLE PARTIES
How was Leak Discovered	TANK CLOSURE
How was Leak Stopped	CLOSE TANK
MTBE Tested	SITE NOT TESTED FOR MTBE
Program Type:	RB LEAD UNDERGROUND STORAGETANK
Repsonsible Party:	ARCO PETROLEUM PREODUCTS CO
Cause of Leak	UNKNOWN
Source of Leak	UNKNOWN
Longitude:	34 5797068
Latitude:	-118 1205939
Summary:	PRILIMINARY SITE ASSESSMENTUNDERWAY FAILURE TO SUMIT SITE ASS REPORT BY 11-20-90
Date Remediation Plan Submitted:	5/18/91
Date Remedial Action Underway	4/12/91
Date Case was Closed:	7/26/95
Date Leak was Discovered:	11/29/88
Reported Date:	3/12/90
Date Leak was Stopped	11/29/88
Fields Not Reported by the Source Agency for this Site:	Cross Street(1), Local Case ID #(1), Remediation Status(1), Abatement Method(1), Funding By(1), How was Leak Discovered(1), MTBE Tested(1), Substance Quantity Leaked (G)(1), Cause of Leak(1), Source of Leak(1), Date Leak was Confirmed(1), Date Preliminary Site Assessment Workpla(1), Date Preliminary Site Assessment Began(1), Date Pollution Characterization Began(1), Date Post Remedial Action Monitoring Beg(1), Date of Enforcement Action(1), MTBE Date(1)

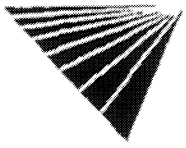
SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)

No Records Found

UNMAPPED SITES

VISTA Address*:	LANCASTER RED MUNITIONS LANCASTER, CA 93536	VISTA ID#:	503282389
CERCLIS / SRC# 17		Agency ID:	0905444

Agency Address:	*SAME AS ABOVE*
EPA ID:	*CASFN0905444*
Site ID:	*0905444*
EPA Region:	*09*
Federal Facility Indicator:	*NOT A FEDERAL FACILITY*
NPL Status:	*NOT ON THE NPL*
Operable Unit ID:	*00*
Operable Unit Name:	*SITEWIDE*
Fields Not Reported by the Source Agency for this Site:	*Financial Management System ID(1), USGS Hydrologic Unit Code(1), Ownership Type(1), Hazardous Waste Docket Flag(1), Site Incident Category Description(1), Description(1), (1), (1), (1)*



* VISTA address includes enhanced city and ZIP.

SITE ASSESSMENT PLUS REPORT

DESCRIPTION OF DATABASES SEARCHED

A) DATABASES SEARCHED TO 1 MILE

NPL
SRC#: 19

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for National Priorities List was October, 2001.

The NPL Report is the US EPA's registry of the nation's worst uncontrolled or abandoned hazardous waste sites. NPL sites are targeted for possible long-term remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.

SPL
SRC#: 113

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for CalSites Database was October, 2000.

This database is provided by the Cal. Environmental Protection Agency, Dept. of Toxic Substances Control. The agency may be contacted at: 916-323-3400.

CORRACTS
SRC#: 14

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for RCRIS Corrective Action Sites was August, 2001.

The CORRACTS database contains information concerning RCRA facilities that have conducted, or are currently conducting a corrective action. A Corrective Action Order is issued pursuant to RCRA Section 3008 (h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may also be imposed as a requirement of receiving and maintaining a TSDF permit.

RCRIS-TSDC
SRC#: 556

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for RCRIS TSDs Subject to Corrective Action was August, 2001.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA TSDCs are treatment, storage and/or disposal facilities that are subject to corrective action under RCRA.

B) DATABASES SEARCHED TO 1/2 MILE

CERCLIS
SRC#: 17

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Comprehensive Environmental Response, Compensation and Liability Information Sys was October, 2001.

The CERCLIS database is a comprehensive listing of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated, or are currently under investigation by the U.S. EPA for the release, or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation, and ultimately placed on the National Priorities List (NPL).

NFRAP
SRC#: 18

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for No Further Remedial Action Planned was October, 2001.

The No Further Remedial Action Planned Report (NFRAP), also known as the CERCLIS Archive, contains information pertaining to sites which have been removed from the U.S. EPA's CERCLIS database. NFRAP sites may be sites where, following an initial investigation, either no contamination was found, contamination was removed quickly without need for the site to be placed on the NPL, or the contamination was not serious enough to require federal Superfund action or NPL consideration.

SCL
SRC#: 112

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for CalSites Database was October, 2000.

This database is provided by the Department of Toxic Substances Control. Two- thirds of these sites have been classified, based on available information, as needing "No Further Action" (NFA) by the Department of Toxic Substances Control. The remaining sites are in various stages of review and remediation to determine if a problem exists at the site. Several hundred sites have been remediated and are considered certified. Some of these sites may be in long term operation and maintenance.

RCRIS-TSD
SRC#: 12

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for RCRIS Treatment, Storage and Disposal Facilities was August, 2001.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA TSDs are facilities which treat, store and/or dispose of hazardous waste.

SWLF
SRC#: 23

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for USGS Solid Waste Landfills was December, 1991.

This database is provided by the United States Geological Survey. The agency may be contacted at: 703-648-5613.

SWLF-CO
SRC#: 51

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Los Angeles County Solid Waste Landfills Transfer Stations was February, 1998.**

This database is provided by the Public Health Investigations, Hazardous Material Control Program. The agency may be contacted at: 323-881-4151.

SWLF-CO
SRC#: 70

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for City of Los Angeles Landfills Transfer Stations was April, 1999.**

This database is provided by the City of Los Angeles, Environmental Affais Department. The agency may be contacted at: 213-580-1070.

SWLF
SRC#: 163

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Solid Waste Inventory System was November, 2001.**

This database is provided by the Integrated Waste Management Board. The agency may be contacted at: 916-255-4021.

WMUDS
SRC#: 68

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Waste Management Unit Data System was February, 1999.**

This database is provided by the State Water Resources Control Board. The agency may be contacted at: 530-892-0323. This is used for program tracking and inventory of waste management units. This system contains information from: Facility, Waste Management Unit, SWAT Program and Report Summary Information, Chapter 15 (formerly Subchapter 15), TPCA and RCRA Program Information, Closure Information; also some information from the WDS (Waste Discharge System).

SPILLS
SRC#: 107

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region 4 SLIC Site List was September, 2001.**

This database is provided by the Regional Water Quality Control Board, Region #4. The agency may be contacted at: 323-266-7576.

LUST-REG
SRC#: 108

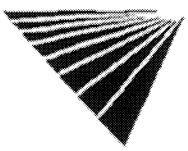
VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region 6 Leaking Underground Storage Tanks was July, 2001.**

This database is provided by the Lahontan Region Six South Lake Tahoe. The agency may be contacted at: 530-542-5400.

LUST-REG
SRC#: 121

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region 4 Leaking Underground Storage Tank was April, 2001.**

This database is provided by the Regional Water Quality Control Board, Region #4. The agency may be contacted at: 323-266-7582.



LUST-REG
SRC#: 128

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region 6 Leaking Underground Storage Tanks was July, 2001.**

This database is provided by the Regional Water Quality Control Board, Region #6. The agency may be contacted at: 760-241-7365.

LUST
SRC#: 164

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Leaking Underground Storage Tank Information System was August, 2001.**

This database is provided by the California Environmental Protection Agency. The agency may be contacted at: 916-341-5740.

CORTESE
SRC#: 53

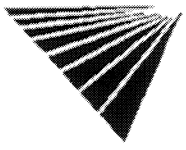
VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Cortese List - Hazardous Waste Substance Site List was April, 1998.**

This database is provided by the Office of Environmental Protection, Office of Hazardous Materials. The agency may be contacted at: 916-445-6532. The California Governor's Office of Planning and Research annually publishes a listing of potential and confirmed hazardous waste sites throughout the State of California under Government Code Section 65962.5. This database (CORTESE) is based on input from the following: (1)CALSITES-Department of Toxic Substances Control, Abandoned Sites Program Information Systems; (2)SARA Title III Section III Toxic Chemicals Release Inventory for 1987, 1988, 1989, and 1990; (3)FINDS; (4)HWIS-Department of Toxic Substances Control, Hazardous Waste Information System. Vista has not included one time generator facilities from Cortese in our database.; (5)SWRCB-State Water Resources Control Board; (6)SWIS-Integrated Waste Management Control Board (solid waste facilities); (7)AGT25-Air Resources Board, dischargers of greater than 25 tons of criteria pollutants to the air; (8)A1025-Air Resources Board, dischargers of greater than 10 and less than 25 tons of criteria pollutants to the air; (9)LTANK-SWRCB Leaking Underground Storage Tanks; (10)UTANK-SWRCB Underground tanks reported to the SWEEPS systems; (11)IUR-Inventory Update Rule (Chemical Manufacturers); (12)WB-LF- Waste Board - Leaking Facility, site has known migration; (13)WDSE-Waste Discharge System - Enforcement Action; (14)DTSCD-Department of Toxic Substance Control Docket.

BORDER-ZON
SRC#: 46

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Deed Restriction Properties Report was October, 2001.**

The Deeds Restrictions list, also known as the Border Zone Property List, contains information concerning voluntary deed restriction. These agreements are made with owners of property who propose building residences, schools, hospitals, or day care centers on property that is on or within 2,000 feet of potentially hazardous waste site.



TOXICPITS
SRC#: 49

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Toxic Pits was February, 1995.**

This database is provided by the Water Quality Control Board, Division of Loans Grants. The agency may be contacted at: 916-227-4396.

USGS-WELLS
SRC#: 3

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for USGS Water Wells was March, 1998.**

The Ground Water Site Inventory (GWSI) database was provided by the United States Geological Survey (USGS). The database contains information for over 1,000,000 wells and other sources of groundwater which the USGS has studied, used or documented during research.

C) DATABASES SEARCHED TO 1/4 MILE

RCRIS-VIOL
SRC#: 11

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for RCRIS Facilities with Violations was August, 2001.**

The Resource Conservation and Recovery Act Information System (RCRIS) identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRIS Violations report contains information concerning facilities that have been cited for violations of RCRA, as well as any enforcement actions taken against the facility.

UST
SRC#: 45

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for Underground Storage Tanks was January, 1994.**

This historical database is provided by the State Water Resources Control Board, Office of Underground Storage Tanks. Please refer to the local level UST list for more current information. Be advised that some states do not require registration of heating oil tanks, especially those used for residential purposes.

UST-CO-LB
SRC#: 56

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for City of Long Beach Underground Storage Tanks was October, 1999.**

This database is provided by the City of Long Beach Fire Department. The agency may be contacted at: 562-570-2560. Be advised: Many states do not require registration of heating oil tanks, especially those used for residential purposes.

UST-ELSE
SRC#: 86

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for City of El Segundo Underground Storage Tanks was October, 2001.**

This database is provided by the City of El Segundo Fire Department. The agency may be contacted at: 310-524-2239. Be advised: Many states do not require registration of heating oil tanks, especially those used for residential purposes.

UST-TORR
SRC#: 101

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for City of Torrance Underground Storage Tanks was October, 2001.**

This database is provided by the City of Torrance Fire Prevention Division. The agency may be contacted at: 310-618-2973. Be advised: Many states do not require registration of heating oil tanks, especially those used for residential purposes.

UST-CO-LA
SRC#: 142

VISTA conducts a database search to identify all sites within 1/4 mile of your property. . **The agency release date for Los Angeles County UST Street Number Book was January, 2002.**

This database is provided by the Los Angeles County Department of Public Works, Environmental Programs. The agency may be contacted at: 626-458-4125. Be advised: Many states do not require registration of heating oil tanks, especially those used for residential purposes.

AST
SRC#: 60

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for Aboveground Storage Tanks was January, 2001.**

This database is provided by the State Water Resources Control Board. The agency may be contacted at: 916-227-4364.

LACO-SITE-
SRC#: 111

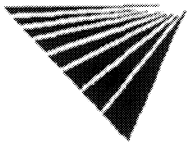
VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for Los Angeles County Site Mitigation Complaint Control Log was August, 1999.**

This database is provided by the Department of Health Services, LA County Public Health Investigations. The agency may be contacted at: 323-890-7806.

TRIS
SRC#: 2

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for Toxic Release Inventory System was January, 1998.**

All facilities that manufacture, process, or import toxic chemicals in quantities in excess of 25,000 pounds per year are required to register with the EPA under Section 313 of the Superfund Amendments and Reauthorization Act (SARA Title III) of 1986. Data contained in the TRIS system covers approximately 20,000 sites and 75,000 chemical releases.



D) DATABASES SEARCHED TO 1/8 MILE

ERNS
SRC#: 8

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for Emergency Response Notification System was December, 2000.

ERNS is a national computer database system that is used to store information on the sudden and/or accidental release of hazardous substances, including petroleum, into the environment. The ERNS reporting system contains preliminary information on specific releases, including the spill location, the substance released, and the responsible party.

RCRA-LQG
SRC#: 16

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for RCRIS Large Quantity Generators was August, 2001.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Large Generators are facilities which generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).

RCRIS-SQG
SRC#: 15

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for RCRIS Small Quantity Generators was August, 2001.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Small Quantity Generators are facilities which generate less than 1000 kg./month of non-acutely hazardous waste.

RCRIS-NOTI
SRC#: 1298

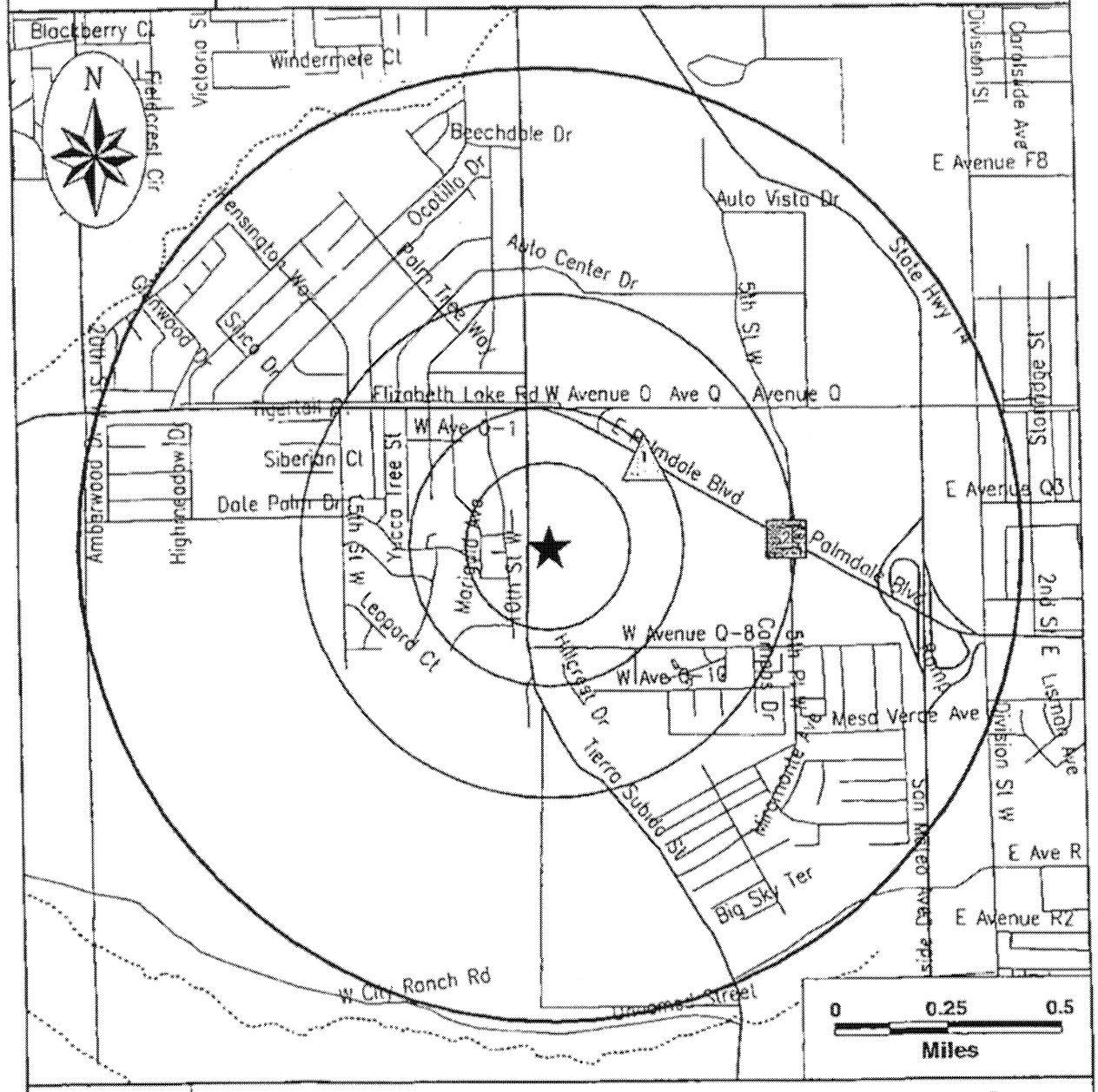
VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for RCRIS Notifiers was August, 2001.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal.The RCRIS Notifiers contains information on formerly regulated RCRA sites with more complete historical information.

End of Report

SITE ASSESSMENT PLUS REPORT

Map of Sites within One Mile



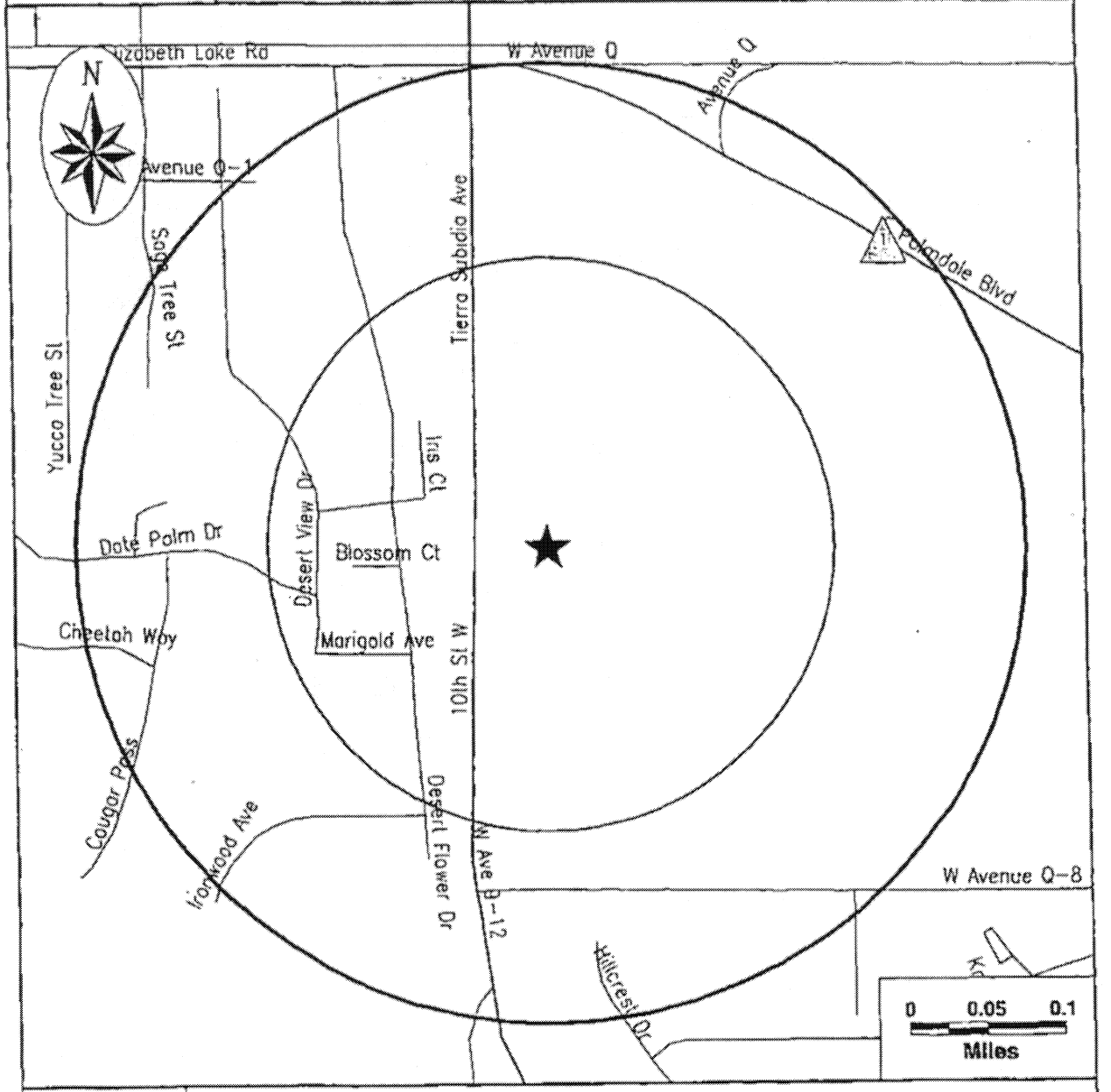
Subject Site	Category:	A	B	C	D
★	Databases Searched to:	1 mi.	1/2 mi.	1/4 mi.	1/8 mi.
	Single Sites	◆	▩	△	○
	Multiple Sites	◆	▩	△	○
		NPL, SPL, CORRACTS (TSD)	CERCLIS\ NFRAP, TSD, LUST, SWLF, SCL	RCRA VIOL, TRIS, UST	ERNS, GENERATORS

Highways and Major Roads
Roads
Railroads
Rivers or Water Bodies
Utilities

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

SITE ASSESSMENT PLUS REPORT

Map of Sites within Quarter Mile



Subject Site	Category:	A	B	C	D
★	Databases Searched to:	1 mi.	1/2 mi.	1/4 mi.	1/8 mi.
	Single Sites	◆	■	△	○
	Multiple Sites	◆	■	△	○
		NPL, SPL, CORRACTS (TSD)	CERCLIS\ NFRAP, TSD, LUST, SWLF, SCL	RCRA VIOL, TRIS, UST	ERNS, GENERATORS

Highways and Major Roads
Roads
Railroads
Rivers or Water Bodies
Utilities

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

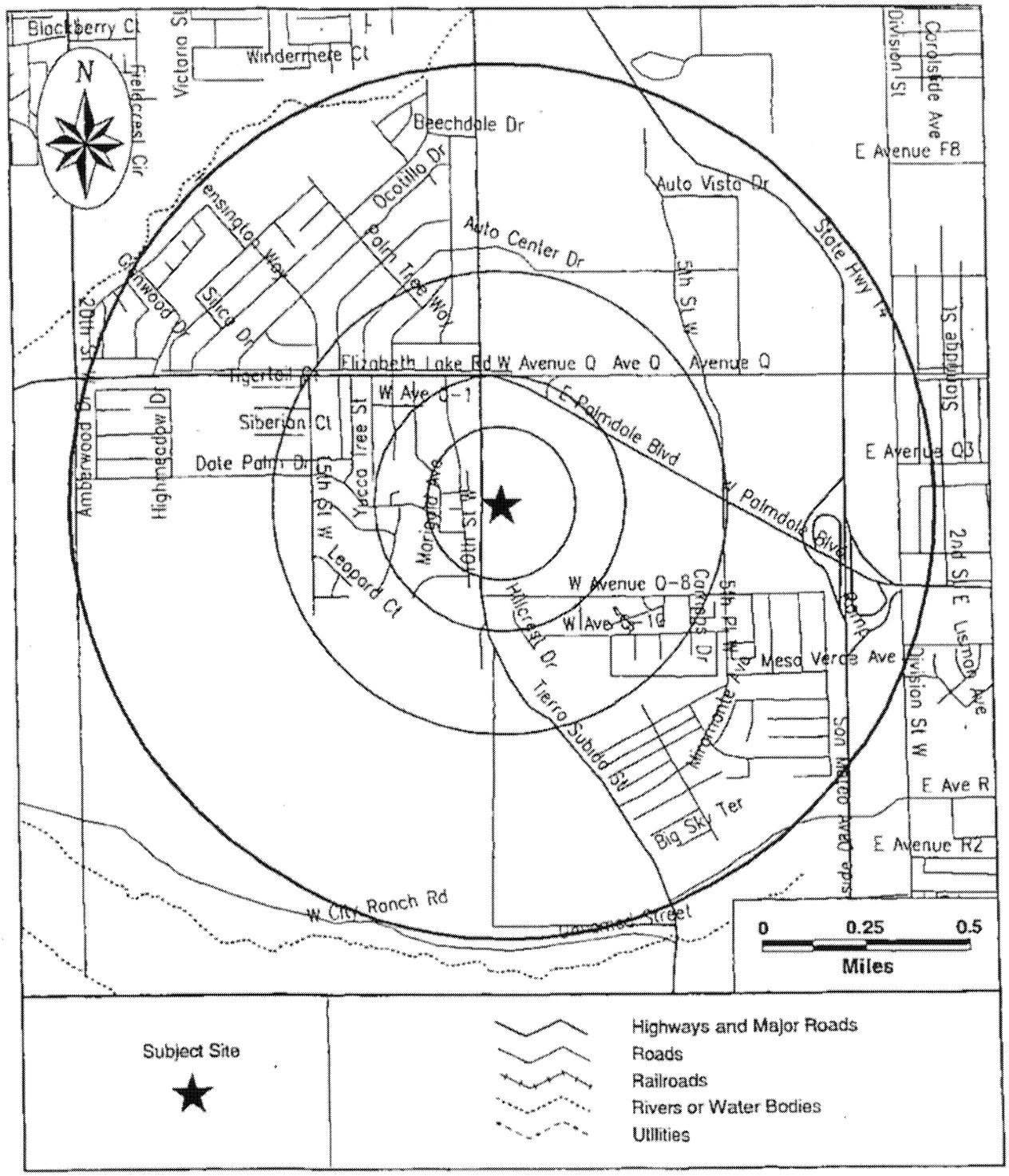
For More Information Call VISTA Information Solutions, Inc. at **1 - 800 - 767 - 0403**

Report ID: **750801901**

Date of Report: **January 24, 2002**

SITE ASSESSMENT PLUS REPORT

Street Map



APPENDIX C

February 11, 2002

Phil Rosenberg
Geocon Environmental
6970 Flanders Drive
San Diego, CA 92121
TEL: (858) 558-6100
FAX (858) 558-8437

ELAP No: 1838

RE: Palmdale Bonino Property - 09178-06-01

Work Order No.: 055230

Attention: Phil Rosenberg

Enclosed are the results for sample(s) received on February 04, 2002 by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Edgar Caballero
Laboratory Director

RECEIVED
FEB 21 2002

This cover letter is an integral part of this analytical report.

Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT:	Geocon Environmental	**Client Sample ID:**	F-8
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 9:11:00 AM
Lab ID:	055230-001A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD				**EPA 8081A**		
RunID: **GC10_020205A** BatchID: **7375**				PrepDate: **2/5/02**		Analyst: GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/5/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/5/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/5/02
Aldrin	ND	2.0		µg/Kg	1.0	2/5/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/5/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/5/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/5/02
Chlordane	ND	17		µg/Kg	1.0	2/5/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/5/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/5/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/5/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/5/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/5/02
Endrin	ND	4.0		µg/Kg	1.0	2/5/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/5/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/5/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/5/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/5/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/5/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/5/02
Methoxychlor	ND	17		µg/Kg	1.0	2/5/02
Toxaphene	ND	170		µg/Kg	1.0	2/5/02

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT:	Geocon Environmental	**Client Sample ID:**	F-8
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 9:11:00 AM
Lab ID:	055230-001A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE				**EPA 1664_SGT/HEM**		
RunID: WETCHEM2_02020 BatchID: R15246				PrepDate: 2/8/02		Analyst: CA
Total Petroleum Hydrocarbons	ND	50		mg/Kg	1 0	2/8/02
ICP METALS				**EPA 6010B**		
RunID: ICP2_020205D BatchID: 7366				PrepDate: 2/5/02		Analyst: RQ
Antimony	0.50	0 25		mg/Kg	1 0	2/5/02
Arsenic	6 0	0 25		mg/Kg	1 0	2/5/02
Barium	33	0 15		mg/Kg	1 0	2/5/02
Beryllium	ND	0 15		mg/Kg	1 0	2/5/02
Cadmium	ND	0 15		mg/Kg	1 0	2/5/02
Chromium	4.5	0 15		mg/Kg	1 0	2/5/02
Cobalt	4 0	0 15		mg/Kg	1 0	2/5/02
Copper	7 5	0 15		mg/Kg	1 0	2/5/02
Lead	4 5	0 25		mg/Kg	1 0	2/5/02
Molybdenum	0 47	0 25		mg/Kg	1 0	2/5/02
Nickel	3 0	0.15		mg/Kg	1 0	2/5/02
Selenium	ND	0 25		mg/Kg	1 0	2/5/02
Silver	ND	0 15		mg/Kg	1 0	2/5/02
Thallium	1 0	0 25		mg/Kg	1 0	2/5/02
Vanadium	22	0 15		mg/Kg	1 0	2/5/02
Zinc	30	0 50		mg/Kg	1 0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7471A**		
RunID: AA1_020205D BatchID: 7360				PrepDate: 2/5/02		Analyst: NS
Mercury	ND	0 10		mg/Kg	1 0	2/5/02

Qualifiers:

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- J - Analyte detected below quantitation limits
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- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT:	Geocon Environmental	**Client Sample ID:**	E-6
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 9:18:00 AM
Lab ID:	055230-002A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD				**EPA 8081A**		
RunID: GC10_020205A BatchID: 7375				PrepDate: 2/5/02		Analyst: GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/5/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/5/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/5/02
Aldrin	ND	2.0		µg/Kg	1.0	2/5/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/5/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/5/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/5/02
Chlordane	ND	17		µg/Kg	1.0	2/5/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/5/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/5/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/5/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/5/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/5/02
Endrin	ND	4.0		µg/Kg	1.0	2/5/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/5/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/5/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/5/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/5/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/5/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/5/02
Methoxychlor	ND	17		µg/Kg	1.0	2/5/02
Toxaphene	ND	170		µg/Kg	1.0	2/5/02

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT:	Geocon Environmental	**Client Sample ID:**	E-6
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 9:18:00 AM
Lab ID:	055230-002A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE				**EPA 1664_SGT/HEM**		
RunID: **WETCHEM2_02020** BatchID: **R15246**				PrepDate: **2/8/02**		Analyst: **CA**
Total Petroleum Hydrocarbons	50	50		mg/Kg	1.0	2/8/02
ICP METALS				**EPA 6010B**		
RunID: **ICP2_020205D** BatchID **7366**				PrepDate: **2/5/02**		Analyst: **RQ**
Antimony	0.34	0 25		mg/Kg	1 0	2/5/02
Arsenic	5 5	0 25		mg/Kg	1.0	2/5/02
Barium	40	0 15		mg/Kg	1 0	2/5/02
Beryllium	ND	0 15		mg/Kg	1 0	2/5/02
Cadmium	ND	0 15		mg/Kg	1 0	2/5/02
Chromium	5 0	0 15		mg/Kg	1 0	2/5/02
Cobalt	4 5	0 15		mg/Kg	1 0	2/5/02
Copper	7 5	0 15		mg/Kg	1 0	2/5/02
Lead	5 0	0 25		mg/Kg	1 0	2/5/02
Molybdenum	0.29	0 25		mg/Kg	1 0	2/5/02
Nickel	4 0	0 15		mg/Kg	1 0	2/5/02
Selenium	ND	0 25		mg/Kg	1 0	2/5/02
Silver	ND	0 15		mg/Kg	1 0	2/5/02
Thallium	0 50	0 25		mg/Kg	1 0	2/5/02
Vanadium	22	0 15		mg/Kg	1 0	2/5/02
Zinc	30	0.50		mg/Kg	1 0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7471A**		
RunID: **AA1_020205D** BatchID: **7360**				PrepDate: **2/5/02**		Analyst: **NS**
Mercury	ND	0 10		mg/Kg	1.0	2/5/02

Qualifiers:
- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT:	Geocon Environmental	Client Sample ID:	C-7
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	Collection Date:	2/4/02 9:37:00 AM
Lab ID:	055230-003A	Matrix:	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD				**EPA 8081A**		
RunID: GC10_020205A BatchID: 7375				PrepDate: 2/5/02		Analyst GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/5/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/5/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/5/02
Aldrin	ND	2.0		µg/Kg	1.0	2/5/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/5/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/5/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/5/02
Chlordane	ND	17		µg/Kg	1.0	2/5/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/5/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/5/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/5/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/5/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/5/02
Endrin	ND	4.0		µg/Kg	1.0	2/5/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/5/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/5/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/5/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/5/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/5/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/5/02
Methoxychlor	ND	17		µg/Kg	1.0	2/5/02
Toxaphene	ND	170		µg/Kg	1.0	2/5/02

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT: Geocon Environmental
Client Sample ID: C-7
Lab Order: 055230
Project: Palmdale Bonino Property - 09178-06-01
Collection Date: 2/4/02 9:37:00 AM
Lab ID: 055230-003A
Matrix: Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE				**EPA 1664_SGT/HEM**		
RunID: WETCHEM2_02020 BatchID: R15246				PrepDate: 2/8/02		Analyst: CA
Total Petroleum Hydrocarbons	ND	50		mg/Kg	1 0	2/8/02
ICP METALS				**EPA 6010B**		
RunID: ICP2_020205D BatchID: 7366				PrepDate: 2/5/02		Analyst: RQ
Antimony	0 36	0 25		mg/Kg	1.0	2/5/02
Arsenic	5 0	0 25		mg/Kg	1 0	2/5/02
Barium	35	0 15		mg/Kg	1 0	2/5/02
Beryllium	ND	0 15		mg/Kg	1 0	2/5/02
Cadmium	ND	0 15		mg/Kg	1 0	2/5/02
Chromium	6.5	0.15		mg/Kg	1 0	2/5/02
Cobalt	3.5	0 15		mg/Kg	1 0	2/5/02
Copper	7 0	0 15		mg/Kg	1 0	2/5/02
Lead	5.0	0 25		mg/Kg	1 0	2/5/02
Molybdenum	0 27	0 25		mg/Kg	1 0	2/5/02
Nickel	4 0	0.15		mg/Kg	1 0	2/5/02
Selenium	ND	0 25		mg/Kg	1 0	2/5/02
Silver	ND	0 15		mg/Kg	1 0	2/5/02
Thallium	0 50	0 25		mg/Kg	1 0	2/5/02
Vanadium	20	0 15		mg/Kg	1 0	2/5/02
Zinc	28	0 50		mg/Kg	1 0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7471A**		
RunID: AA1_020205D BatchID: 7360				PrepDate: 2/5/02		Analyst: NS
Mercury	ND	0 10		mg/Kg	1 0	2/5/02

Qualifiers:
- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT:	Geocon Environmental	**Client Sample ID:**	B-8
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 9:40:00 AM
Lab ID:	055230-004A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD				**EPA 8081A**		
RunID: GC10_020205A BatchID: 7375				PrepDate: 2/5/02		Analyst: GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/6/02
Aldrin	ND	2.0		µg/Kg	1.0	2/6/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/6/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Chlordane	ND	17		µg/Kg	1.0	2/6/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/6/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/6/02
Endrin	ND	4.0		µg/Kg	1.0	2/6/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/6/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/6/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/6/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/6/02
Methoxychlor	ND	17		µg/Kg	1.0	2/6/02
Toxaphene	ND	170		µg/Kg	1.0	2/6/02

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT:	Geocon Environmental	**Client Sample ID:**	B-8
Lab Order:	055230		
Project:	Palmdale Bonino Property-- 09178-06-01	**Collection Date:**	2/4/02 9:40:00 AM
Lab ID:	055230-004A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE				**EPA 1664_SGT/HEM**		
RunID: WETCHEM2_02020 BatchID: R15246				PrepDate: 2/8/02		Analyst: CA
Total Petroleum Hydrocarbons	ND	50		mg/Kg	1 0	2/8/02
ICP METALS				**EPA 6010B**		
RunID: ICP2_020205D BatchID 7366				PrepDate: 2/5/02		Analyst: RQ
Antimony	0 38	0 25		mg/Kg	1 0	2/5/02
Arsenic	4.5	0 25		mg/Kg	1 0	2/5/02
Barium	31	0 15		mg/Kg	1 0	2/5/02
Beryllium	ND	0 15		mg/Kg	1 0	2/5/02
Cadmium	ND	0.15		mg/Kg	1 0	2/5/02
Chromium	5 0	0.15		mg/Kg	1.0	2/5/02
Cobalt	3.5	0 15		mg/Kg	1 0	2/5/02
Copper	6 0	0 15		mg/Kg	1 0	2/5/02
Lead	4 0	0 25		mg/Kg	1 0	2/5/02
Molybdenum	ND	0 25		mg/Kg	1 0	2/5/02
Nickel	3 5	0 15		mg/Kg	1 0	2/5/02
Selenium	ND	0.25		mg/Kg	1 0	2/5/02
Silver	ND	0.15		mg/Kg	1 0	2/5/02
Thallium	0 50	0.25		mg/Kg	1 0	2/5/02
Vanadium	20	0 15		mg/Kg	1 0	2/5/02
Zinc	24	0 50		mg/Kg	1 0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7471A**		
RunID: AA1_020205D BatchID: 7360				PrepDate: 2/5/02		Analyst: NS
Mercury	ND	0 10		mg/Kg	1 0	2/5/02

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT:	Geocon Environmental	**Client Sample ID:**	D-1
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 9:50:00 AM
Lab ID:	055230-005A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD				**EPA 8081A**		
RunID: GC10_020205A BatchID: 7375				PrepDate: 2/5/02		Analyst GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/6/02
Aldrin	ND	2.0		µg/Kg	1.0	2/6/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/6/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Chlordane	ND	17		µg/Kg	1.0	2/6/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/6/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/6/02
Endrin	ND	4.0		µg/Kg	1.0	2/6/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/6/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/6/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/6/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/6/02
Methoxychlor	ND	17		µg/Kg	1.0	2/6/02
Toxaphene	ND	170		µg/Kg	1.0	2/6/02

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials:

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT:	Geocon Environmental	**Client Sample ID:**	D-1
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 9:50:00 AM
Lab ID:	055230-005A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE				**EPA 1664_SGT/HEM**		
RunID: WETCHEM2_02020 BatchID: R15246				PrepDate: 2/8/02		Analyst: CA
Total Petroleum Hydrocarbons	ND	50		mg/Kg	1 0	2/8/02
ICP METALS				**EPA 6010B**		
RunID: ICP2_020205D BatchID: 7366				PrepDate: 2/5/02		Analyst: RQ
Antimony	0 50	0 25		mg/Kg	1 0	2/5/02
Arsenic	5 0	0 25		mg/Kg	1 0	2/5/02
Barium	41	0 15		mg/Kg	1 0	2/5/02
Beryllium	ND	0 15		mg/Kg	1 0	2/5/02
Cadmium	ND	0.15		mg/Kg	1 0	2/5/02
Chromium	6 0	0 15		mg/Kg	1.0	2/5/02
Cobalt	3 5	0 15		mg/Kg	1 0	2/5/02
Copper	7.5	0.15		mg/Kg	1 0	2/5/02
Lead	7 0	0.25		mg/Kg	1 0	2/5/02
Molybdenum	0.29	0 25		mg/Kg	1 0	2/5/02
Nickel	4 5	0 15		mg/Kg	1 0	2/5/02
Selenium	ND	0 25		mg/Kg	1 0	2/5/02
Silver	ND	0 15		mg/Kg	1 0	2/5/02
Thallium	1 0	0 25		mg/Kg	1 0	2/5/02
Vanadium	20	0 15		mg/Kg	1 0	2/5/02
Zinc	30	0 50		mg/Kg	1 0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7471A**		
RunID: AA1_020205D BatchID: 7360				PrepDate: 2/5/02		Analyst: NS
Mercury	ND	0 10		mg/Kg	1 0	2/5/02

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT: Geocon Environmental
Client Sample ID: E-1
Lab Order: 055230
Project: Palmdale Bonino Property - 09178-06-01
Collection Date: 2/4/02 10:00.00 AM
Lab ID: 055230-006A
Matrix: Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD				EPA 8081A		
RunID: GC10_020205A BatchID: 7375				PrepDate: 2/5/02		Analyst: GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/6/02
Aldrin	ND	2.0		µg/Kg	1.0	2/6/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/6/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Chlordane	ND	17		µg/Kg	1.0	2/6/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/6/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/6/02
Endrin	ND	4.0		µg/Kg	1.0	2/6/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/6/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/6/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/6/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/6/02
Methoxychlor	ND	17		µg/Kg	1.0	2/6/02
Toxaphene	ND	170		µg/Kg	1.0	2/6/02

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT: Geocon Environmental
Client Sample ID: E-1
Lab Order: 055230
Project: Palmdale Bonino Property - 09178-06-01
Collection Date: 2/4/02 10:00:00 AM
Lab ID: 055230-006A
Matrix: Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE				**EPA 1664_SGT/HEM**		
RunID: WETCHEM2_02020 BatchID: R15246				PrepDate: 2/8/02		Analyst: CA
Total Petroleum Hydrocarbons	ND	50		mg/Kg	1 0	2/8/02
ICP METALS				**EPA 6010B**		
RunID: ICP2_020205D BatchID: 7366				PrepDate: 2/5/02		Analyst: RQ
Antimony	0 36	0.25		mg/Kg	1 0	2/5/02
Arsenic	5 0	0 25		mg/Kg	1.0	2/5/02
Barium	38	0 15		mg/Kg	1 0	2/5/02
Beryllium	ND	0 15		mg/Kg	1 0	2/5/02
Cadmium	ND	0.15		mg/Kg	1 0	2/5/02
Chromium	5 5	0 15		mg/Kg	1 0	2/5/02
Cobalt	3.5	0.15		mg/Kg	1 0	2/5/02
Copper	7 5	0.15		mg/Kg	1 0	2/5/02
Lead	4.5	0 25		mg/Kg	1.0	2/5/02
Molybdenum	0 26	0 25		mg/Kg	1 0	2/5/02
Nickel	4 5	0 15		mg/Kg	1 0	2/5/02
Selenium	ND	0 25		mg/Kg	1.0	2/5/02
Silver	ND	0 15		mg/Kg	1 0	2/5/02
Thallium	0 50	0 25		mg/Kg	1 0	2/5/02
Vanadium	18	0 15		mg/Kg	1 0	2/5/02
Zinc	28	0 50		mg/Kg	1 0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE				**EPA 7471A**		
RunID: AA1_020205D BatchID: 7360				PrepDate: 2/5/02		Analyst: NS
Mercury	ND	0 10		mg/Kg	1 0	2/5/02

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT:	Geocon Environmental	Client Sample ID:	D-4
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	Collection Date:	2/4/02 10:02:00 AM
Lab ID:	055230-007A	Matrix:	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD				EPA 8081A		
RunID: GC10_020205A BatchID 7375				PrepDate: 2/5/02		Analyst: GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/6/02
Aldrin	ND	2.0		µg/Kg	1.0	2/6/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/6/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Chlordane	ND	17		µg/Kg	1.0	2/6/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/6/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/6/02
Endrin	ND	4.0		µg/Kg	1.0	2/6/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/6/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/6/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/6/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/6/02
Methoxychlor	ND	17		µg/Kg	1.0	2/6/02
Toxaphene	ND	170		µg/Kg	1.0	2/6/02

Qualifiers:
- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT: Geocon Environmental
Client Sample ID: D-4
Lab Order: 055230
Project: Palmdale Bonino Property - 09178-06-01
Collection Date: 2/4/02 10:02:00 AM
Lab ID: 055230-007A
Matrix: Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE				EPA 1664_SGT/HEM		
RunID: WETCHEM2_02020 BatchID: R15246				PrepDate: 2/8/02		Analyst: CA
Total Petroleum Hydrocarbons	ND	50		mg/Kg	1.0	2/8/02
ICP METALS				EPA 6010B		
RunID: ICP2_020205D BatchID: 7366				PrepDate: 2/5/02		Analyst: RQ
Antimony	0.36	0.25		mg/Kg	1.0	2/5/02
Arsenic	5.5	0.25		mg/Kg	1.0	2/5/02
Barium	34	0.15		mg/Kg	1.0	2/5/02
Beryllium	ND	0.15		mg/Kg	1.0	2/5/02
Cadmium	ND	0.15		mg/Kg	1.0	2/5/02
Chromium	5.0	0.15		mg/Kg	1.0	2/5/02
Cobalt	3.5	0.15		mg/Kg	1.0	2/5/02
Copper	7.5	0.15		mg/Kg	1.0	2/5/02
Lead	4.5	0.25		mg/Kg	1.0	2/5/02
Molybdenum	ND	0.25		mg/Kg	1.0	2/5/02
Nickel	3.5	0.15		mg/Kg	1.0	2/5/02
Selenium	ND	0.25		mg/Kg	1.0	2/5/02
Silver	ND	0.15		mg/Kg	1.0	2/5/02
Thallium	0.50	0.25		mg/Kg	1.0	2/5/02
Vanadium	18	0.15		mg/Kg	1.0	2/5/02
Zinc	32	0.50		mg/Kg	1.0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE				EPA 7471A		
RunID: AA1_020205D BatchID: 7360				PrepDate: 2/5/02		Analyst: NS
Mercury	ND	0.10		mg/Kg	1.0	2/5/02

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials:

Advanced Technology Laboratories
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Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT: Geocon Environmental
Client Sample ID: A-3
Lab Order: 055230
Project: Palmdale Bonino Property - 09178-06-01
Collection Date: 2/4/02 10:10:00 AM
Lab ID: 055230-008A
Matrix: Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD				EPA 8081A		
RunID: GC10_020205A BatchID: 7375				PrepDate: 2/5/02		Analyst: GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/6/02
Aldrin	ND	2.0		µg/Kg	1.0	2/6/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/6/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Chlordane	ND	17		µg/Kg	1.0	2/6/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/6/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/6/02
Endrin	ND	4.0		µg/Kg	1.0	2/6/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/6/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/6/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/6/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/6/02
Methoxychlor	ND	17		µg/Kg	1.0	2/6/02
Toxaphene	ND	170		µg/Kg	1.0	2/6/02

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials: [illegible]

Advanced Technology Laboratories
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Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT:	Geocon Environmental	**Client Sample ID:**	A-3
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 10:10:00 AM
Lab ID:	055230-008A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE			**EPA 1664_SGT/HEM**			
RunID: WETCHEM2_02020 BatchID: R15246				PrepDate: 2/8/02		Analyst: CA
Total Petroleum Hydrocarbons	ND	50		mg/Kg	1.0	2/8/02
ICP METALS			**EPA 6010B**			
RunID: ICP2_020205D BatchID: 7366				PrepDate: 2/5/02		Analyst: RQ
Antimony	ND	0.25		mg/Kg	1.0	2/5/02
Arsenic	4.5	0.25		mg/Kg	1.0	2/5/02
Barium	37	0.15		mg/Kg	1.0	2/5/02
Beryllium	ND	0.15		mg/Kg	1.0	2/5/02
Cadmium	ND	0.15		mg/Kg	1.0	2/5/02
Chromium	5.0	0.15		mg/Kg	1.0	2/5/02
Cobalt	3.5	0.15		mg/Kg	1.0	2/5/02
Copper	6.5	0.15		mg/Kg	1.0	2/5/02
Lead	4.5	0.25		mg/Kg	1.0	2/5/02
Molybdenum	ND	0.25		mg/Kg	1.0	2/5/02
Nickel	4.0	0.15		mg/Kg	1.0	2/5/02
Selenium	ND	0.25		mg/Kg	1.0	2/5/02
Silver	ND	0.15		mg/Kg	1.0	2/5/02
Thallium	0.50	0.25		mg/Kg	1.0	2/5/02
Vanadium	16	0.15		mg/Kg	1.0	2/5/02
Zinc	26	0.50		mg/Kg	1.0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE			**EPA 7471A**			
RunID: AA1_020205D BatchID: 7360				PrepDate: 2/5/02		Analyst: NS
Mercury	ND	0.10		mg/Kg	1.0	2/5/02

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials: [redacted]

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Print Date: 2/11/02

CLIENT:	Geocon Environmental	Client Sample ID:	B-2
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	Collection Date:	2/4/02 10:13:00 AM
Lab ID:	055230-009A	Matrix:	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES BY GC/ECD		EPA 8081A				
RunID: GC10_020205A BatchID: 7375				PrepDate: 2/5/02		Analyst GG
4,4'-DDD	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDE	ND	4.0		µg/Kg	1.0	2/6/02
4,4'-DDT	ND	4.0		µg/Kg	1.0	2/6/02
Aldrin	ND	2.0		µg/Kg	1.0	2/6/02
alpha-BHC	ND	2.0		µg/Kg	1.0	2/6/02
alpha-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
beta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Chlordane	ND	17		µg/Kg	1.0	2/6/02
delta-BHC	ND	2.0		µg/Kg	1.0	2/6/02
Dieldrin	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan I	ND	2.0		µg/Kg	1.0	2/6/02
Endosulfan II	ND	4.0		µg/Kg	1.0	2/6/02
Endosulfan sulfate	ND	4.0		µg/Kg	1.0	2/6/02
Endrin	ND	4.0		µg/Kg	1.0	2/6/02
Endrin aldehyde	ND	4.0		µg/Kg	1.0	2/6/02
Endrin ketone	ND	4.0		µg/Kg	1.0	2/6/02
gamma-BHC	ND	2.0		µg/Kg	1.0	2/6/02
gamma-Chlordane	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor	ND	2.0		µg/Kg	1.0	2/6/02
Heptachlor epoxide	ND	2.0		µg/Kg	1.0	2/6/02
Methoxychlor	ND	17		µg/Kg	1.0	2/6/02
Toxaphene	ND	170		µg/Kg	1.0	2/6/02

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interference
H - Samples exceeding analytical holding time
E - Value above quantitation range
M - Not Monitored Highly Reactive

Initials: RC

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Print Date: *2/11/02*

CLIENT:	Geocon Environmental	**Client Sample ID:**	A-6
Lab Order:	055230		
Project:	Palmdale Bonino Property - 09178-06-01	**Collection Date:**	2/4/02 10:20:00 AM
Lab ID:	055230-010A	**Matrix:**	Soil

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
OIL & GREASE				EPA 1664_SGT/HEM		
RunID: WETCHEM2_02020 BatchID: R15246				PrepDate: 2/8/02		Analyst: CA
Total Petroleum Hydrocarbons	ND	50		mg/Kg	1 0	2/8/02
ICP METALS				EPA 6010B		
RunID: ICP2_020205D BatchID: 7366				PrepDate: 2/5/02		Analyst: RQ
Antimony	0 25	0.25		mg/Kg	1.0	2/5/02
Arsenic	4 0	0 25		mg/Kg	1 0	2/5/02
Barium	33	0.15		mg/Kg	1 0	2/5/02
Beryllium	ND	0 15		mg/Kg	1 0	2/5/02
Cadmium	ND	0.15		mg/Kg	1 0	2/5/02
Chromium	5.0	0.15		mg/Kg	1 0	2/5/02
Cobalt	3.0	0 15		mg/Kg	1 0	2/5/02
Copper	6 5	0 15		mg/Kg	1 0	2/5/02
Lead	15	0 25		mg/Kg	1 0	2/5/02
Molybdenum	0 33	0.25		mg/Kg	1 0	2/5/02
Nickel	4.0	0 15		mg/Kg	1 0	2/5/02
Selenium	ND	0 25		mg/Kg	1 0	2/5/02
Silver	ND	0 15		mg/Kg	1 0	2/5/02
Thallium	0.50	0 25		mg/Kg	1 0	2/5/02
Vanadium	16	0 15		mg/Kg	1 0	2/5/02
Zinc	30	0 50		mg/Kg	1 0	2/5/02
MERCURY BY COLD VAPOR TECHNIQUE				EPA 7471A		
RunID: AA1_020205D BatchID: 7360				PrepDate: 2/5/02		Analyst: NS
Mercury	ND	0 10		mg/Kg	1 0	2/5/02

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interference
- H - Samples exceeding analytical holding time
- E - Value above quantitation range
- M - Not Monitored Highly Reactive

Initials: _____

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

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Advanced Technology Laboratories

Date: 11-Feb-02

CLIENT: Geocon Environmental
Work Order: 055230
Project: Palmdale Bonino Property - 09178-06-01

QC SUMMARY REPORT
Method Blank

Sample ID MB-R15246 Batch ID: R15246 Test Name OIL & GREASE Units mg/Kg Analysis Date: 2/8/02 Prep Date: 2/8/02
MBLK SeqNo: 234024

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	ND	50		0				0			J

Sample ID MB-7356 Batch ID: 7356 Test Name ICP METALS Units mg/Kg Analysis Date: 2/5/02 Prep Date: 2/5/02
MBLK SeqNo: 233336

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.25		0				0			
Arsenic	ND	0.25		0				0			
Barium	ND	0.15		0				0			
Beryllium	ND	0.15		0				0			
Cadmium	ND	0.15		0				0			
Chromium	ND	0.15		0				0			
Cobalt	ND	0.15		0				0			
Copper	ND	0.15		0				0			
Lead	ND	0.25		0				0			
Molybdenum	ND	0.25		0				0			
Nickel	ND	0.15		0				0			
Selenium	ND	0.25		0				0			
Silver	ND	0.15		0				0			
Thallium	ND	0.25		0				0			
Vanadium	ND	0.15		0				0			
Zinc	ND	0.50		0				0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
M - Not Monitored. Highly Reactive
S - Spike/Surrogate outside of limits due to matrix interference
DO - Surrogate Diluted Out

Initials: [illegible]

All calculations are based on raw values.

1

Advanced Technology Laboratories

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CLIENT: Geocon Environmental
Work Order: 055230
Project: Palmdale Bonino Property - 09178-06-01

QC SUMMARY REPORT
Method Blank

Sample ID MB-7360 Batch ID: 7360 Test Name MERCURY BY COLD VAPOR TECHNIQUE Units mg/Kg Analysis Date: 2/6/02 Prep Date: 2/6/02

mblk SeqNo: 233417

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10		0				0			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
M - Not Monitored. Highly Reactive
S - Spike/Surrogate outside of limits due to matrix interference
DO - Surrogate Diluted Out

All calculations are based on raw values.

Initials: [redacted]

Advanced Technology Laboratories

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CLIENT: Geocon Environmental
Work Order: 055230
Project: Palmdale Bonino Property - 09178-06-01

QC SUMMARY REPORT
Method Blank

Sample ID MB-7375 Batch ID: 7375 Test Name ORGANOCHLORINE PESTICIDES BY GC/ECD Units µg/Kg Analysis Date: 2/6/02 Prep Date: 2/6/02

MBLK SeqNo: 233607

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4'-DDD	ND	4.0		0				0			
4,4'-DDE	ND	4.0		0				0			
4,4'-DDT	ND	4.0		0				0			
Aldrin	ND	2.0		0				0			
alpha-BHC	ND	2.0		0				0			
alpha-Chlordane	ND	2.0		0				0			
beta-BHC	ND	2.0		0				0			
Chlordane	ND	17		0				0			
delta-BHC	ND	2.0		0				0			
Dieldrin	ND	4.0		0				0			
Endosulfan I	ND	2.0		0				0			
Endosulfan II	ND	4.0		0				0			
Endosulfan sulfate	ND	4.0		0				0			
Endrin	ND	4.0		0				0			
Endrin aldehyde	ND	4.0		0				0			
Endrin ketone	ND	4.0		0				0			
gamma-BHC	ND	2.0		0				0			
gamma-Chlordane	ND	2.0		0				0			
Heptachlor	ND	2.0		0				0			
Heptachlor epoxide	ND	2.0		0				0			
Methoxychlor	ND	17		0				0			
Toxaphene	ND	170		0				0			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
M - Not Monitored. Highly Reactive
S - Spike/Surrogate outside of limits due to matrix interference
DO - Surrogate Diluted Out

All calculations are based on raw values.

Initials: [illegible]

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *11-Feb-02*

CLIENT: Geocon Environmental
Work Order: 055230
Project: Palmdale Bonino Property - 09178-06-01

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID **055230-010AMS** Batch ID: **R16246** Test Name **OIL & GREASE** Units **mg/Kg** Analysis Date: **2/8/02** Prep Date: **2/8/02**

MS SeqNo: **234036**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	2000	50	2000	20	100	80	120	0			

Sample ID **055230-010AMS** Batch ID: **R16246** Test Name **OIL & GREASE** Units **mg/Kg** Analysis Date: **2/8/02** Prep Date: **2/8/02**

MSD SeqNo: **234037**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	2100	50	2000	20	104	80	120	2000	4	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
M - Not Monitored. Highly Reactive
S - Spike/Surrogate outside of limits due to matrix interference
DO - Surrogate Diluted Out

All calculations are based on raw values.

Initials: [redacted]

Advanced Technology Laboratories

3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

CLIENT: Geocon Environmental
Work Order: 055230
Project: Palmdale Bonino Property - 09178-06-01

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID 055230-010AMS Batch ID: 7366 Test Name ICP METALS Units mg/Kg Analysis Date: 2/5/02 Prep Date: 2/5/02

SeqNo: 233350

MS

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	86	0.25	125	0.25	69	32	115	0			
Arsenic	110	0.25	125	4	82	59	111	0			
Barium	130	0.15	125	33	77	34	151	0			
Beryllium	98	0.15	125	0	78	56	112	0			
Cadmium	97	0.15	125	0	78	52	120	0			
Chromium	100	0.15	125	5	77	56	118	0			
Cobalt	110	0.15	125	3	82	58	117	0			
Copper	120	0.15	125	6.5	92	58	134	0			
Lead	110	0.25	125	15	78	47	128	0			
Molybdenum	100	0.25	125	0.33	82	56	115	0			
Nickel	110	0.15	125	4	82	52	120	0			
Selenium	98	0.25	125	0.022	78	46	108	0			
Silver	100	0.15	125	0.008	82	74	117	0			
Thallium	100	0.25	125	0.5	82	62	117	0			
Vanadium	130	0.15	125	16	88	55	122	0			
Zinc	130	0.50	125	30	76	43	134	0			

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
M - Not Monitored. Highly Reactive
S - Spike/Surrogate outside of limits due to matrix interference
DO - Surrogate Diluted Out

Initials: [illegible]

All calculations are based on raw values.

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

CLIENT: Geocon Environmental
Work Order: 055230
Project: Palmdale Bonino Property - 09178-06-01

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Sample ID 055230-010AMS Batch ID: 7366 Test Name ICP METALS Units mg/Kg Analysis Date: 2/5/02 Prep Date: 2/5/02

MSD SeqNo: 233351

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	86	0.25	125	0.25	68	32	115	86	1	20	
Arsenic	120	0.25	125	4	90	59	111	110	12	20	
Barium	150	0.15	125	33	91	34	151	130	15	20	
Beryllium	100	0.15	125	0	84	56	112	98	2	20	
Cadmium	100	0.15	125	0	83	52	120	97	3	20	
Chromium	110	0.15	125	5	85	56	118	100	8	20	
Cobalt	110	0.15	125	3	89	58	117	110	4	20	
Copper	140	0.15	125	6.5	103	58	134	120	14	20	
Lead	130	0.25	125	15	92	47	128	110	14	20	
Molybdenum	110	0.25	125	0.33	89	56	115	100	7	20	
Nickel	120	0.15	125	4	90	52	120	110	11	20	
Selenium	110	0.25	125	0.022	85	46	108	98	12	20	
Silver	72	0.15	125	0.008	58	74	117	100	35	20	SR
Thallium	110	0.25	125	0.5	89	62	117	100	6	20	
Vanadium	140	0.15	125	16	96	55	122	130	11	20	
Zinc	140	0.50	125	30	91	43	134	130	11	20	

Sample ID 055207-002AMS Batch ID: 7360 Test Name MERCURY BY COLD VAPOR TECHNIQUE Units mg/Kg Analysis Date: 2/5/02 Prep Date: 2/5/02

MS SeqNo: 233403

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	7.5	1.0	0.83	6.5	116	62	146	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
M - Not Monitored, Highly Reactive
S - Spike/Surrogate outside of limits due to matrix interference
DO - Surrogate Diluted Out

Initials:

All calculations are based on raw values.

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

CLIENT: Geocon Environmental
Work Order: 055230
Project: Palmdale Bonino Property - 09178-06-01

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Sample ID 055207-002AMS Batch ID: 7360 Test Name MERCURY BY COLD VAPOR TECHNIQUE Units mg/Kg Analysis Date: 2/5/02 Prep Date: 2/5/02
SeqNo: 233404
MSD

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	4.2	1.0	0.83	6.5	-279	62	146	7.5	56	33	SR

Sample ID MB-7376 Batch ID: 7376 Test Name ORGANOCHLORINE PESTICIDES BY GC/ECD Units µg/Kg Analysis Date: 2/5/02 Prep Date: 2/5/02
SeqNo: 233609
MS

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4'-DDT	22	4.0	26.6	0	83	40	150	0			
Aldrin	12	2.0	13.3	0	90	40	150	0			
Dieldrin	24	4.0	26.6	0	90	40	150	0			
Endrin	25	4.0	26.6	0	94	40	150	0			
gamma-BHC	12	2.0	13.3	0	90	40	150	0			
Heptachlor	12	2.0	13.3	0	90	40	150	0			

Sample ID MB-7376 Batch ID: 7376 Test Name ORGANOCHLORINE PESTICIDES BY GC/ECD Units µg/Kg Analysis Date: 2/5/02 Prep Date: 2/5/02
SeqNo: 233610
MSD

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4'-DDT	24	4.0	26.6	0	90	40	150	22	9	50	
Aldrin	12	2.0	13.3	0	90	40	150	12	1	50	
Dieldrin	25	4.0	26.6	0	94	40	150	24	5	50	
Endrin	26	4.0	26.6	0	98	40	150	25	5	50	
gamma-BHC	13	2.0	13.3	0	98	40	150	12	4	50	
Heptachlor	13	2.0	13.3	0	98	40	150	12	10	50	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
M - Not Monitored, Highly Reactive
S - Spike/Surrogate outside of limits due to matrix interference
DO - Surrogate Diluted Out

Initials: [illegible]

All calculations are based on raw values.

CHAIN OF CUSTODY RECORD

Pg 1 of 1

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90807
(562) 989-4045 • FAX (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#: _____
Logged By: _____ Date: _____ Time: _____

Method of Transport: Walk-In ☐ Courier ☐ UPS ☐ FED. EXP. ☐ ATL ☑

Sample Condition Upon Receipt:
1. CHILLED 7°C Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☐

Client: GEOCON ENVIRONMENTAL - SAN DIEGO
Address: 6970 Flanders Drive
City: San Diego State: CA Zip Code: 92121
TEL: (858) 558-6100
FAX: (858) 558-8437

Attn: Phil Rosenberg
Project Name: Palisade Bonsall Property Project #: 09178-06-01
Sampler: (Printed Name) Rob Reglin (Signature)

Relinquished by: (Signature and Printed Name)	Date: 2/4/02	Time: 12:25	Received by: (Signature and Printed Name)	Date: 2/4/02 Time: 12:25
Relinquished by: (Signature and Printed Name)	Date: 2/4/02	Time: 3:08	Received by: (Signature and Printed Name)	Date: 2/4/02 Time: 15:10
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter: _____ 2/4/02
Print Name Date
Signature

Send Report To: GeoCon
Attn: _____
Co: _____
Address: _____
City _____ State _____ Zip _____

Bill To: Same
Attn: _____
Co: _____
Address: _____
City _____ State _____ Zip _____

Special Instructions/Comments: (562) 260-0796 Joe! Pick-up @ 13:00 4 oz Soil jar sufficient volume

Unless otherwise requested, all samples will be disposed 45 days after receipt.

Sample Archive/Disposal:
☐ Laboratory Standard
☐ Other _____
☐ Return To: _____
* $10.00 FEE PER HAZARDOUS SAMPLE DISPOSAL.

Circle or Add Analysis(es) Requested

CIRCLE APPROPRIATE MATRIX: SOIL • SOLID • SLUDGE | OIL • SOLVENT • LIQUID | WATER • WASTEWATER | DRINKING WATER | AIR | WIPE • FILTER | OTHER

ITEM	LAB USE ONLY: Batch #: / Lab No.	Sample Description: Sample I.D.	Date	Time	8260 / 624 / 8021 (Purgeables/VOC)	8260 (Volatiles/GCMS)	625 / 8270 (BNA/GCMS)	Metals: Total (CAM 17) / TTLC / TCLP	8015M TPH/GWBTEX (COMBINATION)	8015M TPH/D (Diesel/GC)	TCLP TPH	TTLC 22 CAM Lab	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	55230-001	E-8	2/4/02	8:11					X		X	X	5	1	JG		
2		E-6		9:18													
3		C-7		9:37													
4		B-8		9:40													
5		D-1		9:50													
6		E-1		10:00													
7		D-4		10:02													
8		A-3		10:10													
9		B-2		10:15													
10		A-6		10:16													

QA/QC: RTNE ☐ RWQCB ☐ WIP ☐ NAVY ☐ CT ☐ OTHER _____

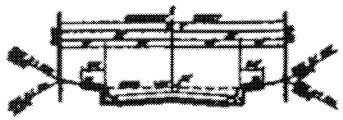
* TAT starts 8 a.m. following day if samples received after 5 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

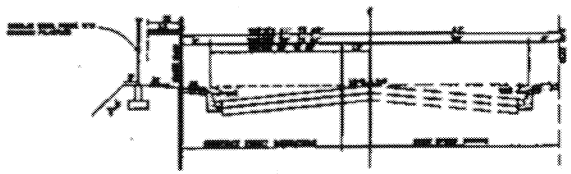
Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

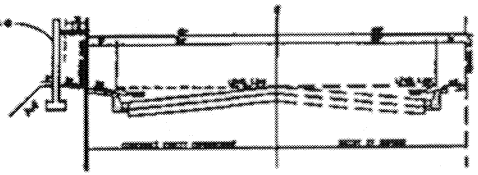
TENTATIVE TRACT MAP No. 53869



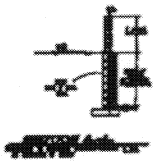
STREETS 'C' AND 'E'

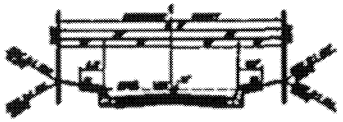


TIERRA SUBIDA AVENUE

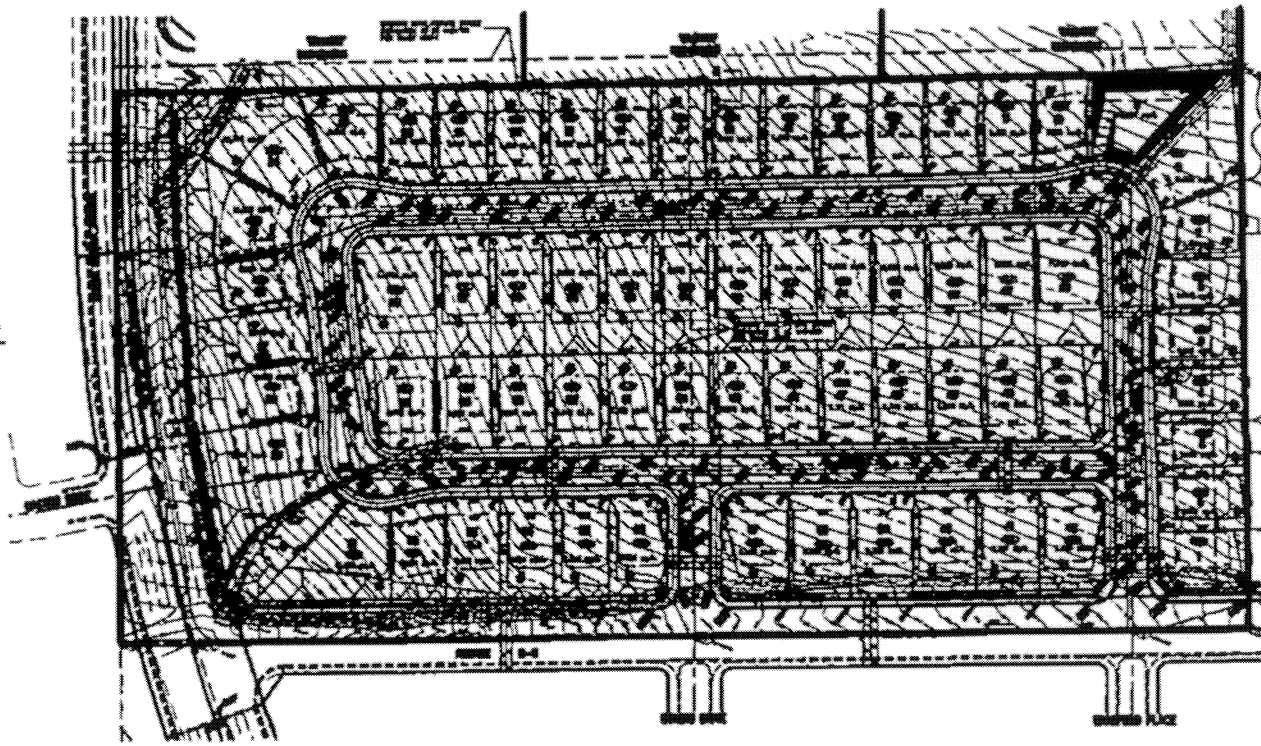


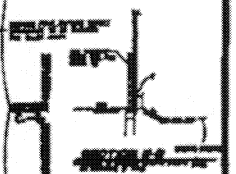
AVENUE G-8

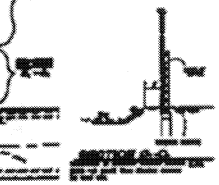


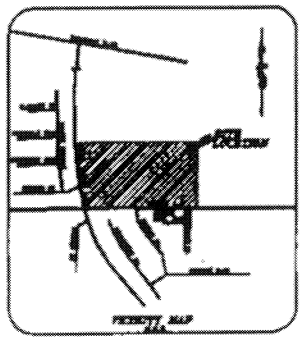


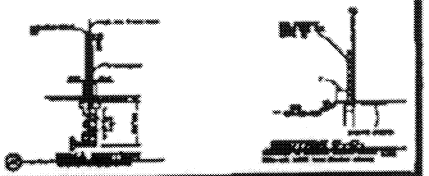
STREETS 'A', 'B', 'C', AND 'D'











11/20/11

CCL ENGINEERING INC.

CIVIL ENGINEERING • SURVEYING • GEOTECHNICAL ENGINEERING

GEOTECHNICAL ENGINEERING REPORT

For

Proposed Residential Development
Tentative Tract No. 53869
Tierra Subida & Avenue Q-8
Palmdale, CA

Developer

New West Properties
(Mr. Curt Ensign)
369 San Miguel Dr., Ste. 350
Newport Beach, CA 92660

Prepared by

CCL Engineering, Inc.
Geotechnical Department

July 16, 2002
JN: 1514P

43434 Sahuayo Street • Lancaster, CA 93535
(661) 949-9500 • FAX (661) 949-8380

GEOTECHNICAL ENGINEERING REPORT

Tentative Tract No. 53869
Palmdale, CA

INTRODUCTION

As requested, we have performed a geotechnical investigation and study for the proposed subdivision and ultimate development of Tract 53869, Palmdale, CA. Based on plans recently prepared by CCL Engineering, Inc. New West Properties intends to subdivide the property into 68 lots, construct infrastructure, and ultimately construct 68 single-family residential units on the developed lots. A copy of the proposed Geotechnical Study Plan is appended (Appendix A).

PURPOSE AND SCOPE OF SERVICES

The purpose of our services was to evaluate the project site soil conditions, and to provide geotechnical engineering conclusions and recommendations relative to the project site and the proposed subdivision of the land into residential homesites. Our scope of services included the following:

A. A general reconnaissance of the site and surrounding environs.

B. Subsurface exploration by drilling of six exploratory borings.

C. Geotechnical laboratory testing of selected soil samples obtained from the exploratory soil borings drilled for this project.

D. Engineering analyses of the data obtained from the exploration and testing programs.

E. A summary of our findings and recommendations as presented in this written report.

Contained in this report are:

A. Discussions on local soil and geologic conditions

B. Results of our laboratory tests and field data.

C. Preliminary recommendations relating to the proposed site development, including allowable foundation bearing capacity, recommendations for foundation design, estimated total and differential settlements, preliminary site grading criteria, lateral earth pressures, and preliminary paving sections for the proposed streets within the Tract and the adjoining streets (Tierra Subida & Avenue Q-8).

SITE CONDITIONS

Surficial reconnaissance was made of the subject property and adjacent environs during our study. The property does not appear to have been previously utilized, with the exception of an old abandoned home site in the northwesterly corner of the site. Minor areas of earth fill and some minor amounts of construction debris are scattered across the site (the latter predominately in the southwest portion of the site). Fill supports the adjacent roadbeds of Ave. Q-8 and Tierra Subida. The property to the south of the site is a developed residential subdivision; an apartment complex exists east of the site; the site abuts vacant land on its north edge.

The approximate 20-acre property is a sloping alluvial/colluvial fan in the west Palmdale area. The site slopes northeasterly at a nearly uniform gradient of approximately 5½ to 6%, having an overall, vertical elevation differential of some 70 feet from its southwest to northeast corners. The relatively uniform surface gradient of the natural site is interrupted by several northeast trending, incised drainage swales that have eroded from 2' to as much as 10' deep into the native soils. (The deeper ravine emanates from the outfall of a large culvert crossing the intersection of Tierra Subida & Ave. Q-8. The property is presently covered by a moderate to heavy growth of native grasses, weeds, and small desert brush.

GEOTECHNICAL INVESTIGATION

In order to evaluate the preliminary design and grading parameters, an exploratory boring program was undertaken by CCL Engineering, Inc. Our field exploration, conducted in April, 2002 consisted of six exploratory soil borings drilled to depths ranging from 16 to 41 feet below the existing ground surface.

The borings were drilled with a Mobile B-61 truck mounted drilling rig using an eight inch (8") diameter continuous flight hollow stem auger, in accordance with generally accepted geotechnical exploration procedures (ASTM D 1452).

The approximate boring locations, as indicated on the attached Geotechnical Study Plan in Appendix A, were determined by pacing and visual sighting utilizing the adjacent roads, and other topographic features. The boring locations should be considered accurate only to the degree implied by the measurement method used.

Bulk disturbed samples of the near surface soils were obtained from cuttings developed during excavation of the test borings. These samples were secured for classification and testing purposes and represent a mixture of soils within the noted depths.

Relatively undisturbed soil samples were secured from within the test borings with a three inch (3") O. D. ring sampler (ASTM D 3550). The sampler shoe is similar to the type specified in ASTM D 1586. The sampler was driven by a 140 pound hammer falling approximately 30 inches (ASTM D 1586). The number of blows required to drive the sampler one foot was recorded in six inch increments. Recovered soil samples were sealed in plastic containers and brought to the laboratory for further classification and testing.

Sampling and the securing of disturbed samples was also performed using the Standard Penetration Test sampler (ASTM D 1586). The Standard Penetration Test sampler is a split spoon sampler with a 1-3/8 inch inside diameter. The sampler was driven by a 140 pound hammer falling approximately 30 inches. The number of blows required to drive the sampler twelve inches was recorded. Recovered soil samples were sealed in plastic containers and returned to the laboratory for further classification and testing.

The CCL Engineering Logs of Test Borings, included in Appendix A, represent the interpretation of the field logs prepared for each boring by our engineering staff, along with their interpretation of soil conditions between samples and results of laboratory tests. While the noted stratification separation lines represent approximate boundaries between soil types, the actual transitions may be gradual.

LABORATORY TESTING

After visual and tactile classification in the field, the soil samples were brought to the laboratory. The soil classifications were checked in accordance with the Unified Soil Classification System and a testing program was established. The classifications and field logs were reviewed to assess which samples would be analyzed further. In situ moisture content and dry unit weight for soil core samples were developed in accordance with ASTM D 2937.

Consolidation tests (ASTM D 2435) were conducted on relatively undisturbed samples obtained from the ring sampler. The maximum stress during testing was 5.2 KSF. The samples were saturated at 1.3 KSF to check the hydroconsolidation potential. The samples were unloaded to 1.3 KSF to check rebound.

Soil classification tests consisted of Particle Size Analysis: Mechanical Method and Hydrometer Method (ASTM D 422). Additional tests consisted of Maximum Density-Optimum Moisture (ASTM D 1557), Expansion Index (UBC 29-2), and R-Value (California Test Method 301).

Refer to Appendix B for test results. The 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.

SITE SOIL CONDITIONS

The native soils encountered in the exploratory borings were identified as typical younger and older alluvial deposits, consisting of normally consolidated fine-grained silty and clayey sands and silts, and some coarser sands (SC, SM, ML, SP and CL type soils, based upon the Unified Soil Classification System). The upper 10' – 20' of soils (silty fine sands and sandy silts) appear to be younger (geologically more recent) alluvial deposits, while the soils below 15' – 20' ± are dense, more clayey and well consolidated (clayey sands/sandy clays), and are probably an older alluvial deposition. In the deeper test borings (Nos. 1 & 4), the deeper profile (below 30') was dense and is possibly a weathered bedrock or formational material.

The upper 3' – 4' ± soils are relatively loose/medium dense. Strata below 5' ± are generally denser. The Logs of Borings in Appendix A contain a more detailed description of the soils encountered.

Based upon our density and consolidation test results, the upper several feet (3' to 4') of native soils were noted to be relatively loose and would be prone to unacceptable bearing and compression potentials. The soils found at five feet or more below natural grade in the test borings exhibited higher in-situ densities and lower hydrocompression or consolidation potentials.

Based upon the Expansion Index Test results, the upper sandy to clayey silt soils that will be used in the site grading and foundation support areas are non to only slightly expansive (E. I. values of less than 50). Maximum density - optimum moisture relationships and expansion indices of several soil types encountered are as follows:

Sample Location (Soil Type)	Maximum Density	Optimum Moisture	E.I.
Boring #3 (0'-5') SILTY SAND - fine grained, lt. red brown, w/sm. gravels)	131.0 p.c.f.	8.5%	5
Boring #4, (0'-5') Vy. fine grained SANDY SILT, lt. brown	127.5 p.c.f.	10.0%	30

GROUNDWATER

Free groundwater was not encountered in the borings at the time of drilling. Groundwater levels in the vicinity of the site are estimated to be deeper than 100 feet below the existing site grades, based on published water data reports. No signs of seeps or springs were noted.

REGIONAL GEOLOGY

The San Andreas rift zone, which is several miles wide, dominates the geology of southern California. The rift zone is an extensive zone of active and potentially active faults that extends from the Gulf of California to Cape Mendocino in northern California. The San Andreas fault, (main trace), at the nearest point, is approximately one & one-half kilometers southwest of the site. Another zoned active fault (Littlerock or Cemetery) lies about ½ kilometer southwest of the site; this fault is subsidiary to the San Andreas and would probably break only in response to a large scale event on the adjacent San Andreas. No known active faults exist within the site boundaries.

Historically the San Andreas fault is responsible for two of the three great earthquakes experienced in California. These are the 1857 Fort Tejon and 1906 San Francisco earthquakes. Each event is credited with approximately two hundred miles of surface rupture and horizontal displacements as great as thirty feet.

GEOLOGIC HAZARDS

Based upon our site reconnaissance and a review of selected geologic references, the geologic hazards that could affect proposed developments in the project area generally include seismically related hazards described as follows:

Fault Rupture

The potential for rupture occurring on the subject property is considered very low as no known active faults cross the parcel. The site is not located within an "Earthquake Fault Zone" as currently delineated by the Alquist-Priolo Earthquake Fault Zoning Act.

Seismic Hazards

The subject property is located in southern California, an active seismic area, where large numbers of earthquakes are recorded each year. The most significant recorded (historical) earthquake felt at the subject site would have been the 1857 Fort Tejon event (on the San Andreas Fault system) which is estimated to have produced a Modified Mercalli Intensity of VIII to IX at the site. A description of damage that might occur, based on the Modified Mercalli Scale, is included in Appendix C of this report.

Using data from Sieh (1984) relating to the recurrence intervals of major seismic events on the San Andreas fault, it is estimated that a major earthquake has occurred along this segment of the San Andreas fault every 100 to 300 years. The average recurrence interval has been estimated to be from 130 to 160 years. As the last major earthquake on the San Andreas fault in this area occurred in 1857, the recurrence of an earthquake in this area within the estimated economic lifetime of any new construction is considered quite probable.

Other seismically related hazards include earthquake-induced flooding and liquefaction. Earthquake-induced flooding includes tsunamis, seiches, and reservoir failure. Owing to the inland location of the site, hazards due to tsunamis are considered unlikely. Several large water storage tanks lay up gradient (southwest of) the subject site; earthquake-induced flooding (sheet flow) could occur from this source. It is thought however, that the proposed and existing infrastructure development (roads, storm drains) will mitigate this potential.

Liquefaction is defined as the loss of soil strength as a result of an increase in pore pressure due to dynamic loading during an earthquake. Conditions necessary for liquefaction to occur generally include a relatively high water table (within thirty feet of the ground surface) and a susceptibility of the soil to liquefy based on its grain size and relative density. Our on-site borings and literature review indicated that the groundwater is currently deeper than thirty feet and the soils underlying the site are generally dense and slightly cohesive. Based on the on-site soil types encountered, their relative densities, and a groundwater depth greater than thirty feet, it is our opinion that the potential for on-site liquefaction is negligible.

DISCUSSION AND CONCLUSIONS

Based upon the current field exploration, laboratory testing, a review of the proposed subdivision and preliminary grading plans, and past experience, it is our opinion that the subject parcel, when modified as recommended in this report, is suitable for the intended use as a single-family residential subdivision.

A geotechnical concern with the near surface soils at this site is the low bearing capacity and slight hydrocompression potential of the soft/loose upper native soils and the ability of the upper soils to provide uniform bearing support. Typically, the procedure utilized to increase bearing capacity, reduce the consolidation potential, and provide more uniform bearing for proposed structures is to excavate the upper loose and potentially consolidatable soils, and to backfill such excavations with engineered fill until finished pad grades are obtained. To provide more uniform support for the proposed structures at this site, it is recommended that specified amounts of upper loose soils be removed (from below any proposed building pad areas) and be recompacted. Additional fill placed to bring the building pads to finish grades should also be properly compacted. More specific recommendations for limits and extent of remedial grading are contained in the GRADING RECOMMENDATIONS section of this Report.

It is our opinion that once the site grading is properly completed, the constructed building pads will be suitable for support of single-family residential structures. It is expected that convertical depth spread footings will be satisfactory for such structures. We estimate that allowable soil bearing pressures of 2,000 to 2,500 psf will be obtainable on compacted fills generated with the on-site soils.

At these bearing pressures, and providing the remedial grading as recommended herein is performed, we estimate total settlement of any proposed structures to be less than one inch.

For preliminary estimation of grading quantities, a value of 20% shrinkage may be utilized for soil excavations of up to 4' ± depth which are to be replaced as compacted fill (to at least 90% Relative Compaction). Deeper excavations would be into firmer (denser) soils, which would "shrink" less when placed as compacted fill (estimate 5% - 10%). In addition to shrinkage, a subsidence value of 0.15' should be applied across all areas to be graded.

GRADING RECOMMENDATIONS

The Tentative Tract subdivision map illustrates that the project will be graded to accommodate 68 residential lots (see attached copy of the Geotechnical Study Plan, Tentative Tract No. 53869). As can be seen, this will be accomplished by cut/fill grading techniques, with the deepest cuts of approximately 10' to 12' ± being made through the westerly portion of the site, and the deepest fills (10'±) being made along the central tier of lots (43-55). Some of the lots in the proposed development are proposed as cut/fill (transition) pads, or very shallow (1' – 2') cut or fill pads.

Prior to site grading, all vegetation, existing uncertified fill deposits, trash and construction debris, and abandoned underground utilities, (if any) should be removed from the proposed grading areas. The existing localized fill deposits noted along the west and south sides of the site should be removed. These fill soils, cleaned of any debris, may be re-utilized in the site grading. All organic strippings and debris should be removed from the site. Any organic matter (roots, stumps, etc.) greater than 1" in diameter or 1' in length is to be removed and may not be incorporated into the structural fills.

We have reviewed the attached preliminary grading plan, conducted investigation of the near-surface soils, and applied our recommended remedial grading concept to the proposed cut/fill depths (as shown on the appended Plan) to formulate the following (tabulated) grading recommendations:

Lot Grading Recommendations

Proposed Cut and/or Fill - Building Pad -	Overexcavation Recommendations
All Fill	Excavate & recompact these proposed lot areas 3' (36") below existing ground levels prior to new fill placement.
C/F or shallow cut or fill (transition lots)	Excavate building pad areas at least two feet below proposed pad levels or existing ground levels (whichever is deeper); restore to proposed pad grades with compacted fill.
All cut, (deeper than 3' below existing grades)	Cut to proposed pad elevation, overexcavate an additional one foot below the proposed pad grade, & recompact.

After the pad areas are excavated to the required depths, the exposed bottoms should be scarified (8"±), be heavily moisture conditioned to above optimum moisture content of the soils, and be compacted prior to fill placement thereon. All exposed bottoms (overexcavated areas) should be observed and tested by the project geotechnical consultant prior to placement of fills thereon. **Some lots will lie across the incised ravines. After excavation to proposed grade on these lots, the geotechnical engineer should explore the subgrades to determine if additional overexcavation is required.** All loose soil and debris should be stripped from the ravines prior to fill placement therein.

All proposed fill areas outside of the structural pad areas (i.e., street areas, yard areas) should be deep scarified (12" ±), be heavily moisture conditioned, and be uniformly compacted prior to placement of fill thereon.

Import soils, if necessary to complete site grades to the desired elevations, should be equal to or better than the on-site soils in strength, expansion, soil chemistry, and compressibility characteristics. In general, import material should be free of organic matter and other deleterious substances, have 100% passing a two inch sieve, 60% to 100% passing a #4 sieve, no more than 50% passing a #200 sieve, and an Expansion Index of less than 30.

Cut and fill slopes are programmed (planned) at 2 horizontal to 1 vertical slope inclinations; such slopes should be grossly stable. All proposed fill over cut slopes should be overexcavated (at the base) and be restored as entirely fill slopes.

All soils to be placed as fill should be uniformly moisture conditioned to at or slightly above the soil's optimum-moisture content, be placed in uniform, level layers not exceeding eight inches in depth, and be uniformly compacted to at least 90% of the soil's maximum density as determined by ASTM Test Method D-1557. All placed fill is to be observed and tested by the geotechnical engineer's representative to verify compliance with these recommendations.

Final site grades of each building pad should be designed and constructed so that all water is diverted away from all structural foundations and not allowed to pond adjacent to the structures. Drainage devices should be constructed to divert tributary drainage from each building site. One foot (±) high berms should be placed at tops of all descending fill slopes to prevent drainage overflow.

STRUCTURAL FOUNDATION RECOMMENDATIONS

After the anticipated grading is performed as outlined above, all structural foundations will be supported in either compacted fill or firm natural soils (on the cut lots). Soils at this site are expected to be only slightly expansive (E.I. < 50). The final expansive nature of the soils will necessarily have to be determined during/after the pads are graded, when the on-site soils have been mixed/blended.

Based on these expectations, the following design recommendations are offered:

A) All structures are to be designed to at least the minimum standards for Seismic Zone 4 as designated by the latest edition of the Uniform Building Code. The foundation soils below the site are assigned to Soil Profile Type "S_0" (stiff soil profile) per U.B.C. Table 16-J.

B) Foundations on the graded pads should bear at least 12" into the designated soil strata (compacted fill). Continuous foundations (minimum 12" wide by 12" deep) may be designed to exert a net allowable vertical pressure of 2000 pounds per square foot. Isolated (pad) foundations (minimum 24" wide, 12" deep) may exert an allowable vertical pressure of 2500 psf.

D) Continuous foundations should be reinforced with at least 2 No. 4 bars of steel; one placed near the top of the foundation and one placed near the base of the foundation.

E) A coefficient of friction of 0.3 (between concrete and compacted soil), and an allowable passive resistance of 300 psf (E.F.P.), may be utilized when computing resistance to horizontal loadings.

F) Concrete (on-grade) floor slabs should have a nominal minimum thickness of 4". It is suggested that on-grade concrete slabs be reinforced with wire mesh reinforcement or #3 bars at 18" on-center both ways. **Reinforcement in slabs should be placed in the center of the slab.**

G) All interior slabs to have moisture sensitive floor coverings should be underlain by a moisture membrane. The membrane should be covered with at least two (2) inches of clean sand to protect it during construction. Sand should be moistened just prior to concrete placement.

H) Retaining walls (if any), with level backfill should be designed to resist an active equivalent fluid pressure of 30 pcf. Walls retaining a 2:1 sloping backfill should resist an equivalent fluid pressure of 45 pcf. All walls should contain a backdrainage system to relieve possible hydrostatic force buildup.

PAVEMENT RECOMMENDATIONS

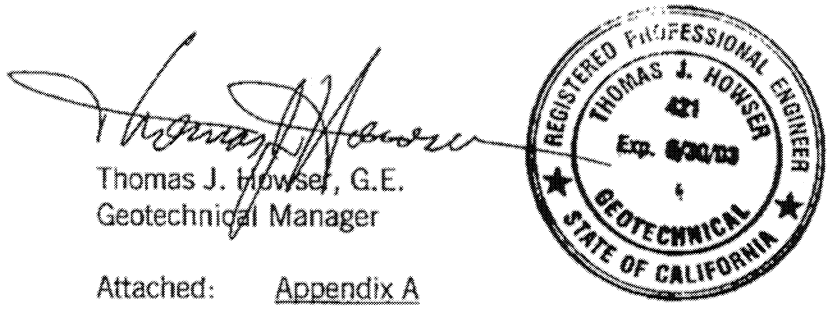
Based on preliminary R-value testing of near surface soils, it is expected that all interior Tract streets will require 3" Asphalt Concrete on 4" Crushed Aggregate Base (C.A.B.). Improvements to the bordering major streets will require 4" to 5" of Asphalt Concrete on an estimated thickness of 8" of C.A.B. Actual pavement structural sections will be based on R-value testing of the street subgrades at the completion of site grading.

CLOSURE

We trust this Geotechnical Report is sufficient at this time and meets your current needs. We appreciate this opportunity to provide professional geotechnical engineering services for this project. If you have any questions regarding the information contained in this report, or if you require additional geotechnical engineering services, please contact us.

Sincerely,

CCL ENGINEERING, INC.



Thomas J. Howser, G.E.
Geotechnical Manager

Attached: Appendix A
- Geotechnical Study Plan with Locations of Test Borings
- Key – Boring Log Symbols
- Logs of Test Borings

Appendix B
- Consolidation Test Data
- R-Value Test Data

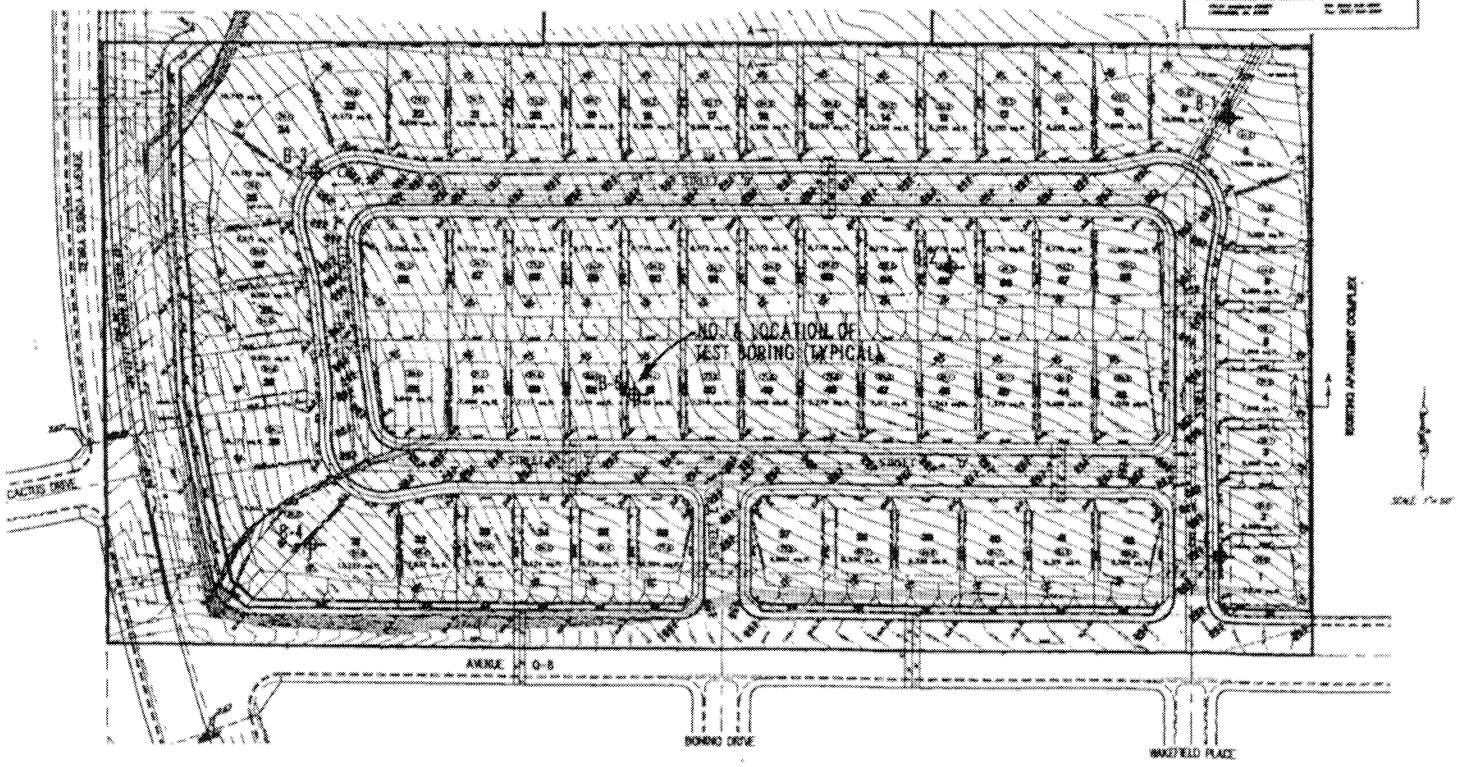
Appendix C
- Modified Mercalli Index Scale

APPENDIX A

Geotechnical Study Plan
with Locations of
Test Borings
Key – Boring Log Symbols
Logs of Test Borings

TENTATIVE TRACT MAP No. 53869
AVENUE Q-8 AND TIERRA SUBIDA AVENUE

GEOTECHNICAL STUDY PLAN



KEY BORING LOG SYMBOLS

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
	MORE THAN 50% OF COURSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS W/FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES.
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS W/FINES (APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTY, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

UNIFIED SOIL CLASSIFICATION SYSTEM

SAMPLER TYPE:

■ ASTM D-3550: 3" O. D. Modified California Sampler (2.5" I. D.)

□ ASTM D-1586: 1.75" O. D. Sampler (Standard Penetrameter)

CCL ENGINEERING, INC. BORING LOG

Boring Number: B-1
Location: N.E. Corner of Site
Project: TTM# 53869 (Tierra Subida & Ave Q-8)
Logged By: TJH
Project Number: 1514P
Diameter of Hole: 8" H.S. Auger
Date Drilled: April 23, 2002
Drill Rig Type: Mobil B-61

Depth (feet)	Symbol	Pen Resist. (blows/ ft)	Description	Soil Type	Dry Density (pcf)	Moisture Content (%)	Remarks
0							
		44	SILTY SAND/ SANDY SILT - Vy. fine grained w/ few small gravels - Lt. Red-Brown (pinkish)	SM/ML	106.0	3.2	
5		45	- Loose/Medium dense - Vy dry to damp		99.3	3.6	
10		33	- Firmer @ 10' becoming slightly coarser		110.1	2.7	
15		73	CLAYEY SAND - coarse - Darker Red - Brown - Medium Dense to Dense	SC	117.5	2.5	
20		72	- More clayey @ 20', moist, dense, slight plasticity		121.9	8.3	
25		56	SANDY/CLAYEY SILT - Light cream color, - Moist, dense - Vy fine grained	ML	114.4	6.8	
30			- CONT. -				

CCL ENGINEERING, INC. BORING LOG

Boring Number: B-1 (continued)
Location:
Project: TTM # 53869 (Tierra Subida & Ave Q-8)
Logged By: TJH
Project Number: 1514P
Diameter of Hole: 8" H.S. Auger
Date Drilled: April 23, 2002
Drill Rig Type: Mobil B-61

Depth (feet)	Symbol	Pen Resist. (blows/ ft)	Description	Soil Type	Dry Density (pcf)	Moisture Content (%)	Remarks
			-continued-				
30		55	- Stiff to very stiff		113.6	11.6	
35			SAND- Reddish/Brown - Fine/medium grained w/ small gravels - Dense, cemented (possibly very weathered, soft bedrock)	SP			
40		90			115.0	6.8	

CCL ENGINEERING, INC. BORING LOG

Boring Number: B-2
Location: East-Center of Site
Project: TTM # 53869 (Tierra Subida & Ave Q-8)
Logged By: TJH
Project Number: 1514P
Diameter of Hole: 8" H.S. Auger
Date Drilled: April 23, 2002
Drill Rig Type: Mobil B-61

Depth (feet)	Symbol	Pen Resist. (blows/ ft)	Description	Soil Type	Dry Density (pcf)	Moisture Content (%)	Remarks
0							
		17*	SANDY SILT/Very Fine SILTY SAND - Light Reddish Brown - Light cementation	ML/SM	-	3.2	
5		18*	- Damp very slightly cohesive - Medium Dense, (stiff)		-	4.4	
		15*			-	4.2	
10		12*			-	3.3	
15		13*	- becomes slightly coarser denser, damp to slightly moist, - becoming darker red		-	4.9	
20		27*			-	5.6	
			*Standard Penetration Test Count				
25							
30							

CCL ENGINEERING, INC. BORING LOG

Boring Number: B-3
Location: N.W. Corner of Site
Project: TTM # 53869 (Tierra Subida & Ave Q-8)
Logged By: TJH
Project Number: 1514P
Diameter of Hole: 8" H.S. Auger
Date Drilled: April 23, 2002
Drill Rig Type: Mobil B-61

Depth (feet)	Symbol	Pen Resist. (blows/ ft.)	Description	Soil Type	Dry Density (pcf)	Moisture Content (%)	Remarks
0							
		31	SILTY SAND, Light Red-Brown - Very fine grained with few small gravels - Non-plastic (cohesionless) - Medium Dense to Dense	SM	111.5	2.3	
		43			116.8	2.9	
5		25			115.8	1.6	
		29			117.2	2.3	
10		22	SANDY SILT - slightly Clayey - Light Red-Brown - slight plasticity (cohesive) - Medium dense (stiff)	ML	115.6	3.5	
15		45	- darker red, slightly moist, Dense		106.9	7.5	
20		50+			122.6	6.5	
25							
30							

CCL ENGINEERING, INC. BORING LOG

Boring Number: B-4
Location: S.W. Corner of Site
Project: TTM # 53869 (Tierra Subida & Ave Q-8)
Logged By: TJH
Project Number: 1514P
Diameter of Hole: 8" H.S. Auger
Date Drilled: April 23, 2002
Drill Rig Type: Mobil B-61

Depth (feet)	Symbol	Pen Resist. (blows/ ft.)	Description	Soil Type	Dry Density (pcf)	Moisture Content (%)	Remarks
0							
		12*	SANDY/CLAYEY SILT - Light Brown, Medium Dense - slight plasticity, slight cohession	ML	-	2.9	
		14*			-	3.3	
5		19*	SANDY SILT/SILTY SAND - Light Reddish Brown - Fine grained, Medium Dense	ML/SM	-	2.7	
10		19*			-	2.7	
15		24*	SAND, very fine grained - Dry, cohesionless - Dense	SP	-	2.1	
20		27*			-	3.4	
25		18*	CLAYEY SAND - Dark reddish-brown - Fine grained, moist	SC	-	3.8	
30			- CONT. -				

CCL ENGINEERING, INC. BORING LOG

Boring Number: B-4 (continued)
Location:
Project: TTM # 53869 (Tierra Subida & Ave Q-8)
Logged By: TJH
Project Number: 1514P
Diameter of Hole: 8" H.S. Auger
Date Drilled: April 23, 2002
Drill Rig Type: Mobil B-61

Depth (feet)	Symbol	Pen Resist. (blows/ft)	Description	Soil Type	Dry Density (pcf)	Moisture Content (%)	Remarks
			- CONT. -				
30		18*	- becomes more Clayey, moist, dense (very stiff) cohesive, slight plasticity		-	8.2	
35		28*			-	7.4	
40		35*			-	8.8	
			*Standard Penetration Test Count				

CCL ENGINEERING, INC. — BORING LOG

Boring Number: B-5
Location: West-Center of Site
Project: TTM # 53869 (Tierra Subida & Ave Q-8)
Logged By: TJH
Project Number: 1514P
Diameter of Hole: 8" H.S. Auger
Date Drilled: April 23, 2002
Drill Rig Type: Mobil B-61

Depth (feet)	Symbol	Pen Resist. (blows/ ft.)	Description	Soil Type	Dry Density (pcf)	Moisture Content (%)	Remarks
0							
		30	SANDY SILT - Light Brown Fine grained with few small gravels	ML	111.2	2.3	
		32			111.5	3.2	
5		41	SANDY CLAY - Red Brown, - Cohesive, Dense	CL	119.8	2.3	
		26	SILTY SAND, Light Red Brown - Fine grained, damp	SM	111.7	3.1	
10		28	- Medium Dense, slight cohession		107.4	3.5	
			SANDY/CLAYEY SILT	ML			
15		30	- Very Fine grained, cohesive - Stiff to very stiff (dense) - Light Brown, damp to slightly moist		113.8	4.1	
20		50			114.3	3.5	
25		42			109.1	5.8	
30							

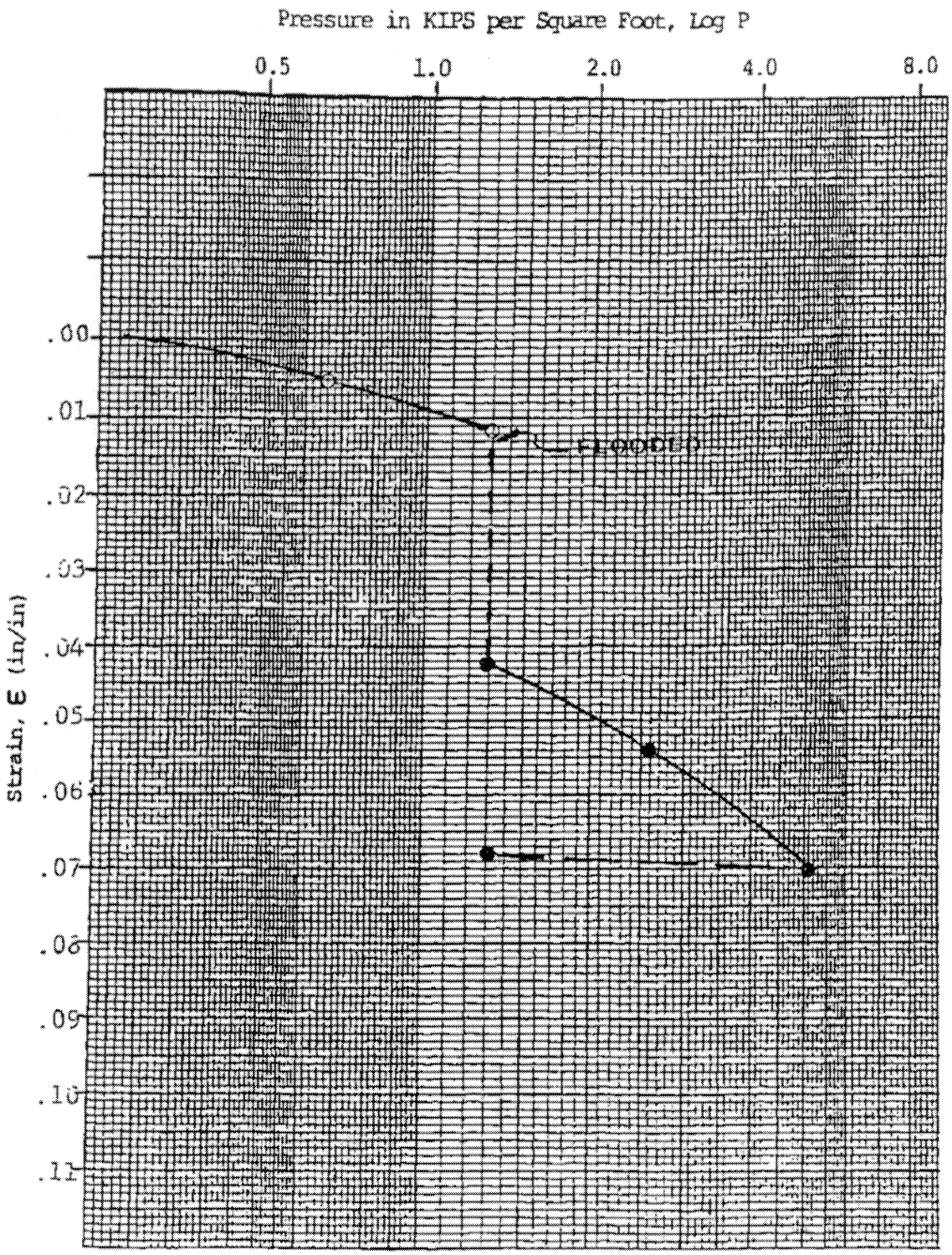
CCL ENGINEERING, INC. BORING LOG

Boring Number: B-6
Location: S.E. Corner of Site
Project: TTM # 53869 (Tierra Subida & Ave Q-8)
Logged By: TJH
Project Number: 1514P
Diameter of Hole: 8" H.S. Auger
Date Drilled: April 23, 2002
Drill Rig Type: Mobil B-61

Depth (feet)	Symbol	Pen Resist. (blows/ ft)	Description	Soil Type	Dry Density (pcf)	Moisture Content (%)	Remarks
0			SANDY SILT - Light Brown	ML			
		28*	- Fine, with few small gravels - Dry, medium dense		-	3.2	
5		35*	- becomes reddish brown (pinkish)		-	2.1	
10		19*	- slightly more clayey (cohesive) with depth, becomes denser (stiff)		-	3.7	
15		46*			-	5.3	
			*Standard Penetration Test Count				
20							
25							
30							

APPENDIX B

Consolidation Test Data
R-Value Test Data



CONSOLIDATION DATA

○ in-situ moisture

● saturated

Sample I.D : Boring No. 1 @ 5'

Sample Desc.: Fine SANDY SILT

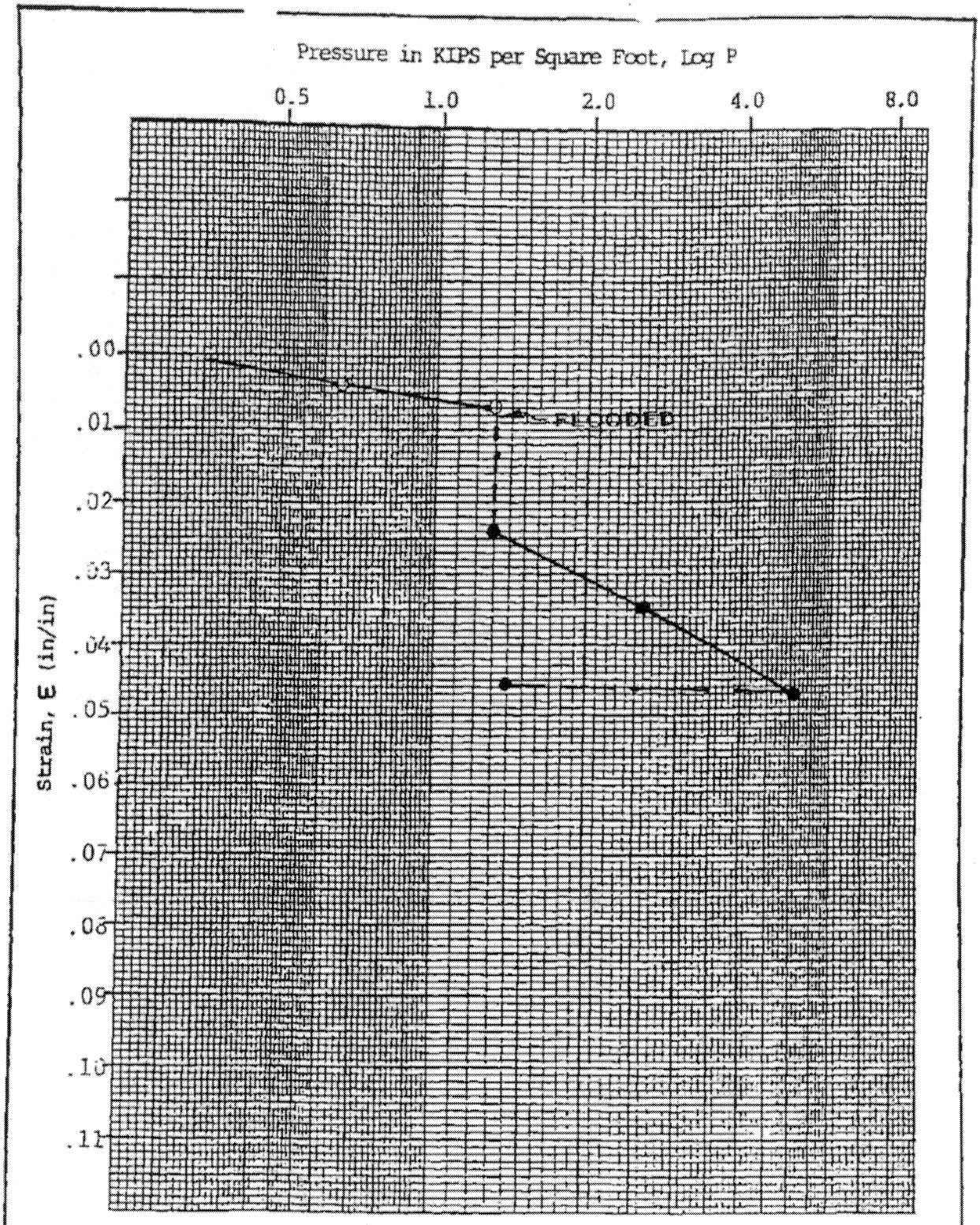
Sample Density: 99.3 pcf

COMPRESSION DIAGRAM

(ε x Log P)

CCL ENGINEERING INC.

JULY 16, 2002 | JN: 1514P



CONSOLIDATION DATA

○ in-situ moisture

● saturated

Sample I.D : Boring No. 5 @ 3'

Sample Desc.: Fine SANDY SILT

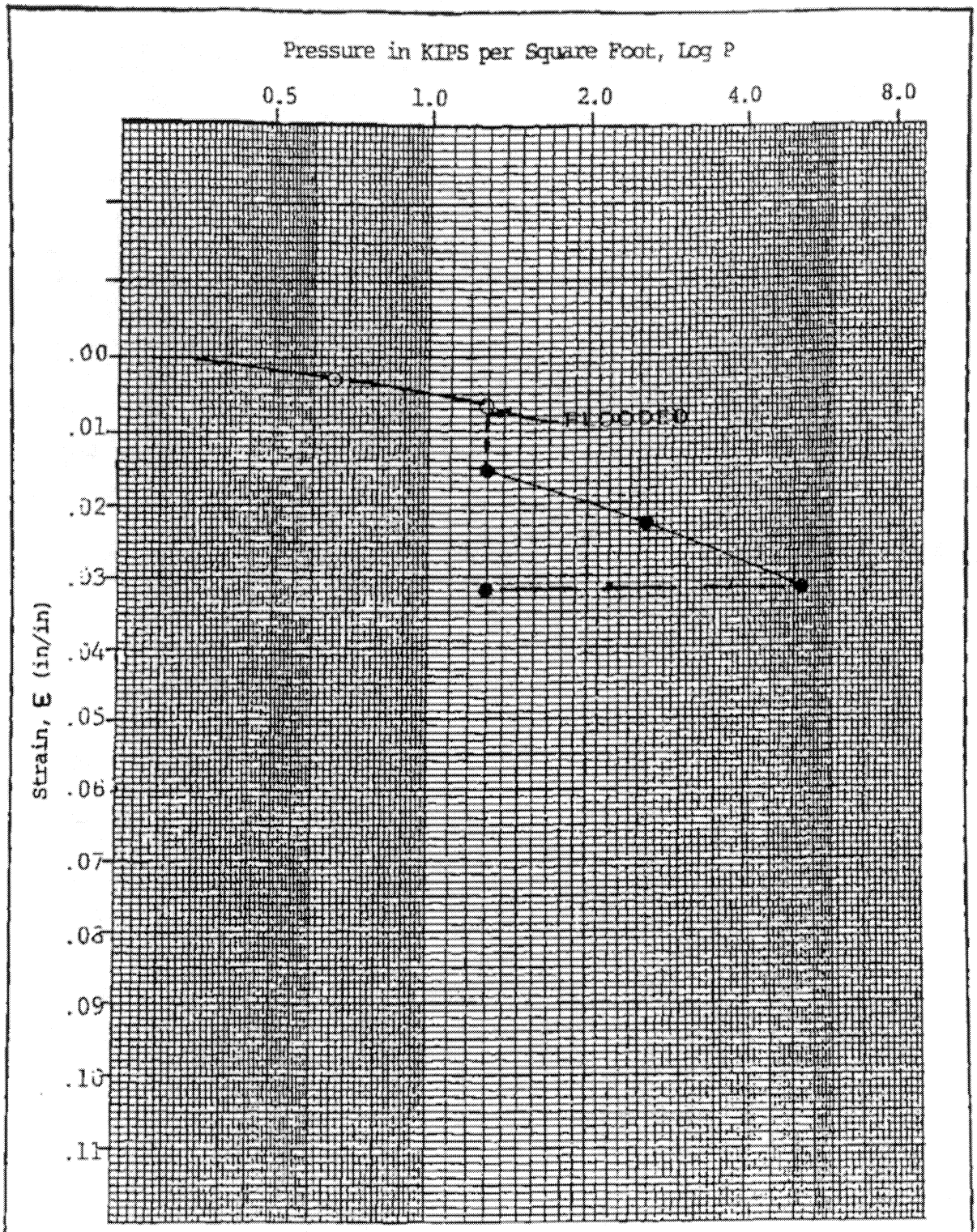
Sample Density: 111.5 pcf

COMPRESSION DIAGRAM

(ε x Log P)

CCL ENGINEERING INC.

JULY 16, 2002 | JN: 1514P



CONSOLIDATION DATA

○ in-situ moisture

● saturated

Sample I.D : Boring No. 5 @ 10'

Sample Desc.: SILTY SAND, sl. Clayey

Sample Density: 107.4 pcf

COMPRESSION DIAGRAM

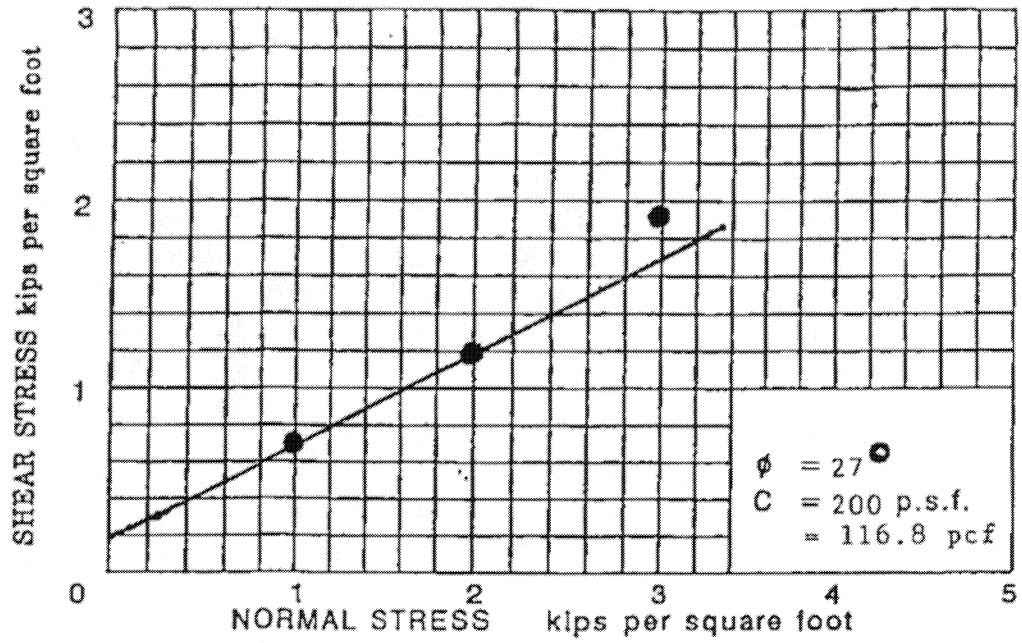
(ε x Log P)

CCL ENGINEERING INC.

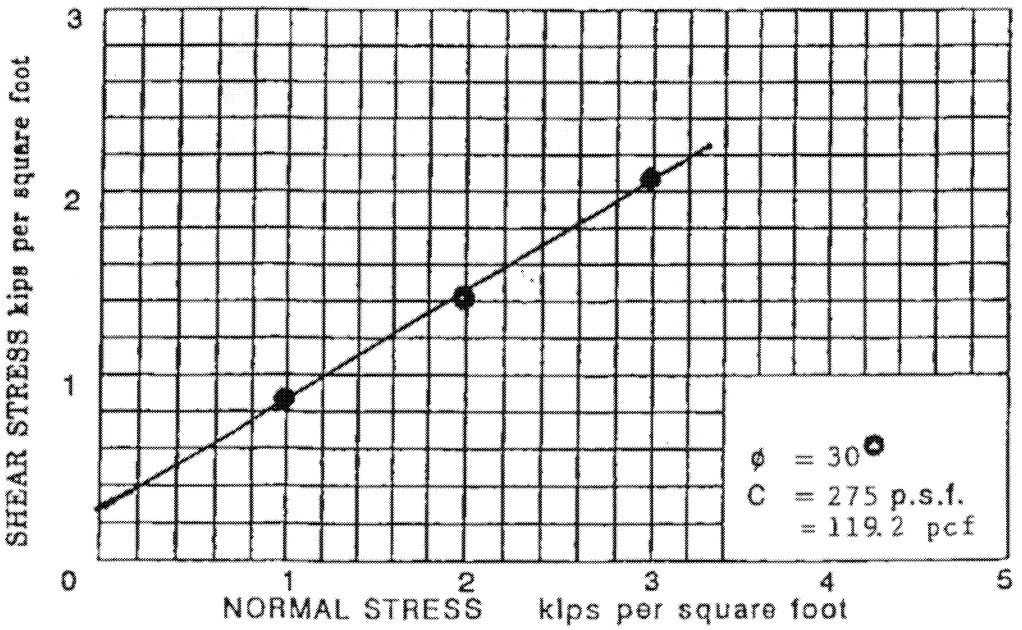
JULY 16, 2002 | JN: 1514P

DIRECT SHEAR TESTS

Boring No. 3 @ 3' (SILTY Fine Sand, sl. Clayey)



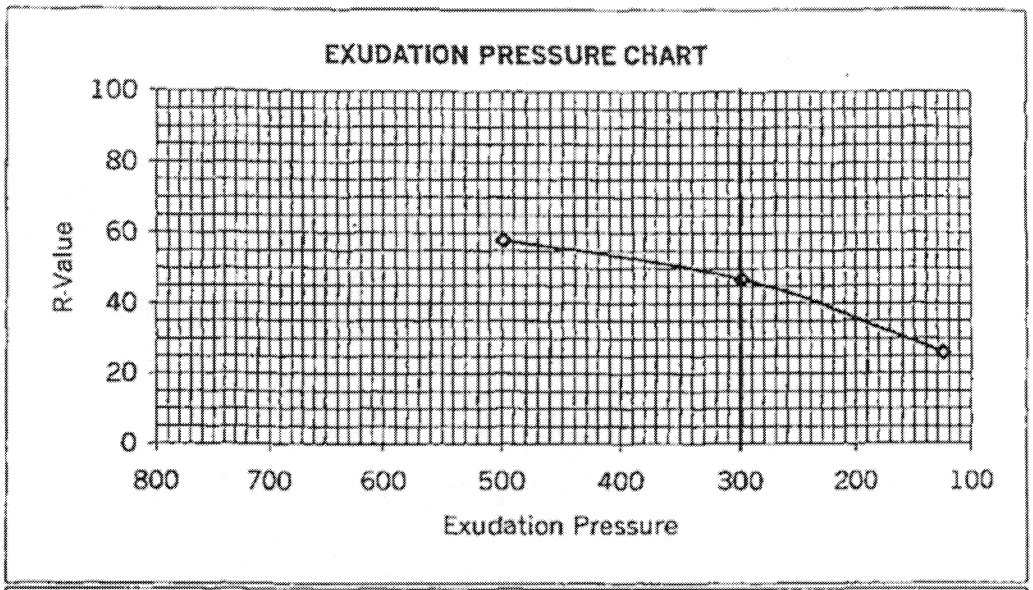
Boring No. 4 (0' O 5') Remolded - Compacted

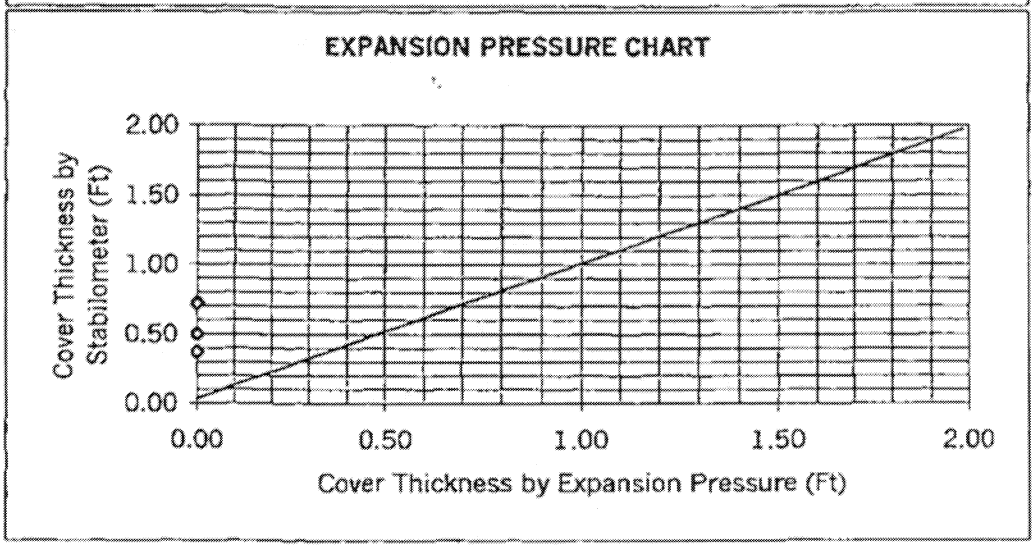


ASTM D-3080

CCL ENGINEERING, Inc.

JULY 16, 2002 | JN: 1514P





JOB NAME: CCL JN:1514P
SAMPLE I. D.: Boring 6 @ 0-4'
SOIL DESCRIPTION: Silty Fine to Coarse Sand (SM)

SPECIMEN NUMBER	A	B	C
EXUDATION PRESSURE	499	299	125
RESISTANCE VALUE	58	47	26
EXPANSION DIAL(0.0001")	0	0	0
EXPANSION PRESSURE (PSF)	0.0	0.0	0.0
% MOISTURE AT TEST	9.9	10.7	12.0
DRY DENSITY AT TEST	127.6	126.4	131.5

R-VALUE @ 300 PSI EXUDATION	47
R-VALUE by Expansion Pressure*	100

**Based on a Traffic Index of 5.0 and a Gravel Factor of 1.70*

APPENDIX C

Modified Mercalli Index Scale

Modified Mercalli Index

MMI Value	Description of Shaking Severity	Full Description
I		Not felt. Marginal and long period effects of large earthquakes.
II		Felt by persons at rest, on upper floors, or favorably placed.
III		Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV		Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV, wooden walls and frame creak.
V	Light	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
VI	Moderate	Felt by all. Many frightened and run outdoors. Persons walk unsteadily Windows, dishes, glassware broken. Knickknacks, books, etc , off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). Trees, bushes shaken (visibly, or heard to rustle).
VII	Strong	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments). Some cracks in masonry C Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
VIII	Very Strong	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells Cracks in wet ground and on steep slopes.
IX	Violent	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged (General damage to foundations.) Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.
X	Very Violent	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land Rails bent slightly.
XI		Rails bent greatly Underground pipelines completely out of service.
XII		Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

Masonry A: Good workmanship, mortar, and design, reinforced, especially laterally, and bound together by using steel, concrete, etc , designed to resist lateral forces
Masonry B: Good workmanship and mortar; reinforced, but not designed in detail to resist lateral forces.
Masonry C: Ordinary workmanship and mortar, no extreme weaknesses like failing to tie in at corners, but neither reinforced nor designed against horizontal forces.
Masonry D: Weak materials, such as adobe; poor mortar; low standards of workmanship; weak horizontally.

Modified Mercalli intensity scale of 1931 (1956 version)[1]
[1]Original 1931 version in Wood, H.O. and Neumann, F., 1931, Modified Mercalli intensity scale of 1931: Seismological Society of America Bulletin, v. 53, no. 5, p. 979-987

[1]1956 version prepared by Charles F. Richter, in Elementary Seismology, 1958, p. 137-138, W. H. Freeman & Co.

CCL ENGINEERING, INC.

11/20/02

GEOTECHNICAL ENGINEERING REPORT

PROPOSED A-EXPRESS FUEL CENTER #6333
SOUTHWEST CORNER OF TIERRA SUBIDA AVENUE
AND ELIZABETH LAKE ROAD
PALMDALE, CALIFORNIA

TERRACON PROJECT NO. 65005105
JULY 20, 2000

RECEIVED
SEP 28 2000
PLANNING DEPT
CASE #
CUP 936 MAJ. MOD.
GEO

Prepared for:

Albertson's Inc.
250 East Park Center Boulevard
Boise, Idaho 83706

Attn: Mr. Brian L. Liquin

Prepared by:

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July 20, 2000

Albertson's Inc.
250 East Park Center Boulevard
Boise, Idaho 83706

Attn: Mr. Brian L. Liquin

Re: **Geotechnical Engineering Report**
Proposed Albertson's A-Express Fuel Center No. 6333
Southwest Corner of Tierra Subida Avenue and Elizabeth Lake Road
Palmdale, California
Terracon Project No. 65005105

Terracon has completed geotechnical engineering exploration for the proposed Albertson's A-Express Fuel Center to be located at the existing Albertson's store at the southwest corner of Tierra Subida Avenue and Elizabeth Lake Avenue in Palmdale, California. This study was performed in general accordance with our Proposal No. D6500256 dated June 12, 2000. The results of our engineering study, including the site plan, laboratory test results, logs of borings, and the geotechnical recommendations needed to aid in the design and construction of foundations and other earth connected phases of this project are attached.

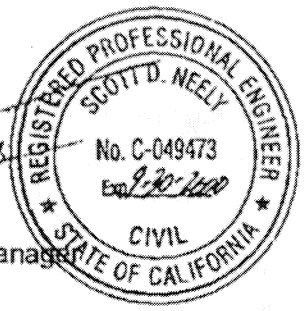
An existing pavement section, consisting of 3-inches of asphalt concrete over 4 inches of aggregate base course was encountered at the surface in Boring No. B1. The subsurface soils beneath the existing pavement section and at the location of Boring B2 consisted of 4½ feet of existing fill consisting of silty sand. Silty clayey sand was encountered beneath the fill materials and extended to the maximum depth of exploration. The results of field exploration and laboratory testing completed for this study indicate the soils at the site exhibit low to moderate compressibility at in-situ moisture content. The soils show slight potential for hydro-compaction when elevated in moisture content. When water is added to compacted near surface soils, the materials exhibit negligible expansive potential under light loading conditions such as those imposed by floor slabs.

Documentation has not been provided regarding placement or testing of the existing fill. Based upon the field and laboratory testing completed for this project, the fill appears to be well compacted. Provided the fill has been placed under controlled conditions, the fill is considered suitable for foundation and slab support. Based on the geotechnical engineering analyses, subsurface exploration and laboratory test results, we recommend the proposed building be supported on a spread footing foundation system. Slab-on-grade may be utilized for the interior floor system provided that care is taken in the placement and compaction of the subgrade soil. On-site soils should be suitable for use as engineered fill beneath the foundation systems and floor slabs.

Other design and construction recommendations, based upon geotechnical conditions, are presented in the report.

We appreciate being of service to you in the geotechnical engineering phase of this project, and are prepared to assist you during the construction phases as well. If you have any questions concerning this report or any of our testing, inspection, design and consulting services, please do not hesitate to contact us.

Sincerely,
Terracon



Scott D. Neely, P.E.
Geotechnical Services Manager

Reviewed by:

Donald R. Clark
Principal

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Copies to: Addressee (7)

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GEOTECHNICAL ENGINEERING REPORT

PROPOSED A-EXPRESS FUEL CENTER #6333
SOUTHWEST CORNER OF TIERRA SUBIDA AVENUE
AND ELIZABETH LAKE ROAD
PALMDALE, CALIFORNIA

TERRACON PROJECT NO. 65005105
JULY 20, 2000

INTRODUCTION

This report contains the results of our geotechnical engineering exploration for the proposed Albertson's A-Express Fuel Center to be located at the existing Albertson's store at the southwest corner of Tierra Subida Avenue and Elizabeth Lake Avenue in Palmdale, California.

The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- groundwater conditions
- foundation design and construction
- lateral earth pressures
- floor slab design and construction
- pavement design and construction
- earthwork
- drainage

The recommendations contained in this report are based upon the results of field and laboratory testing, engineering analyses, and experience with similar soil conditions, structures and our understanding of the proposed project.

PROPOSED CONSTRUCTION

The project will be located at the building pad at the southeast corner of the existing Albertson's center parking lot. The project will include construction of a 2000 square foot convenience store, underground fuel storage tanks, fueling islands, and an overhead fuel island canopy. The site will be paved in the canopy and UST areas with Portland cement concrete and in the parking and driveways with heavy duty asphalt concrete pavement.

SITE EXPLORATION

The scope of the services performed for this project included site reconnaissance by an engineering geologist, a subsurface exploration program, laboratory testing and engineering analyses.

Field Exploration: Two test borings were drilled on June 28, 2000 to depths of 21 and 26 feet at the locations shown on the Site Plan, Figure 1. One boring was drilled within the footprint of the proposed location of the underground fuel storage tanks, and one boring was drilled in the area of the proposed convenience store building. The boring in the area of the UST's was planned to be advanced to a depth of 50 feet, however, due to the presence of moderately to well cemented soils and difficult drilling conditions, the boring was stopped at a depth of 26 feet. Borings were advanced with a truck-mounted drilling rig, utilizing 7½ inch diameter hollow-stem augers.

The borings were located in the field by pacing from property lines and/or existing site features. The accuracy of boring locations should only be assumed to the level implied by the method used.

Continuous lithologic logs of each boring were recorded by the engineering geologist during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving a ring-barrel sampler. Bulk samples were taken of the near surface soils.

Penetration resistance measurements were obtained by driving the ring-barrel into the subsurface materials with a 140-pound hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency, relative density or hardness of the materials encountered.

Groundwater conditions were evaluated in each boring at the time of site exploration, and immediately upon completion of drilling.

Laboratory Testing: Samples retrieved during the field exploration were taken to the laboratory for observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System described in Appendix C. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials. Boring logs were prepared and are presented in Appendix A.

Laboratory tests were conducted on selected soil samples and are presented in Appendix B and on the Logs of Borings. The test results were used for the geotechnical engineering

analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples were tested for the following engineering properties:

- Water Content
- Dry Density
- Consolidation
- Gradation
- Plasticity Index
- Expansion

SITE CONDITIONS

The proposed construction site is partially located in an area of asphalt concrete pavement used for parking at the existing Albertson's store and the remainder is a graded building pad. No evidence of fills or underground facilities such as septic tanks, cesspools, basements, utilities, and dry wells were observed. The ground surface at the site was relatively flat and sloped gently to the northeast. Site drainage was generally by surface sheetflow and followed the topography.

SUBSURFACE CONDITIONS

Geology: The site is within Antelope Valley, which is the southwestern portion of the Mojave Desert geomorphic province of southern California. The valley is roughly triangular in shape and is bounded on the southwest by the San Andreas Fault Zone and on the northwest by the Garlock Fault. The desert areas of California consist of mountain ranges and isolated hills surrounding broad valleys underlain by alluvial deposits. The valleys are generally underlain by thick layers of sediment (mostly gravel, sand, and silt) which contain the main aquifers. The site is more specifically comprised of sediments derived from weathering and erosion of Ritter Ridge and the Sierra Pelona Mountains to the south. The active San Andreas Fault Zone is located approximately 1.2 miles southwest of the site.

The surficial geology of the site is described as Quaternary age alluvium that is underlain at depth by bedrock (Duell, 1987). This alluvium is described as sand and boulders, cobbles, and gravel with small quantities of silt and clay. The thickness of the alluvium is estimated to be less than 100 feet.

Soil Conditions: As presented on the Logs of Boring, an existing pavement section, consisting of 3-inches of asphalt concrete over 4 inches of aggregate base course was

encountered at the surface in Boring No. B1. The subsurface soils beneath the existing pavement section and at the location of Boring B2 consisted of 4½ feet of existing fill consisting of silty sand. Silty clayey sand was encountered beneath the fill materials and extended to the maximum depth of exploration.

The sands are generally fine to coarse grained and poorly graded. The silty clayey sands are typically weakly cemented near the top of the stratum and become moderately cemented with depth.

Field and Laboratory Test Results: Field penetration test results indicate the sand soils vary from medium dense to dense in relative density. The relative density generally increase with depth in the test borings.

Documentation has not been provided regarding placement or testing of the existing fill. Based upon the field and laboratory testing completed for this project, the fill appears to be well compacted.

The results of field exploration and laboratory testing completed for this study indicate the soils at the site exhibit low to moderate compressibility at in-situ moisture content. The soils show slight potential for hydro-compaction when elevated in moisture content. When water is added to compacted near surface soils, the materials exhibit negligible expansive potential under light loading conditions such as those imposed by floor slabs.

Groundwater Conditions: Groundwater was not observed in any test boring at the time of field exploration, nor when checked immediately upon completion of drilling. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations. Groundwater conditions can change with varying seasonal and weather conditions, and other factors.

ENGINEERING ANALYSES AND RECOMMENDATIONS

Geotechnical Considerations: Information has not been provided regarding the placement of fill on the project. Documentation of fill placement, including laboratory and field test reports, should be obtained to determine if the fill has been placed under controlled conditions (engineered fill). Should this documentation be available, and provided the fill has been placed under controlled conditions, the foundations and floor slabs may be supported directly on the existing fill.

Foundation Systems: Spread footing foundations are recommended for the support of the proposed building on the site. Due to the presence of undocumented fill and non-uniform bearing conditions, we recommend the upper 10-inches of soil beneath foundation excavations be scarified, moisture conditioned and compacted as engineered fill. This should provide for more uniform bearing conditions and reduce differential settlement. In the event that documentation cannot be provided regarding testing and compaction of existing fill, these materials should be removed, moisture conditioned, and compacted for foundation and slab support. Engineered fill which will support footings should be placed and constructed as recommended in the Earthwork section of this report.

The footings may be designed for a maximum bearing pressure of 2,000 psf. The design bearing pressure applies to dead loads plus design live load conditions. The design bearing pressure may be increased by one-third when considering total loads that include wind or seismic conditions. Recommended minimum widths of column and wall footings are 24 inches and 16 inches, respectively.

Exterior footings should be placed a minimum of 18 inches below finished grade to provide confinement for the bearing soils. Interior footings should bear a minimum of 12 inches below finished grade. Finished grade is the lowest adjacent grade for perimeter footings and floor level for interior footings.

Footings should be proportioned to reduce differential foundation movement. Proportioning on the basis of equal total settlement is recommended; however, proportioning to relative constant dead-load pressure will also reduce differential settlement between adjacent footings. Total settlement resulting from the assumed structural loads is estimated to be on the order of 1-inch. Differential settlement could be on the order of ½ to ¾ of the estimated total settlement. Additional foundation movements could occur if water from any source infiltrates the foundation soils; therefore, proper drainage should be provided in the final design and during construction.

Reinforced concrete foundations, cast in excavations against engineered fill are recommended for support of the fuel island canopy. To resist uplift, footing foundations may be designed using a simplification of Meyerhof's method for rectangular footings. The equation for determining the ultimate uplift capacity as a function of footing foundation dimension, foundation depth, and soil weight is presented below:

$$T_u = 0.7 \times \gamma \times D^2 \times (B + L) + W$$

Where: T_u = Ultimate uplift capacity (lbs)
γ = Unit weight of soil (lbs/ft^3)*
D = Depth to base of footing foundation below final grade (ft)

B = Width of footing foundation (ft)
L = Length of footing foundation (ft)
W = Weight of footing + weight of soil directly over the top of the footing (lbs)

*A unit weight (γ) of 120 pcf is recommended for soil (either undisturbed or compacted backfill) at this site.

The design uplift resistance should be calculated by dividing the ultimate resistance obtained from the equation above by an appropriate factor of safety. A factor of safety of at least 2 is recommended for live uplift loads in the analysis.

Footings, foundations, and masonry walls should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of joints at openings or other discontinuities in masonry walls is recommended.

Foundation excavations should be observed by a licensed civil engineer practicing in the field of geotechnical engineering. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

Lateral Earth Pressures: For soils above any free water surface, recommended equivalent fluid pressures for unrestrained foundation elements when using on-site soils as backfill are:

- Active ..... 40 psf/ft
- Passive ..... 400 psf/ft
- Coefficient of base friction 0.45*

  *The coefficient of base friction should be reduced to 0.30 when used in conjunction with passive pressure.

Where the design includes restrained elements, the following equivalent fluid pressures are recommended:

- At rest ..... 55 psf/ft

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if such conditions are to be included in the design.

Fill against foundation and retaining walls should be compacted to densities specified in Earthwork. Compaction of each lift adjacent to walls should be accomplished with hand-

operated tampers or other lightweight compactors. Overcompaction may cause excessive lateral earth pressures which could result in wall movement.

Seismic Considerations: The project site is located in Seismic Risk Zone 4 of the Seismic Zone Map of the United States as indicated by the 1997 Uniform Building Code. Based upon the nature of the subsurface materials, a Soil Profile Type "S_C" should be used for the design of structures for the proposed project (1997 Uniform Building Code, Table No. 16-J).

Because the site is located in Seismic Risk Zone 4, a review of the potential for seismically induced liquefaction of the soils at the site was conducted. Based on the information obtained during field exploration and our analyses, the potential risk to the site, due to liquefaction of the subsurface soils, is considered minor.

Floor Slab Design and Construction: The on-site soils exhibit negligible expansive potential under light loading conditions such as those imposed by floor slabs. Construction of floor slabs directly on compacted fills composed of on-site soils are considered acceptable for the project. Some differential movement of a slab-on-grade floor system is possible should the subgrade materials become elevated in moisture content. Such movements are anticipated to be within general tolerance for normal slab-on-grade construction. To reduce potential slab movements, the subgrade soils should be prepared as outlined in the Earthwork section of this report.

Additional floor slab design and construction recommendations are as follows:

- Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement.
- Control joints should be provided in slabs to control the location and extent of cracking.
- Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined below.
- For the anticipated design loading, a minimum 4-inch layer of aggregate base course should be placed beneath interior slabs. For heavy loading, vehicular traffic or concentrated loads on floor slabs, reevaluation of slab and/or base course thickness may be required.

- If moisture sensitive floor coverings are used on interior slabs, consideration should be given to the use of barriers to minimize potential vapor rise through the slab.

- Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

Pavement Design and Construction: Design of pavements for the project have been based on the procedures outlined in the 1993 Guideline for Design of Pavement Structures by the American Association of State Highway and Transportation Officials (AASHTO). Assumed traffic criteria used for pavement thickness design includes single 18-kip equivalent axle loads (EAL's) of 50,000 for heavy duty pavement. Actual design traffic loading should be verified. Reevaluation of the recommended pavement sections may be necessary if the actual traffic varies from the assumed criteria outlined above.

Recommended alternatives for flexible and rigid pavements, summarized for each traffic area, are as follows:

Traffic Area	Alternative	Recommended Pavement Section Thickness (inches)			
		Asphalt Concrete Surface	Aggregate Base Course	Portland Cement Concrete	Total
Heavy Duty Pavements	A	4			4
	B	3	4		7
	C			5	5

Each alternative should be investigated with respect to current material availability and economic conditions. Rigid concrete pavement, a minimum of 6 inches in thickness, is recommended at the location of dumpsters where trash trucks will park and load or any other areas of anticipated heavy vehicle loads.

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the State of California, Department of Transportation ([1]CALTRANS, July 1992).

[1] State of California, Department of Transportation, July 1992, ***Standard Specifications***, CALTRANS

Earthwork:

- **General Considerations:** The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for design and construction of earth supported elements including foundations, slabs and pavements are contingent upon following the recommendations outlined in this section.

  Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

- **Site Preparation:** Strip and remove existing pavement and other deleterious materials from proposed building and pavement areas. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

  Although evidence of underground facilities such as septic tanks, cesspools, basements, and utilities was not observed during the site reconnaissance, such features could be encountered during construction. If unexpected fills or underground facilities are encountered, such features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

  It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. However, excavations penetrating cemented soils may require the use of specialized heavy-duty equipment to advance the excavation.

  Based upon the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed during construction are anticipated to be relatively stable. However, the stability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions develop, workability may be improved by scarifying and drying. Overexcavation of wet zones and replacement with granular materials may be necessary. Use of lime, fly ash, kiln dust, cement or geotextiles could also be considered as a stabilization technique. Laboratory evaluation is recommended to determine the effect of chemical stabilization on subgrade soils prior to construction. Lightweight excavation equipment may be required to reduce subgrade pumping.

The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

- **Subgrade Preparation:** Due to the presence of undocumented fill and non-uniform bearing conditions, we recommend the upper 10-inches of soil beneath foundation excavations be scarified, moisture conditioned and compacted as engineered fill. This should provide for more uniform bearing conditions and reduce differential settlement. In the event that documentation cannot be provided regarding testing and compaction of existing fill, these materials should be removed, moisture conditioned, and compacted for foundation and slab support.

  Exposed areas which will receive fill, once properly cleared, should be scarified to a minimum depth of ten inches, conditioned to near optimum moisture content, and compacted.

  Subgrade soils beneath interior and exterior slabs, and beneath pavements should be scarified, moisture conditioned and compacted to a minimum depth of ten inches. The moisture content and compaction of subgrade soils should be maintained until slab or pavement construction.

- **Fill Materials and Placement:** On-site fill materials or approved imported materials may be used as fill material for the following:

  - general site grading
  - foundation areas
  - interior floor slab areas
  - exterior slab areas
  - pavement areas
  - foundation backfill

Imported soils (if required) should conform to the following:

Gradation	Percent finer by weight (ASTM C136)
6"	100
3"	70-100
No. 4 Sieve	50-100
No. 200 Sieve	35 (max)

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansive potential (%)* 1.0

*Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 100 psf surcharge and submerged.

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed ten inches loose thickness.

Recommended compaction criteria for engineered fill materials are as follows:

Material	Minimum Percent (ASTM D1557)
On-site and imported fill soils:	
Beneath foundations	95
Beneath slabs	92
Beneath pavements	92
Aggregate base (beneath slabs)	95

On-site fill materials and imported materials should be compacted within a moisture content range of 3 percent below, to 3 percent above optimum.

Additional Design and Construction Considerations:

- **Exterior Slab Design and Construction:** Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill may experience some movement due to the volume change of the backfill. Potential movement or damage caused by movement, could be reduced by:

  - minimizing moisture increases in the backfill
  - controlling moisture-density during placement of backfill
  - using designs which allow vertical movement between the exterior features and adjoining structural elements
  - placing effective control joints on relatively close centers

- **Underground Utility Systems:** Underground piping within or near the proposed structure should be designed with flexible couplings, so minor deviations in alignment do not result in breakage or distress. Utility knockouts in foundation walls should be oversized to accommodate differential movements.

- **Corrosion Protection:** ASTM Type I/II Portland cement is suitable for all concrete on and below grade. Foundation concrete should be designed in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 4.

  Laboratory test results indicate that on-site soils have a resistivity of 1660 ohm-centimeters, and a pH value of 8.1. These values should be used to determine potential corrosive characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

  Criteria published by the Cast Iron Pipe Research Institute indicates that these values make the soils potentially corrosive to buried ferrous materials. Review of data published by the National Association of Corrosion Engineers indicates that the resistivity places the soils in the mildly corrosive category.

  While resistivity and pH are two parameters which indicate the potential of corrosion, these properties alone are not solely responsible for the corrosive effects of soil. One major consideration in combination with other parameters is the in-situ moisture content of the soils. As the moisture content of soils increases, the corrosion potential increases in like manner provided that other properties of the soils indicate corrosive potential.

  For this project, the corrosion of buried ferrous materials will likely be relatively remote provided that the moisture content of the subgrade soils surrounding the materials does not approach saturation. If there is concern regarding pipe and other appurtenant utility lines, the use of PVC or poly-wrap of utilities should be considered.

- **Surface Drainage:** Positive drainage should be provided during construction and maintained throughout the life of the proposed project. Infiltration of water into utility or foundation excavations must be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls. Backfill against footings, exterior walls, and in utility and sprinkler

line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

Downspouts, roof drains or scuppers should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving.

GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide testing and observation during excavation, grading, foundation and construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations which may occur between borings or across the site. The nature and extent of such variations may not become evident until construction. If variations appear, it will be necessary to reevaluate the recommendations of this report.

The scope of services for this project does not include either specifically or by implication any environmental assessment of the site or identification of contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. In the event that changes in the nature, design, or location of the project as outlined in this report, are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes, and either verifies or modifies the conclusions of this report in writing.

LOG OF BORING NO. B2

CLIENT
Albertsons Inc.

SITE SWC Tierra Subida Ave. and Elizabeth Lake Rd.
Palmdale, California

PROJECT
Albertson's A Express #6333

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	TYPE	RECOVERY (in)	BLOWS/FT.	TESTS: WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
	FILL; SILTY SAND; trace gravel, brown, medium dense											
4.5	SILTY, CLAYEY SAND, trace gravel, brown, medium dense to dense, weakly cemented	5	SC SM	1	RS	12	21	7	120			
	yellow brown	10	SC SM	2	RS	12	35					
		15	SC SM	3	RS	12	34	8	120			
	brown											
	weakly to moderately cemented	20	SC SM	4	RS	12	65	6	118			
26		25	SC SM	5	RS	12	47	6	113			
	Bottom of Boring											

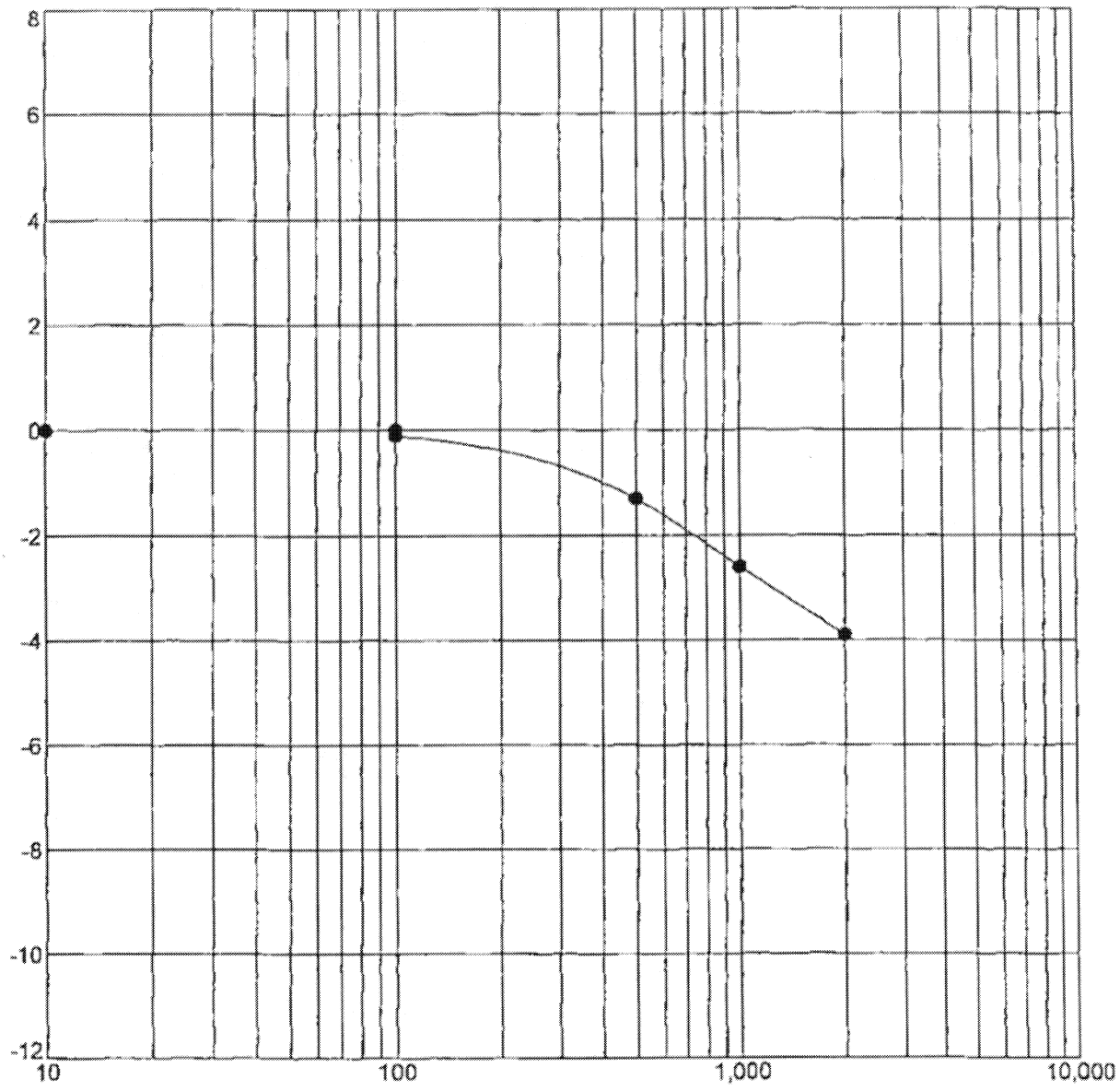
The stratification lines represent the approximate boundary lines between soil and rock types In-situ, the transition may be gradual

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	
WL		
WL	Backfilled Upon Completion	

Terracon

BORING STARTED	6-28-00		
BORING COMPLETED	6-28-00		
RIG	B-53	FOREMAN	HMS
Approved	SDN	JOB #	65005105

BOREHOLE 2000 65005105.GPJ TERR2000.GDT 7/22/00



Specimen Identification		Classification	γ_d, pcf	WC,%
● B1	0.0ft		110	10

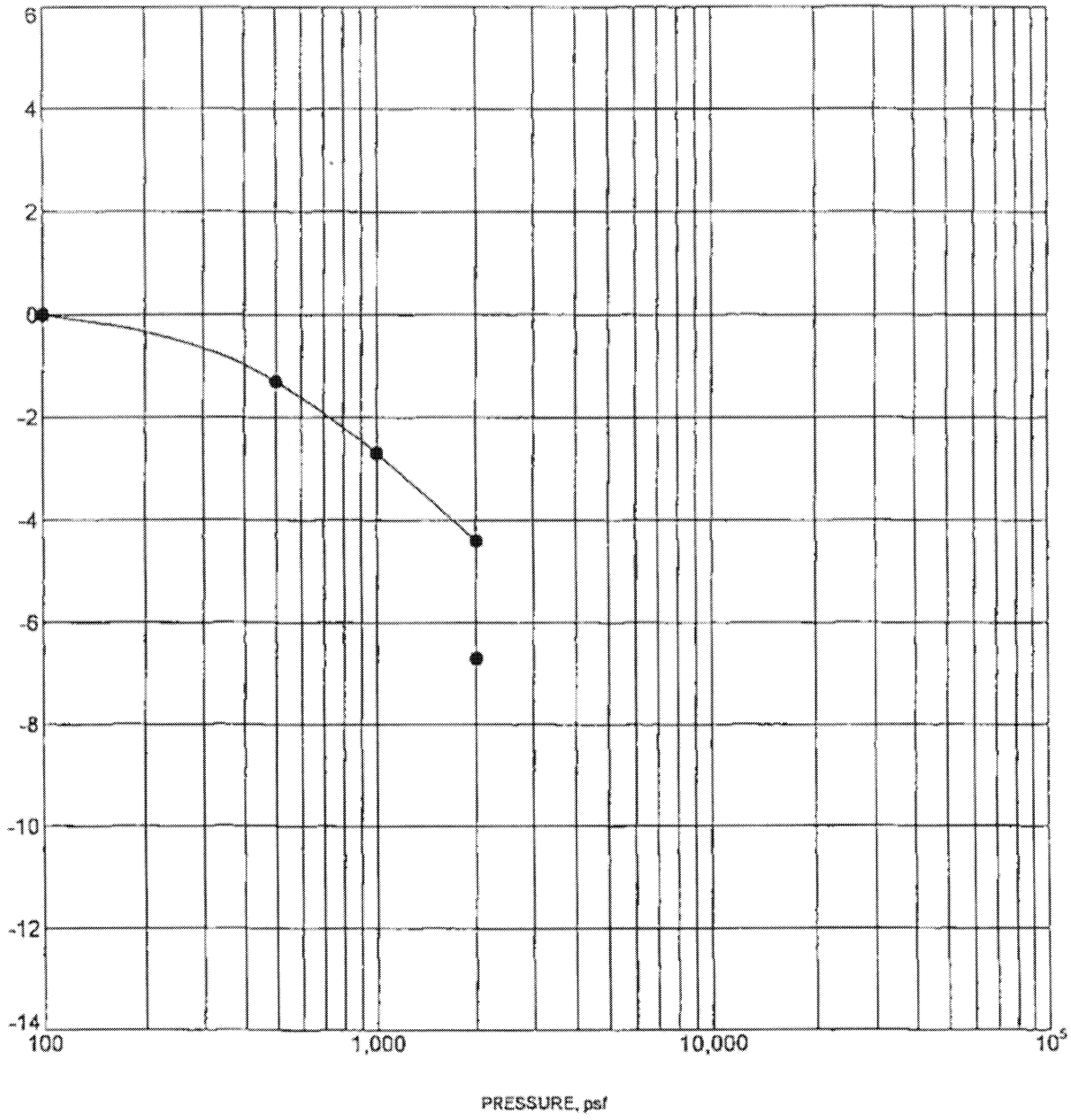
Notes: Sample remolded to the dry density and moisture content indicated. Water added @ 100 psf.

Terracon

SWELL TEST

Project: Albertson's A Express #6333
Site: SWC Tierra Subida Ave. and Elizabeth Lake Rd. Palmdale, California
Job #: 65005105
Date: 7-19-00

TC SWELL1 STRAIN 65005105.GPJ TERRACON.GDT 7/19/00



Specimen Identification		Classification	γ_d, pcf	WC,%
● B2	5.0ft	SILTY, CLAYEY SAND	108	7

Notes: Water added @ 2,000 psf.

Terracon

CONSOLIDATION TEST

Project: Albertson's A Express #6333
Site: SWC Tierra Subida Ave and Elizabeth Lake Rd. Palmdale, California
Job #: 65005105
Date: 7-19-00

TC CONSOL STRAIN 65005105.GPJ TERRACON.GDT 7/19/00

Borehole No.	Depth (ft.)	USCS Soil Class.	In-Situ Properties		Classification				Remolded Expansion				Corrosivity				Remarks
			Dry Density (pcf)	Water Content (%)	Passing #200 Sieve (%)	Atterberg Limits			Dry Density (pcf)	Water Content (%)	Surcharge (psf)	Expansion (%)	pH	Resistivity (ohm-cm)	Water Soluble Salts (ppm)	Sulfates (ppm)	
						LL	PL	PI									
B1	0.0								110	10	100	0	8.2	2140		456	2, 3
B1	0.6	SM			28	20	17	3									
B1	5.0	SC-SM	112	6													1, 2
B1	10.0	SC-SM	118	7													1, 2
B1	15.0	SC-SM	123	6													1, 2
B1	20.0	SC-SM	119	6													1, 2
B2	5.0	SC-SM	120	7													1, 2
B2	15.0	SC-SM	120	8													1, 2
B2	20.0	SC-SM	118	6													1, 2
B2	25.0	SC-SM	113	6													1, 2

REMARKS
1. Dry Density determined from one or more rings of a multi-ring sample.
2. Visual Classification.
3. Submerged to approximate saturation.

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SUMMARY OF LABORATORY RESULTS

Project: Albertson's A Express #6333
Site: SWC Tierra Subida Ave. and Elizabeth Lake Rd. Palmdale, California
Job #: 65005105
Date: 7-21-00

SOIL PROPERTIES 65005105.GPJ TERR2000.GDT 7/21/00

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS	Split Spoon - 1-3/8" I D , 2" O D , unless otherwise noted	HS	Hollow Stem Auger
ST	Thin-Walled Tube - 2" O D., unless otherwise noted	PA	Power Auger
RS	Ring Sampler - 2.42" I.D , 3" O D., unless otherwise noted	HA	Hand Auger
DB	Diamond Bit Coring - 4", N, B	RB	Rock Bit
BS	Bulk Sample or Auger Sample	WB	Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value" For 3" O D ring samplers (RS) the penetration value is reported as the number of blows required to advance the sampler 12 inches using a 140-pound hammer falling 30 inches, reported as "blows per foot," and is not considered equivalent to the "Standard Penetration"or "N-value"

WATER LEVEL MEASUREMENT SYMBOLS:

WL	Water Level	WS	While Sampling
WCI	Wet Cave in	WD	While Drilling
DCI	Dry Cave in	BCR	Before Casing Removal
AB	After Boring	ACR	After Casing Removal

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency

CONSISTENCY OF FINE-GRAINED SOILS

Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-value (SS) Blows/Ft.	Consistency
< 500	<2	Very Soft
500 – 1,000	2-3	Soft
1,001 – 2,000	4-6	Medium Stiff
2,001 – 4,000	7-12	Stiff
4,001 – 8,000	13-26	Very Stiff
8,000+	26+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Standard Penetration or N-value (SS) Blows/Ft.	Ring Sampler (RS) Blows/Ft.	Relative Density
0 – 3	0-6	Very Loose
4 – 9	7-17	Loose
10 – 29	18-55	Medium Dense
30 – 49	56-95	Dense
50+	96+	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 – 29
Modifier	> 30

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 – 12
Modifiers	> 12

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in (300mm)
Cobbles	12 in to 3 in (300mm to 75 mm)
Gravel	3 in. to #4 sieve (75mm to 4 75 mm)
Sand	#4 to #200 sieve (4 75mm to 0 075mm)
Silt or Clay	Passing #200 Sieve (0.075mm)

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1-10
Medium	11-30
High	30+

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UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]					Soil Classification	
					Group Symbol	Group Name[B]
Coarse Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No 4 sieve	Clean Gravels Less than 5% fines[C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$[E]		GW	Well-graded gravel[F]
			$Cu < 4$ and/or $1 > Cc > 3$[E]		GP	Poorly graded gravel[F]
		Gravels with Fines More than 12% fines[C]	Fines classify as ML or MH		GM	Silty gravel[F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel[F,G,H]
	Sands 50% or more of coarse fraction passes No 4 sieve	Clean Sands Less than 5% fines[D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$[E]		SW	Well-graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3$[E]		SP	Poorly graded sand[I]
		Sands with Fines More than 12% fines[D]	Fines classify as ML or MH		SM	Silty sand[G,H,I]
			Fines Classify as CL or CH		SC	Clayey sand[G,H,I]
Fine-Grained Soils 50% or more passes the No 200 sieve	Silts and Clays Liquid limit less than 50	inorganic	PI > 7 and plots on or above "A" line[J]		CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]		ML	Silt[K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay[K,L,M,N] / Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line		CH	Fat clay[K,L,M]
			PI lots below "A" line		MH	Elastic Silt[K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay[K,L,M,P] / Organic silt[K,L,M,Q]
Highly organic soils	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-in (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name

[C] Gravels with 5 to 12% fines require dual symbols GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay

[D] Sands with 5 to 12% fines require dual symbols SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM

[H] If fines are organic, add "with organic fines" to group name

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay

[K] If soil contains 15 to 29% plus No 200, add "with sand" or "with gravel," whichever is predominant

[L] If soil contains ≥ 30% plus No 200 predominantly sand, add "sandy" to group name

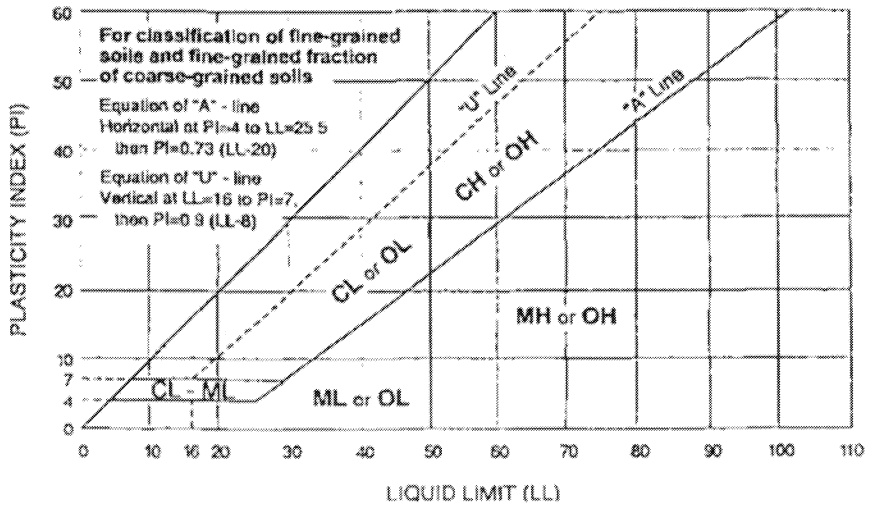
[M] If soil contains ≥ 30% plus No 200, predominantly gravel, add "gravelly" to group name

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line



Terracon

11/20/02

GEOTECHNICAL ENGINEERING REPORT

Proposed John Jay/Best Western Inn
Palmdale Boulevard and 6th Street West
Palmdale, Los Angeles County, California
PL-05329-01

PREPARED FOR

REICHERT LENGFELD, LTD

December 30, 1999

Prepared By

Earth Systems Consultants •
Southern California
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FEB 2 3 2000

1 cy.

December 30, 1999 PL-05329-01

We appreciate this opportunity to provide professional geotechnical engineering services for this project. If you need clarification of the information contained in this report, or if we can be of additional service, please contact the undersigned.

Respectfully submitted,

Earth Systems Consultants •
Southern California

Bruce A. Hick
Project Geotechnical Engineer

Distribution: 4 – Reichert Lengfeld, Ltd.
2 – Antelope Valley Engineering, Inc.

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PURPOSE AND SCOPE OF SERVICES

The purpose of our services was to evaluate the project site soil conditions, and to provide preliminary geotechnical engineering conclusions and recommendations relative to the project site and the proposed development. Our scope of services included the following:

A. A general geotechnical engineering reconnaissance of the site.

B. Shallow subsurface exploration of the project site by drilling three test borings.

C. Geotechnical laboratory testing of selected soil samples obtained from the field exploration program conducted for this project.

D. Engineering analyses of the data obtained from the exploration and testing programs.

E. A summary of our findings and recommendations in this written report.

Contained in this report are:

1. Discussions on local and site specific soil conditions.

2. Results of laboratory tests and field data.

3. Recommendations relating to the proposed site development, including allowable foundation bearing capacity, recommendations for foundation design, estimated total and differential settlements, site grading criteria, lateral earth pressures, soil expansion characteristics, and preliminary pavement sections.

SITE DESCRIPTION

The approximate 1.1-acre roughly rectangular-shaped site project site is located within a portion of the South ½ of the Northeast ¼ of the Northwest ¼ of Section 27, Township 6 North, Range 12 West, San Bernardino Meridian, in the City of Palmdale, Los Angeles County, California. Access to the site is available from Palmdale Boulevard, a paved improved road located adjacent to the northern boundary of the site (see attached Site Plan and Vicinity Map in Appendix A).

Topographically, the site consists of relatively flat terrain that is sloping to the north/northeast at an approximate two percent gradient. There is less than 10 feet of

elevation differential across the site. An existing commercial development is located on the property adjacent to the eastern boundary of the site. Landscape planters and parking lot improvements are located along the eastern boundary of the site. Vacant land is located adjacent to the western and southern boundaries of the site.

The site was vacant land at the time of our field exploration. The site was covered with a light covering of typical desert vegetation, consisting of dry grass, weeds, brush, and bushes. Debris, consisting of household and construction trash was noted on the site, especially adjacent to existing streets. No other existing improvements were observed on the site at the time of our field exploration. The above cited descriptions are intended to be illustrative, and are specifically not intended for use as a legal description of the subject property in any matter.

FIELD EXPLORATION

The field exploration for this study included the drilling and sampling of three exploratory soil borings to depths ranging from approximately 16 to 43 feet below the existing ground surface on December 10, 1999. Boring B-1 was terminated prior to attaining 50 feet below the existing ground surface due to very hard drilling. The borings were drilled with a CME 55 truck-mounted drilling rig using eight-inch diameter continuous flight hollow stem auger in accordance with generally accepted geotechnical exploration procedures (ASTM D 1452). The approximate location of the exploratory borings, as indicated on the attached Site Plan and Vicinity Map in Appendix A, were determined by sighting and tape measuring from existing site improvements. The exploration locations should be considered accurate only to the degree implied by the measurement method used.

Bulk disturbed samples of the subsurface soils were obtained from cuttings developed during drilling of the test borings. These samples were secured for classification and testing purposes and represent a mixture of soils within the noted depths.

Relatively undisturbed soil samples were secured from within the soil borings using a three-inch O. D. ring sampler (ASTM D 3550). The sampler shoe is similar to the type specified in ASTM D 1586. A 140-pound hammer falling approximately 30 inches (ASTM D 1586) drove the sampler. The number of blows required to drive the sampler one-foot was recorded in six-inch increments. Recovered soil samples were sealed in plastic containers and brought to our laboratory for further classification and testing.

The Boring Logs for this report, included in Appendix A, represent our interpretation of the field logs prepared for each boring by our staff, along with their interpretation of soil conditions between samples and results of laboratory tests. While the noted stratification lines represent approximate boundaries between soil types, the actual transitions may be gradual.

LABORATORY TESTING

After visual and tactile classification in the field, the soil samples were brought to our laboratory. The soil classifications were checked in accordance with the Unified Soil Classification System and a testing program was established as follows:

A. Soil samples and field logs were reviewed to assess which samples would be analyzed further.

B. In-situ moisture content and dry unit weight for soil core samples were developed in accordance with ASTM D 2937.

C. The relative strength characteristics of remolded (compacted) samples of the near-surface soils were estimated from the results of direct shear tests (ASTM D 3080) conducted on samples remolded to approximately 90% 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 2.3 KSF.

D. The relative strength characteristics of the subsurface soils were estimated from the results of direct shear tests (ASTM D 3080) conducted on relatively undisturbed samples obtained from the ring sampler. The samples were placed in contact with water for at least 24 hours before testing and then sheared under normal loads ranging from 0.5 to 2.3 KSF.

E. Consolidation tests (ASTM D 2435) were conducted on relatively undisturbed samples obtained from the ring sampler. The maximum stress during testing was 4.6 KSF. The samples were saturated at 2.3 KSF to check the hydroconsolidation potential. The samples were unloaded to 1.2 KSF to check the rebound.

F. Soil Chemistry tests consisted of Soluble Sulfate (California Test Method 417).

G. Additional tests consisted of Maximum Density-Optimum Moisture (ASTM D 1557), Expansion Index (ASTM D 4829) and "R"-Value (California Test Method 301).

Refer to Appendix B for the laboratory test results. 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.

SOIL CONDITIONS

Evaluation of the subsurface site characteristics indicates that the native soils underlying the site encountered in the exploratory soil borings are alluvial deposits, consisting predominately of silty sands and sandy silts (SM and ML soil types based upon the Unified Soil Classification System). The upper native soils can be geologically classified as Quaternary Younger Alluvium ("Qal"). Soils that can be geologically classified as Quaternary Older Alluvium ("Qoa") were encountered in the borings below a depth of approximately five feet from existing site grade. The Boring Logs in Appendix A contain a more detailed description of the soils encountered in the exploratory borings. Per 1997 UBC Table 16-J, the site subgrade classification is a very dense soil profile (S_C).

Some of the upper three to four feet of the site soils were found to be relatively loose, non-uniform, and of low relative compaction. The underlying soils were found to be medium dense to dense condition. The older alluvium soils encountered below a depth of approximately five feet were found to be variably to well cemented.

Based upon the consolidation test results, some of the upper three to four feet of the native site soils demonstrate a moderate to high tendency to hydrocompress (experience a loss in volume upon wetting, with or without additional loading; commonly referred to as "collapsing soil"). The underlying soils below a depth of approximately four feet, through the depths tested, demonstrate a negligible to slight tendency to hydroconsolidate.

Based upon Expansion Index Test (ASTM D 4829) results, the upper native soils are considered to have a "very low" (0-20) expansion potential. Refer to Section G of the Recommendations section for explanations and recommendations for dealing with expansive soils.

GROUNDWATER

Free groundwater was not encountered in the borings at the time of drilling. Static aquifer groundwater levels in the vicinity of the site are estimated to be deeper than 100 feet below the existing surface (U. S. Geological Survey Water Data Report CA 93-5; Volume V: Groundwater Data, March 1993). Fluctuations in groundwater levels may occur due to variations in rainfall, regional climate, and other factors.

REGIONAL GEOLOGY

The project site is located within the Mojave Desert geomorphic that is a broad interior region of isolated mountain ranges separated by desert plains and basins. The western

TABLE I

Earthquake (Fault)	Approx. Distance to Epicenter (miles)	Earthquake Magnitude*	Estimated Intensity at the Site **	Date
Fort Tejon (San Andreas)	106	7.9	VIII	1857
Owens Valley (Sierra Nevada)	146	7.6	VI	1872
Arvin-Tehachapi (White Wolf)	57	7.5	VII	1952
San Fernando (San Fernando)	19	6.6	VI	1971
Whittier	36	5.9	IV	1987
Landers	101	7.3	V	1992
Northridge	34	6.7	V	1994

*Moment Magnitude
**Modified Mercalli Scale

Liquefaction

Liquefaction is defined as a loss of strength of saturated cohesionless soil generally due to seismic shaking. Soil types most susceptible to liquefaction are loose, saturated silty to clean fine sands. Based on our site exploration, the shallow alluvial soils below this site consist of sands that are generally in a medium dense to dense state. Static groundwater depths on this site are greater than 50 feet. Where groundwater levels are greater than 50 feet deep, it is generally thought that surface damage from deeper liquefaction will not occur. Therefore, since the static groundwater level under the site is greater than 50 feet deep and since the foundation soils are relatively dense in nature, it is our opinion that hazards from liquefaction on this site should be negligible.

Table II
Modified Mercalli Intensity Scale of 1931[1], (1956 version)[2]

Masonry A, B, C, D. To avoid ambiguity of language, the quality of masonry, brick or otherwise, is specified by the following lettering.

Masonry A: Good workmanship, mortar, and design; reinforced, especially laterally and bound together by using steel, concrete, etc.; designed to resist lateral forces.

Masonry B: Good workmanship and mortar; reinforced, but no designed in detail to resist lateral forces.

Masonry C: Ordinary workmanship and mortar; no extreme weaknesses like failing to tie in at corners, but neither reinforced nor designed against horizontal forces.

Masonry D: Weak materials, such as adobe; poor mortar; low standards of workmanship; weak horizontally.

I.	Not felt. Marginal and long-period effects of large earthquakes.
II.	Felt by persons at rest, on upper floors, or favorably placed.
III.	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV.	Hanging objects swing. Vibrations like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV wooden walls and frame creak.
V	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
VI.	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). Trees, bushes shaken visibly, or heard to rustle.
VII.	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices also unbraced parapets and architectural ornaments. Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
VIII.	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
IX.	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. General damage to foundations. Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluviated areas sand and mud ejected, earthquake fountains, sand craters.
X.	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
XI.	Rails bent greatly. Underground pipelines completely out of service.
XII.	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

[1] Original 1931 version in Wood, H. O., and Neumann, F., 1931, Modified Mercalli intensity scale of 1931: Seismological Society of America Bulletin, v. 53, no. 5, p. 979-987

[2] 1956 version prepared by Charles F. Richter, in Elementary Seismology, 1956, p. 137-138, W. H. Freeman & Co.

Other Secondary Seismic Hazards

Other seismic hazards related to ground shaking include ground lurching, landslides, tsunamis, seiches, and seismic-induced settlements. Ground lurching is generally associated with fault rupture and liquefaction. As these two hazards are considered unlikely, it is our opinion that the potential for ground lurching is also low. Due to the relatively flat site topography, hazards from landslides are considered negligible. Due to the inland location of the site, hazards from tsunamis are considered nonexistent.

Several large water storage facilities are currently located approximately one-half miles upgradient (southwest) of the property. If these tanks were to release water to the northeast, it is possible that some flooding could occur in the vicinity of the project site.

Seismically induced settlement may occur within the on-site younger alluvial soils. However, the near surface soils will be densified by remedial grading to mitigate most settlement potentials. Additional settlement may occur due to seismic shaking, but will most likely occur on an areal basis.

Erosion

The project site is in an area where minor sheet flooding and erosion could occur. Appropriate site analyses, project design, project construction, and site maintenance should minimize the sheet flooding potential.

DISCUSSION AND CONCLUSIONS

Based upon the field exploration, laboratory testing, a review of the proposed site development plan, and past experience, it is our opinion that the site, when modified as recommended in this report, is suitable for the intended construction.

Geologic Considerations

The project site is not underlain by any known active fault. In our opinion, the primary geologic hazards relative to site development is ground shaking resulting from earthquakes originating on the San Andreas fault or other nearby active or potentially active faults. Maximum anticipated Modified Mercalli intensities at the site from future earthquakes are estimated to range from VIII to IX. Horizontal mean peak ground accelerations are estimated to be 0.9 to 1.0 g. Vertical accelerations are estimated to be one-third to two-thirds of the horizontal acceleration.

Potentials for other geologic hazards, including tsunamis, seiches, liquefaction, areal subsidence, and slope instability are considered very low. The site may be susceptible

to minor sheet flooding and erosion due to seasonal rainfall. Appropriate site grading, design, and maintenance should mitigate this potential.

Site Grading

As mentioned in the Soil Conditions Section, some of the upper three to four feet of the native soils were found to be relatively loose, non-uniform, of low relative compaction, and demonstrate a moderate to high potential to hydrocompress. Again defined, hydrocompression is a loss in soil volume upon wetting, with or without additional loading. Before hydrocompression, the soils have a relatively open inter-granular structure held in-place by a water-soluble binder located between the individual soil grains. The addition of water decreases the binding effect thereby allowing the soil grains to slide together. This causes an overall decrease in soil volume, resulting in settlement. Hydrocompression, if left untreated, may cause unacceptable total and differential settlement of foundations supported by collapsible soils.

Based upon the above, it is our opinion that the upper native soils will not provide uniform support for the proposed structures without remedial grading. To decrease the potential for hydrocompression and to provide a more uniform bearing for the proposed structures, it is recommended that a recompacted soil mat be constructed beneath all structural foundations and slab-on-grade construction. Refer to Section A of the Recommendations of this report for more detailed discussions and recommendations regarding site preparation.

Foundation Design and Settlements

If our preliminary recommendations for site preparation and grading are followed, conventional shallow (continuous and isolated pad) foundations may be used to support the proposed structures. If our preliminary recommendations for foundation design and construction are followed, total settlement of the proposed structures should be approximately one inch. Differential settlement across a thirty foot span may be as high as fifty percent of the total settlement. Refer to Section D of the Recommendations section of this report for more detailed discussions and recommendations regarding foundation design.

RECOMMENDATIONS

Based upon the field exploration, laboratory testing, our interpretation of data from the exploration and testing programs, and past experience, it is our opinion that the following recommendations should be incorporated into site preparation, preliminary design, and construction of the proposed site development.

A. Site Preparation

1. Any vegetation, uncompacted fill, trash piles, pavements, abandoned underground utilities, and other debris should be removed from the proposed grading areas. All strippings and debris should be removed from the site in order to preclude their incorporation in site fill or remedial excavation backfill.

2. Depressions resulting from removals under Item 1 should have debris and loose soils removed and be filled with suitable soils placed as recommended below.

3. In order to minimize potential settlement problems associated with a structure supported on a nonuniform thickness of compacted fill, the geotechnical engineers should be consulted for site grading recommendations relative to backfilling large and/or deep depressions resulting from removals under Item 1.

4. To decrease the site soil hydrocompression potential and to provide a more uniform bearing for the proposed structure foundations and slab-on-grade construction, we recommend the following:

   a. Soils beneath the proposed building areas, including a distance of at least five feet beyond the building or foundation perimeter, should be excavated a minimum of 42 inches below existing site grades (existing grade is defined as the native ground elevation encountered at the time of our field exploration) or finished subgrade (pad elevation), whichever is lower. The bottom of the remedial excavation should be a level plane. The bottom of the remedial excavation should then be scarified (ripped) six inches.

   b. Additional excavation may be required in building foundation areas, and particularly in "deep" foundation areas (i.e. elevator pits, etc.) in order to obtain a **minimum 24 inch thickness of compacted, engineered fill beneath the base of any proposed foundation.**

   c. The intent of the above remedial grading recommendations is to remove the upper loose, non-uniform soils, and the upper site soils subject to significant hydroconsolidation within the proposed building areas. All exposed ground surfaces (subgrades) at the base of the remedial excavations should be tested to verify that an "in-place dry density" ("IPD") of at least **108.5 p.c.f.** is present. If this

density does not exist at the specified depth, additional excavation will be required until suitable subgrade densities are found.

d. The excavated soils may be reused to backfill the remedial excavations provided they are cleaned of any deleterious materials and debris, and are properly moisture conditioned and compacted as recommended in this report. During replacement of the excavated soils in the remedial excavations, and recompaction of the scarified soils, the soils should be moisture conditioned to near optimum moisture content and be 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, fill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

e. The geotechnical consultant's representative should review the site grading following scarification of the bottom of the remedial excavations. Local variations in soil conditions may warrant increasing the depth of remedial excavation. Any deeper areas of loose soils should be removed and be replaced as compacted, engineered fill.

5. Soils beneath any proposed exterior non-traffic bearing concrete flatwork (sidewalks, patios, walkways etc.) or flexible (asphalt concrete) paving areas should be excavated a minimum of six inches below the existing soil grade or finished subgrade, whichever is lower (existing grade is defined as the natural ground elevation encountered at the time of our field exploration). The exposed surface should then be scarified (ripped) six inches. The scarified and excavated soils should be moisture conditioned to near optimum moisture content and be uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. **Compaction should be verified by testing.**

6. Soils beneath any proposed traffic bearing Portland Cement Concrete pavement sections should be excavated a minimum of six inches below the existing soil grade or finished subgrade, whichever is lower (existing grade is defined as the ground elevation encountered at the time of our field exploration). The exposed surface should then be scarified (ripped) six inches. The excavated and scarified soils should be moisture conditioned to near optimum moisture content and be uniformly compacted to at least 95% of maximum dry density using mechanical compaction equipment. **Compaction should be verified by testing.**

7. Import soils should be equal to, or better than, the on-site soils in strength, expansion, compressibility, and soil chemistry characteristics. In general, import material should be free of organic matter and deleterious substances, have 100% passing a two inch sieve, 60% to 100% passing a #4 sieve, no more than 20% passing a #200 sieve, and an Expansion Index less than 20. Import soils can be evaluated prior to their use, but will not be prequalified by the geotechnical consultant. Approval of import soils will be given only after the material is on the project, either in-place, or stockpiled in adequate quantity to complete the project.

8. Backfill around or adjacent to confined areas (i.e. interior utility trench excavations, etc.) may be performed with a lean sand/cement slurry (minimum two sacks of cement) or "flowable fill" material (a mixture of sand/cement/fly ash). The fluidity and lift placement thickness of any such material should be controlled in order to prevent "floating" of any "submerged" structure.

9. Suitable fill soils should be moisture conditioned to near optimum moisture content and be uniformly compacted to 90% or 95% (depending upon the fill usage) of maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. To aid in the compaction operation, fill should be placed in maximum six-inch compacted lifts.

10. Shrinkage because of excavation and compaction of the upper site soils is expected to be 12 to 17 percent of any excavated or scarified site soils. This estimate is based upon compactive effort needed to produce an average degree of compaction of approximately 92 percent and may vary depending on contractor methods. During compaction, we estimate an additional 0.1-foot subsidence of the underlying soils. Losses from site clearing and grubbing operations may affect quantity calculations and should also be taken into account. The grading contractor should verify shrinkage and earthwork yardage estimates.

11. Roof drainage systems for the proposed structures should be designed so that runoff water is diverted away from any structure.

12. Final site grades should be designed and constructed so that all water is diverted away from all structures and not allowed to pond on or near pavement. Drainage devices should be constructed to divert drainage from the project site.

13. It is recommended that Earth Systems Consultants • Southern California (ESC) be retained to provide engineering services during the grading,

excavation, and foundation phases of development. This continuity of services will allow for the geotechnical review of the design concepts and specifications relative to the recommendations of this report and will more readily allow for design changes in the event that subsurface conditions differ from those currently anticipated.

B. Excavations

Standard construction techniques should be sufficient for site excavations. Clean sands, if encountered, may require special considerations.

1. All excavations should be made in accordance with applicable regulations (including CAL/OSHA). Project safety is the responsibility of the contractor and the owner. ESC will not be responsible for project safety.

2. Open excavations may be cut vertically to a maximum depth of no more than four feet. Excavations extending between four and ten feet deep should be shored or sloped back from the base of the excavation to at least a 1.5:1 (horizontal to vertical) slope or flatter. If excavations dry out, sloughing will occur.

3. During the time excavations are open, no heavy grading equipment or other surcharge loads (i.e. excavation spoils) should be allowed within a horizontal distance from the top of any slope equal to the depth of the excavation (both distances measured from the top of the excavation slope).

4. Adequate measures should be taken to protect any structural foundations, pavements, or utilities adjacent to any excavations.

C. Utility Trenches

Standard construction techniques should be sufficient for site utility trench excavations. Jetting of utility trench backfill is not recommended.

1. Backfill of utilities within rights-of-way should be placed in strict conformance with the requirements of the governing agency. However, as a minimum it is recommended that utility trench backfill should be moisture conditioned and be uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. To aid in the compaction operation, utility trench backfill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

2. The provisions of this report relative to minimum compaction standards should govern utility trench backfill within the project boundary. In general, service lines extending inside the site should be backfilled with native soils that have been moisture conditioned to near optimum moisture and uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. To aid in the compaction operation, utility trench backfill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

3. Backfill operations should be reviewed **and tested** by the geotechnical engineer's representative to verify conformance with these recommendations.

D. Foundations

1. It is recommended that any building or structure constructed on this site be designed to at least the minimum standards for Seismic Zone 4 as designated by the 1997 edition of the Uniform Building Code. The following Table is a summary of the estimated seismic parameters typically required for structural design per the 1997 UBC.

TABLE III
Summary of Seismic Design Parameters

Seismic Zone	4
Seismic Source Type (1997 UBC Table 16-U) San Andreas Fault	A
Subgrade Classification (1997 UBC Table 16-J)	S_C
Seismic Zone Factor "Z" (Table 16-I)	0.4
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)	1.5
Near Source Factor - N_v (1997 UBC Table 16-T)	2.0
Estimated Design Based Acceleration (DBE)*	0.9-1.0g ±

*10%Probability of being exceeded in 50 years

2. Foundations for the proposed structures should be supported by a minimum 24-inch thick uniform thickness of compacted soil prepared as recommended in Section A. of this report.

3. Excavations for foundations should be cleaned of all loose or unsuitable soils and debris prior to placement of concrete. **Soil generated from the foundation excavations should not be placed below the floor slab unless it is properly moisture conditioned and compacted.**

5. In areas of moisture sensitive floor coverings, an appropriate vapor barrier should be installed in order to minimize vapor transmission from the subgrade soil to the slab. The vapor barrier should be evaluated for holes and/or punctures, and the edges overlapped and taped, prior to placement of concrete. Any holes or punctures observed should be properly repaired. The barrier should be covered with two inches of sand to help protect it during construction. The sand should be lightly moistened and densified just prior to placing the concrete.

6. Relatively impervious floor coverings (i.e. vinyl, linoleum, etc.) that cover concrete slab-on-grade may block the passage of moisture vapor through the concrete slab, which could result in damage to the floor covering. It is suggested that after the concrete slab has sufficiently cured, the concrete slab surface be sealed with a commercial sealant prior to placing the floor covering. The compatibility, and recommendations for placing of the concrete sealer, mastic, and floor covering should be verified by the floor covering manufacturer prior to sealing the concrete or placing of the floor covering.

7. It is recommended that the proposed exterior perimeter slabs (sidewalks, patios, walkways, etc.) be designed to be relatively independent of foundation stems (free-floating) to help mitigate cracking due to foundation settlement and/or expansion. Frequent joint spacing should be incorporated into concrete slab-on-grade construction, particularly in the areas of re-entrant corners, to help control cracking.

8. Subgrade soils for all concrete flatwork should be moisture conditioned to approximately optimum moisture content to a depth of at least six inches within 24 hours prior to placement of concrete. Measures should be taken to maintain optimum moisture until concrete is placed. Actual depths of pre-moistening will be dependent upon the actual Expansion Index of the subgrade soils.

F. Lateral Earth Pressures

1. Based upon our analyses, the following lateral earth pressures may be used in the design of any proposed retaining walls, flag poles, light standards, loading docks, or similar structures:

	Driving Earth Pressure*	Resisting Earth Pressure*
Well drained level soil	44	340***
Well drained 2:1 backfill soil	70	
At-rest (restrained wall)	65**	

*Equivalent fluid pressure (PSF) per foot of soil height.

**For purposes of design, a wall is considered restrained if it is prevented from movement greater than 0.002H (H = height of wall in feet) at the top of the wall.

***The upper one-foot of soil should be subtracted from the depth, Z, unless confined by pavement or slab.

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. An appropriate factor of safety should be used for design calculations (minimum of 1.5 recommended). The resisting pressure value used for design may be increased by 1/3 for total loads, including seismic forces.

2. Resistance to lateral loading may be provided by friction acting along the foundation base. The coefficient of friction was estimated to be 0.35 for site soils recompacted to approximately 90% of maximum dry density as determined by ASTM D 1557 test procedures, 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. Passive and frictional resistance may be combined without reduction.

3. The lateral earth pressure to be resisted by retaining 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.

4. 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.

5. 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.**

6. 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.

7. Weepholes, backdrains, or an equivalent system of backfill drainage should be incorporated into the retaining wall design (see Plate C-I, Appendix C, for backdrain details). Waterproofing of retaining walls should be provided to help reduce the potential for efflorescent formation.

8. The final grade should be such that all water is diverted away from the retaining wall's foundation or backfill.

G. Expansive Soil

The Expansion Index (ASTM D 4829) of the subgrade soils should be considered when designing foundations. As stated in the Soil Conditions section, the preliminary Expansion Index determination of the on-site soils is in the "very low" (0-20) classification. The foundation and slab-on-grade design recommendations provided in Sections D and E of this report include generally used guidelines in the Palmdale area for foundation design for soils with the indicated degree of expansiveness. These recommendations are minimum and comply with normally accepted geotechnical engineering practices. **However, actual foundation and slab-on-grade construction reinforcement should be determined by the structural engineer based upon site specific conditions such as foundation loading and engineering characteristics of the subgrade soils.**

If the site soils are thoroughly mixed and/or additional fill is added during site preparation, the expansion potential may change. The expansion potential of the new subgrade soils should be determined after the site preparation has been completed, and the final foundation design adjusted accordingly.

H. Preliminary Pavement Sections

One "R"-Value test was conducted on a sample of the expected parking area subgrade soils. During site grading, additional sample(s) should be secured from the exposed pavement subgrade areas, tested, and evaluated for review or revision of the following preliminary pavement sections. Based upon the "R"-Value test results ("R"-Value = 12), the following sections may be used for developing preliminary earth quantities and paving cost estimates:

Asphalt Concrete Pavement Sections

Traffic Index 4.0 (Automobile and Light Truck Parking Areas)

2.5" Asphalt Concrete on
6.5" Crushed Aggregate Base or equivalent

Traffic Index 5.0 (Automobile and Light Truck Drive Lanes)

3.0" Asphalt Concrete on
8.5" Crushed Aggregate Base or equivalent

Asphalt concrete pavement section recommendations are based on the assumption that the pavement section is placed on a minimum 12 inch thick layer of subgrade compacted as recommended in Section A. 5. of the Recommendations of this report. Aggregate base material should be properly moisture conditioned and compacted to at least 95% of the maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. Pavement sections should be verified with the jurisdictional authority prior to the time of construction.

Portland Cement Concrete Pavement Sections

1. It is recommended that no less than a six-inch (6") thick Portland Cement Concrete (P.C.C) section should be considered for design of the proposed traffic bearing pavement sections for this project (Portland Cement Association - Pacific Southwest Region, "Portland Cement Concrete Pavement Design For Light, Medium & Heavy Traffic", Third Printing, 1981). The concrete should have a minimum 28-day Modulus of Rupture of 500 psi (approximately 3,000 psi compressive strength). It is recommended that air entrainment of the concrete be provided.

2. The use of distributed steel in the pavement section is not required by the above structural pavement design, however, steel reinforcement is

recommended to help control the effects of shrinkage and temperature cracking. **Reinforcement should be placed at mid-depth of the slab.** Steel reinforcement should not be carried across longitudinal or transverse joints.

3. Transverse contraction joints should be spaced no further than 12 feet apart. Transverse joints should be cut to a depth of 1/4 of the thickness of the concrete slab plus 1/4 inch by sawing or impressed plastic ribbons.

4. Longitudinal joints should be spaced no further than 12 feet apart. Longitudinal joints should be constructed full depth, or by weakening the concrete to a depth described above with a concrete saw or an impressed plastic ribbon.

5. All Portland Cement Concrete pavement sections should be placed on a minimum 12-inch thick subgrade compacted to at least 95% of maximum dry density as determined by ASTM D 1557 test procedures as recommended in Section A. 6. of the Recommendations of this report.

I. Soil Chemical Testing

1. The results of the soil chemistry tests on a sample of the near surface soils are included in Table B-II of Appendix B. This information should be utilized by the design engineers for their interpretation pertaining to the reactivity of various construction materials (such as concrete and piping) with the soils.

2. Tests should be conducted during grading operations to verify the soil chemistry of the subgrade soils, especially if the soils are thoroughly mixed and additional fill is added during site preparation.

J. Slope Stability

Slope stability calculations were not performed because of anticipated minimal slope heights. If slope heights exceed five feet, engineering calculations should be performed to substantiate the stability of cut or fill slopes. Fill slopes should be constructed to a gradient not exceeding 2 horizontal to 1 vertical and should be overfilled and trimmed back to compacted material.

made. This report was prepared for the exclusive use of the Reichert Lengfeld, Ltd. and their authorized agents.

It is recommended that ESC be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design specifications. If ESC is not accorded the privilege of making this recommended review, we can assume no responsibility for misinterpretation of our recommendations.

The scope of our current services for this report did not include any environmental assessment or investigation for the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater or air, on or below or around the site. These services can be provided upon request.

The statements contained in this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly, the conclusions of this report may be invalidated, wholly or partially, by changes outside of our control, and should therefore be reviewed after one year.

CLOSURE

We trust this report is sufficient at this time and meets your current needs. We appreciate this opportunity to provide professional geotechnical engineering services for this project. If you have any questions regarding the information contained in this report, or if you require additional geotechnical engineering services, please contact us.

Respectfully submitted,

Earth Systems Consultants •
Southern California

Bruce A. Hick
Geotechnical Engineer
R. G. E. #2284

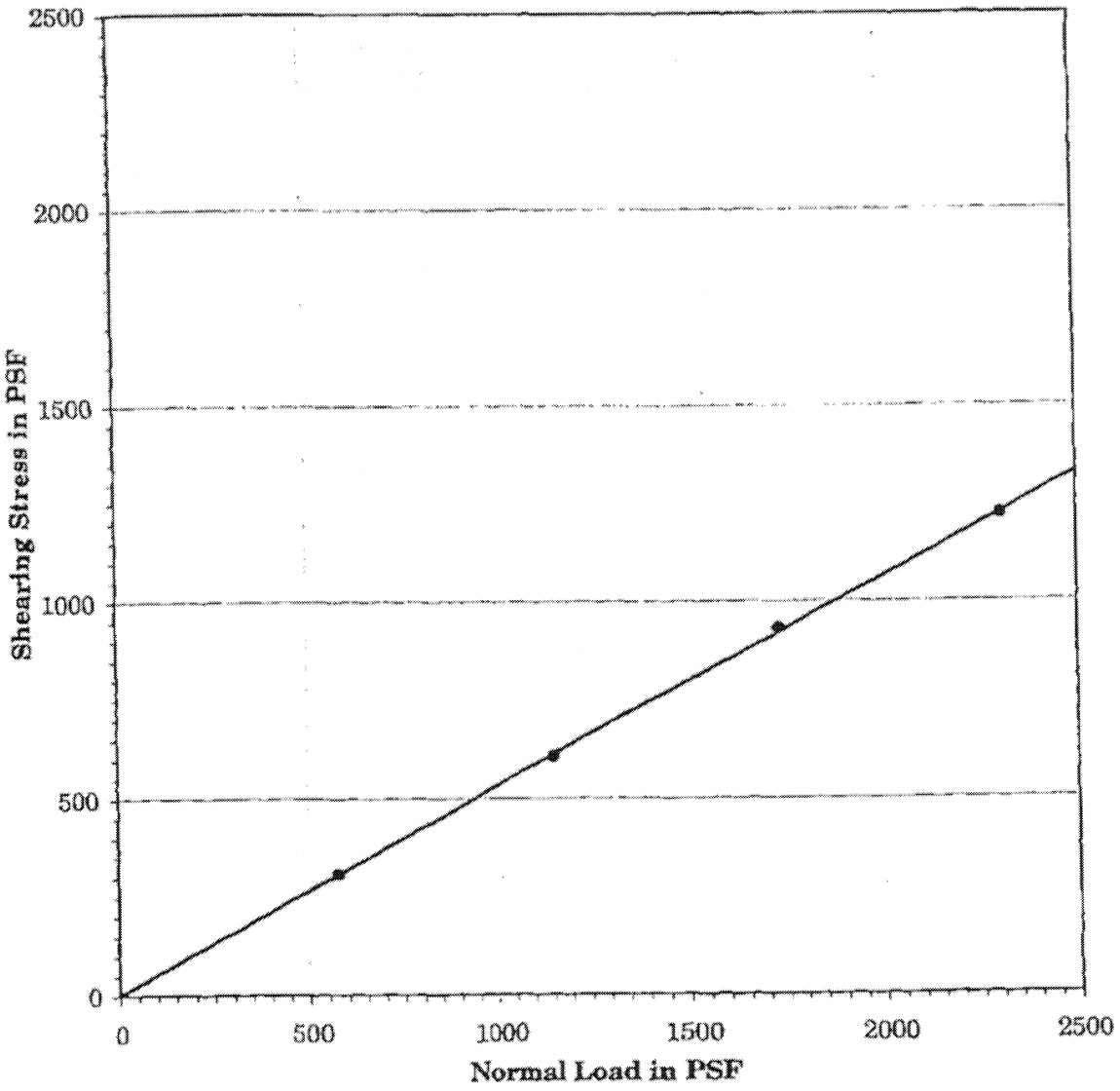
Mark S. Spykerman
Associate Engineering Geologist
E. G. #1174

REGISTERED GEOLOGIST
MARK S. SPYKERMAN
No. 1174
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

APPENDIX A

Site Plan and Vicinity Map (in pocket)

Boring Logs

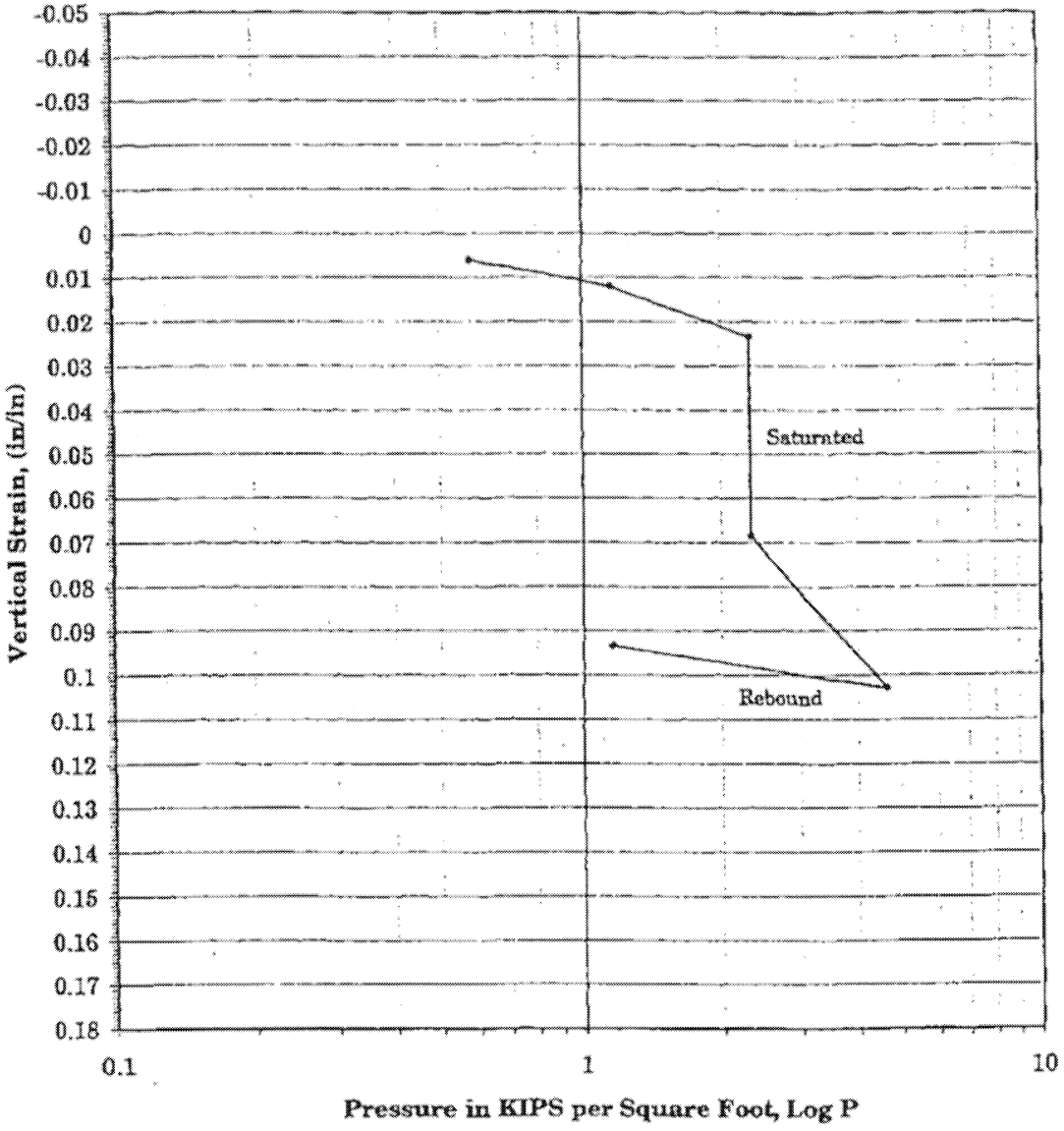


DIRECT SHEAR DATA*

Sample Location: Boring 1@3', in-situ.
Material: Silty Fine to Medium Sand (SM)
Dry Density (pcf): 113.5
ϕ Angle of Friction (degrees): 28
c Cohesive Strength (psf): 0
Test Type: Peak

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
John Jay Inn Palmdale, California	
Earth Systems Consultants - Southern California	
12/30/99	PL-05329-01



Sample Location: Boring 1@1'

Material: Silty Fine to Medium Sand (SM)

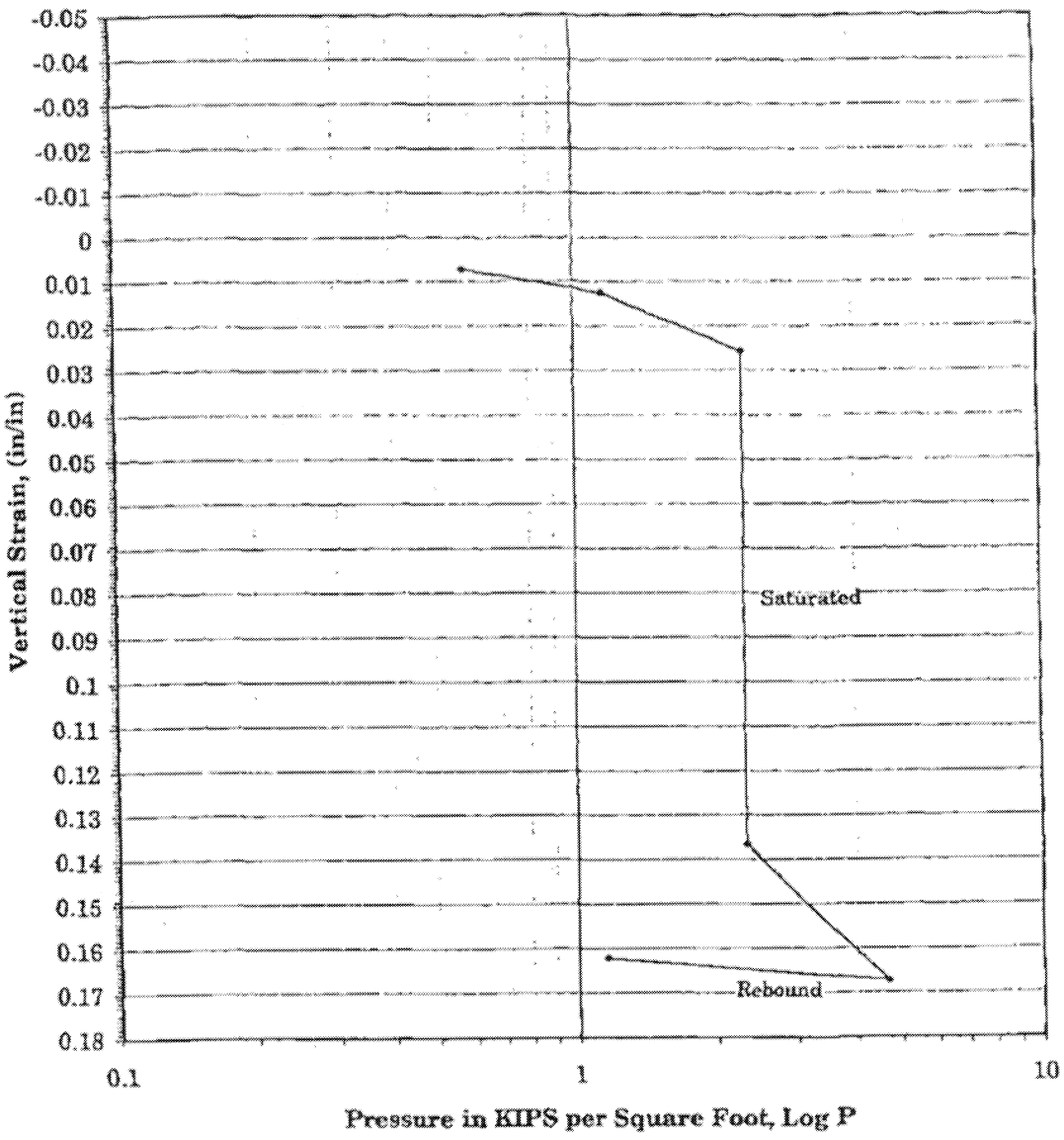
Initial Dry Density: 108.1 PCF

Moisture Content: 3.0%

Percent Hydroconsolidation: 4.50%

* Test Method: ASTM D-2435

Consolidation Test	
John Jay Inn Palmdale, California	
Earth Systems Consultants - Southern California	
12/30/99	PL-05329-01



Sample Location: Boring 3@3'

Material: Silty Fine to Medium Sand (SM)

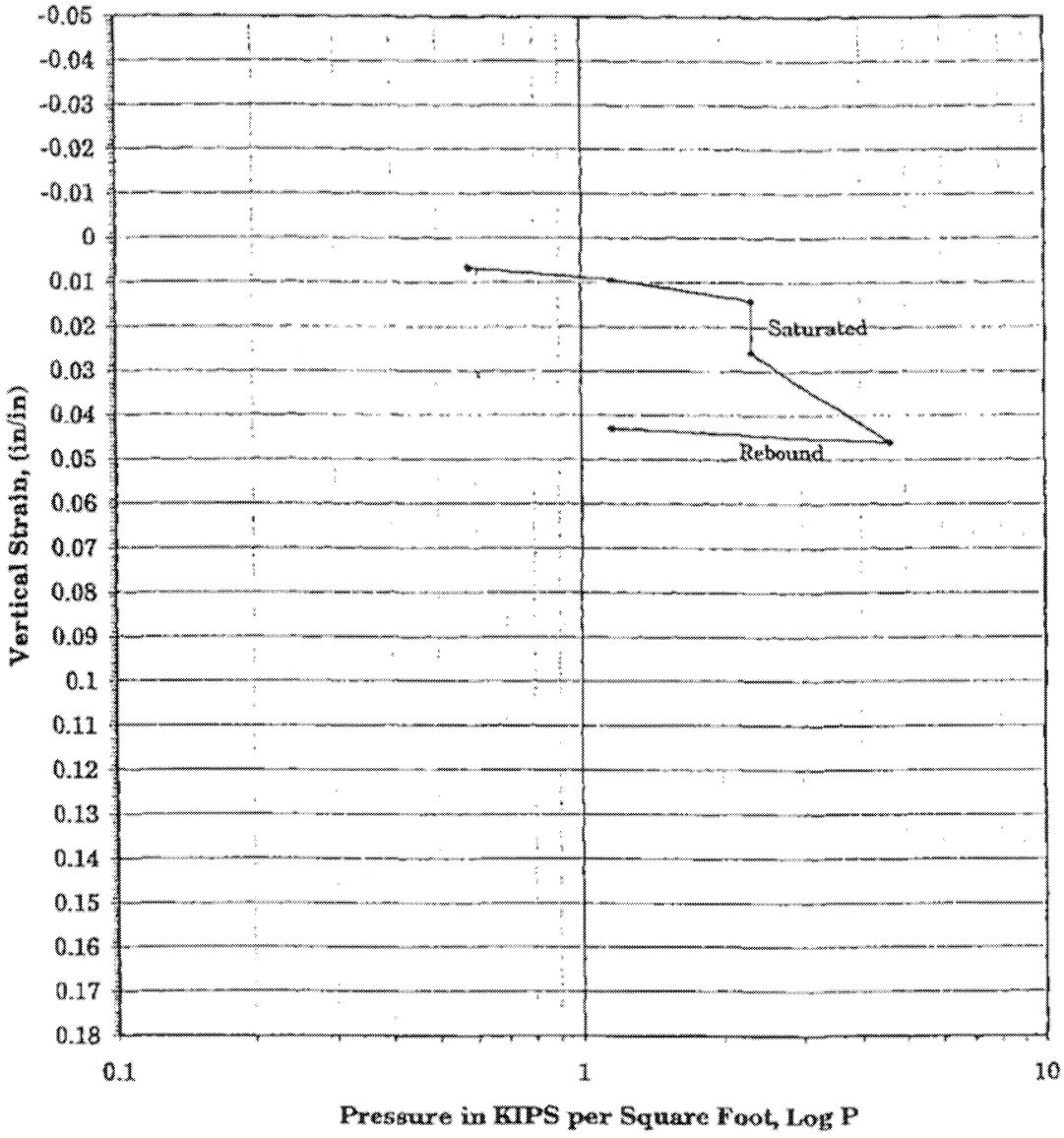
Initial Dry Density: 98.1 PCF

Moisture Content: 3.4%

Percent Hydroconsolidation: 11.08%

* Test Method: ASTM D-2435

Consolidation Test	
John Jay Inn Palmdale, California	
Earth Systems Consultants - Southern California	
12/30/99	PL-05329-01



Sample Location: Boring 2@4'

Material: Silty Fine to Medium Sand (SM)

Initial Dry Density: 115.0 PCF

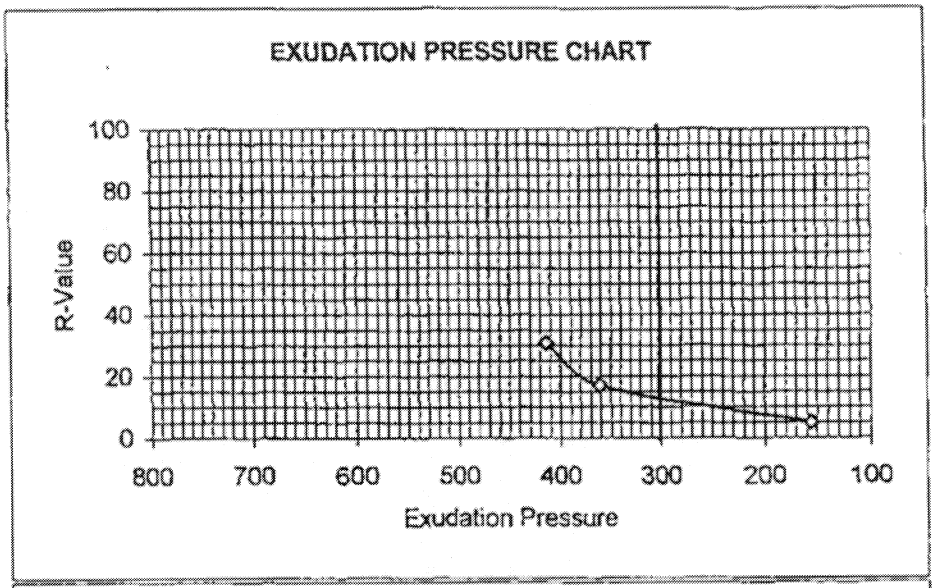
Moisture Content: 3.0%

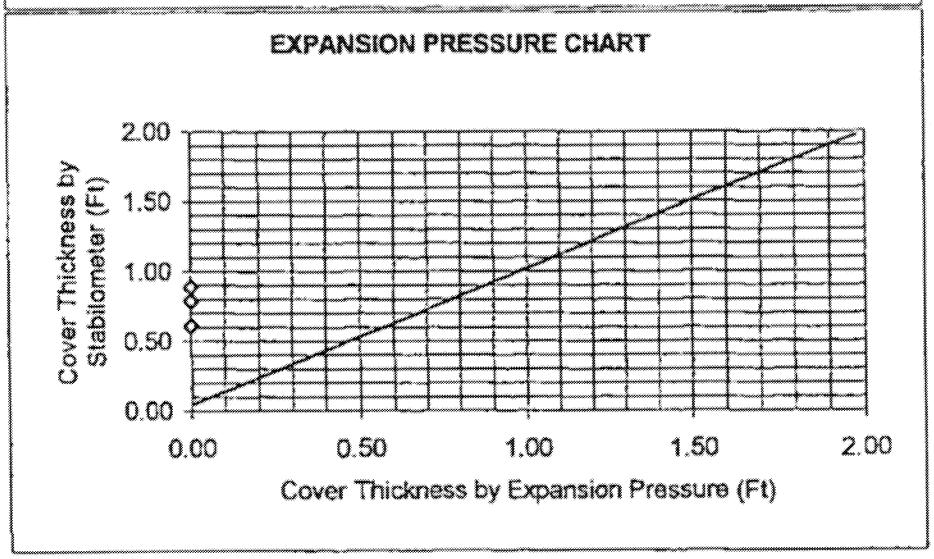
Percent Hydroconsolidation: 1.16%

* Test Method: ASTM D-2435

Consolidation Test	
John Jay Inn Palmdale, California	
Earth Systems Consultants - Southern California	
12/30/99	PL-05329-01

December 30, 1999 PL-05329-01





JOB NAME: John Jay Inn
SAMPLE I. D.: #1
SOIL DESCRIPTION: Moderate Yellowish Brown, Fine Sandy Clay with Silt (CL)

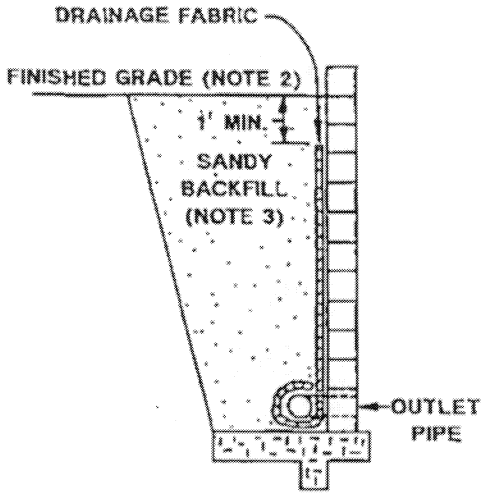
SPECIMEN NUMBER	A	B	C
EXUDATION PRESSURE	414	361	156
RESISTANCE VALUE	31	17	5
EXPANSION DIAL(0.0001")	0	0	0
EXPANSION PRESSURE (PSF)	0.0	0.0	0.0
% MOISTURE AT TEST	10.3	11.6	12.8
DRY DENSITY AT TEST	126.1	124.6	122.5

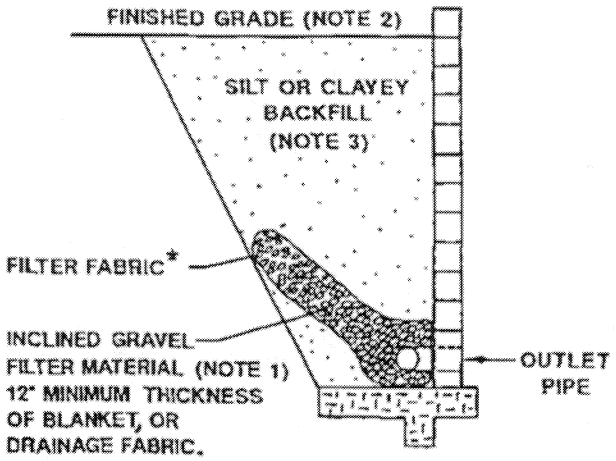
R-VALUE @ 300 PSI EXUDATION	12
R-VALUE @ EQUILIBRIUM	100

Earth Systems Consultants

APPENDIX C

Design Plates

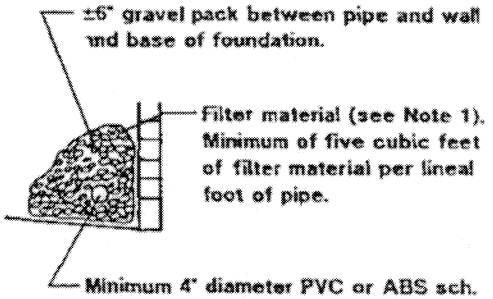


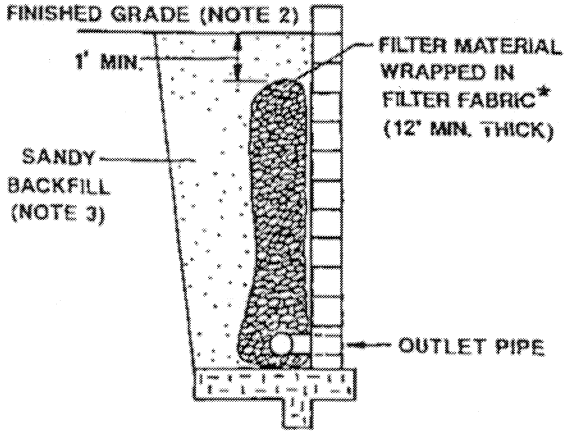


WEEP HOLES IN BASE BLOCK COURSE ARE RECOMMENDED.

OUTLET PIPE TO BE CONNECTED TO DRAIN PIPE WITH TEE OR ELBOW OUTLET EVERY 100' MINIMUM.

DRAIN DETAIL AROUND PIPE





WEEP HOLES IN BASE BLOCK COURSE ARE RECOMMENDED.

NOTE 1) FILTER MATERIAL SHALL CONSIST OF CLEAN PEA GRAVEL OR 3/8" GRAVEL WRAPPED IN APPROPRIATE FILTER FABRIC* OR CALIFORNIA CLASS II PERMEABLE MATERIAL.

NOTE 2) GRADE TO DRAIN AWAY FROM WALL.

NOTE 3) ENGINEERED BACKFILL COMPACTED AS RECOMMENDED IN GEOTECHNICAL REPORT.

* FILTER FABRIC BASED ON SOIL PARAMETERS OF ADJACENT FILL.

Plate C-I -NOT TO SCALE-

WALL DRAIN DETAILS

John Jay/Best Western Inn
Palmdale, California

Earth Systems Consultants Southern California

DATE: 12-30-99 | JOB NO:PL-05329-01

SYMBOLS COMMONLY USED ON BORING LOGS

Modified California Split Barrel Sampler

Modified California Split Barrel Sampler - No Recovery

Standard Penetration Test (SPT) Sampler

Standard Penetration Test (SPT) Sampler - No Recovery

Perched Water Level

Water Level First Encountered

Water Level After Drilling

Pocket Penetrometer (tsf)

Vane Shear (ksf)

1. The location of borings were approximately determined by pacing and/or siting from visible features. Elevations of borings are approximately determined by interpolating between plan contours. The location and elevation of the borings should be considered accurate only to the degree implied by the method used.

2. The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. This data has been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, tides, temperature, and other factors at the time measurements were made.

BORING LOG SYMBOLS	
John Jay Inn Palmdale, California	
Earth Systems Consultants • Southern California	
12/30/99	PL-05329-01

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS

(Major Portion Retained on Number 200 Sieve)

Includes clean gravels and sands described as fine, medium or coarse, depending on distribution of grain sizes, and silty or clayey gravels and sands, condition is rated according to laboratory tests or estimated from resistance to sampler penetration.

Penetration Resistance* California Split Spoon (CSS) Blows/Ft		Penetration Resistance* Standard Pentrometer (SPT) Blows/Ft
0-5	Very Loose	0-4
5-15	Loose	5-10
15-40	Medium Dense	11-30
40-70	Dense	31-50
>70	Very Dense	>50

Fine Grained Soils

(Major Portion Passing the Number 200 Sieve)

Includes inorganic and organic silts and clays, gravelly, sandy or silty clays, and clayey silts. Consistency is rated according to laboratory tests or estimated from resistance to sampler penetration.

Penetration Resistance* California Split Spoon (CSS) Blows/Ft		Penetration Resistance* Standard Pentrometer (SPT) Blows/Ft
0-2	Very Soft	0-2
2-5	Soft	2-4
6-10	Medium Stiff	5-8
11-18	Stiff	9-15
19-36	Very Stiff	16-30
>36	Hard	>30

* Penetration resistance based on a 140 pound hammer falling approximately 30 inches.

Apparent Density/Consistency of Soil

John Jay Inn

Palmdale, California

Earth Systems Consultants • Southern California

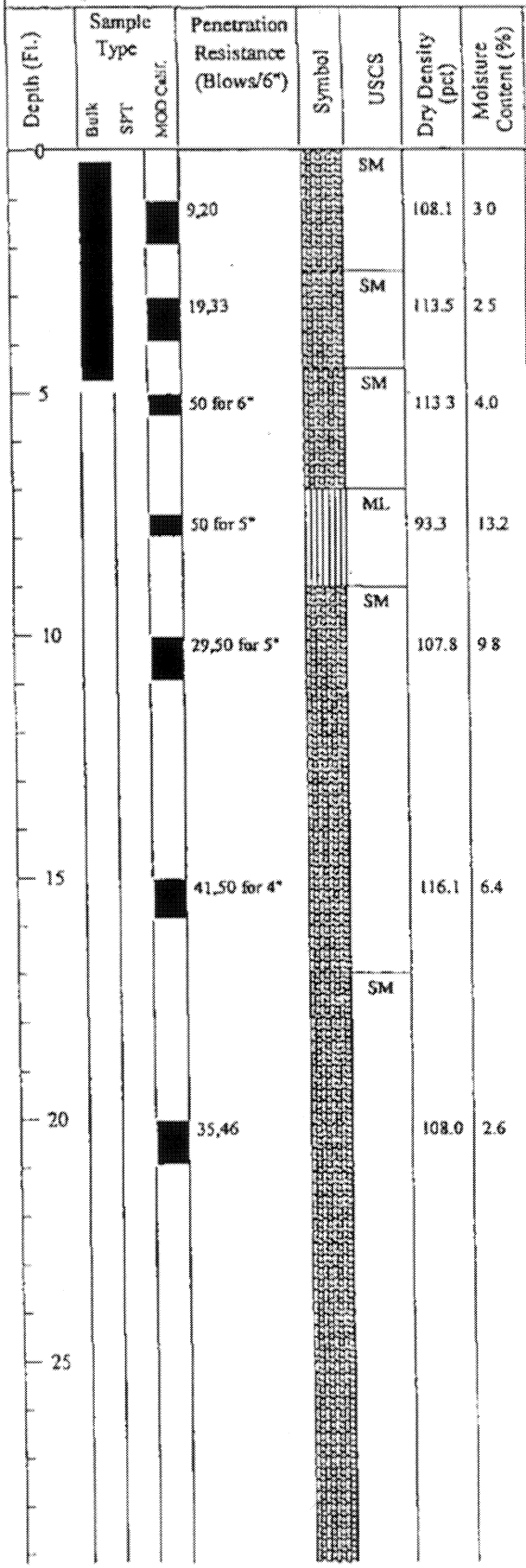
12/30/99 | PL-05329-01

Earth Systems Consultants •
Southern California

1024 W Ave , M-4, Palmdale, Ca. 93551
(661) 948-7538/(661) 948-7963

Boring No: 1
Project Name: John Jay Inn
Project Number: PL-05329-01
Boring Location: Per Plan

Drilling Date: December 10,1999
Drilling Method: Hollow Stem
Drill Type: CME 55
Logged By: Rob Ferguson



DESCRIPTION OF UNITS

Dark Yellow Brown Silty Fine to Medium Sand, Slightly Moist, Medium Dense.

Dark Yellow Brown Silty Fine to Medium Sand, Dry, Dense.

Dark Yellow Brown Silty Fine to Medium Sand, Slightly Moist, Very Dense.

Moderate Yellow Brown Fine Sandy Silt, Moist, Very Stiff.

Moderate Yellow Brown Very Silty Fine Sand with Clay, Moist, Very Dense.

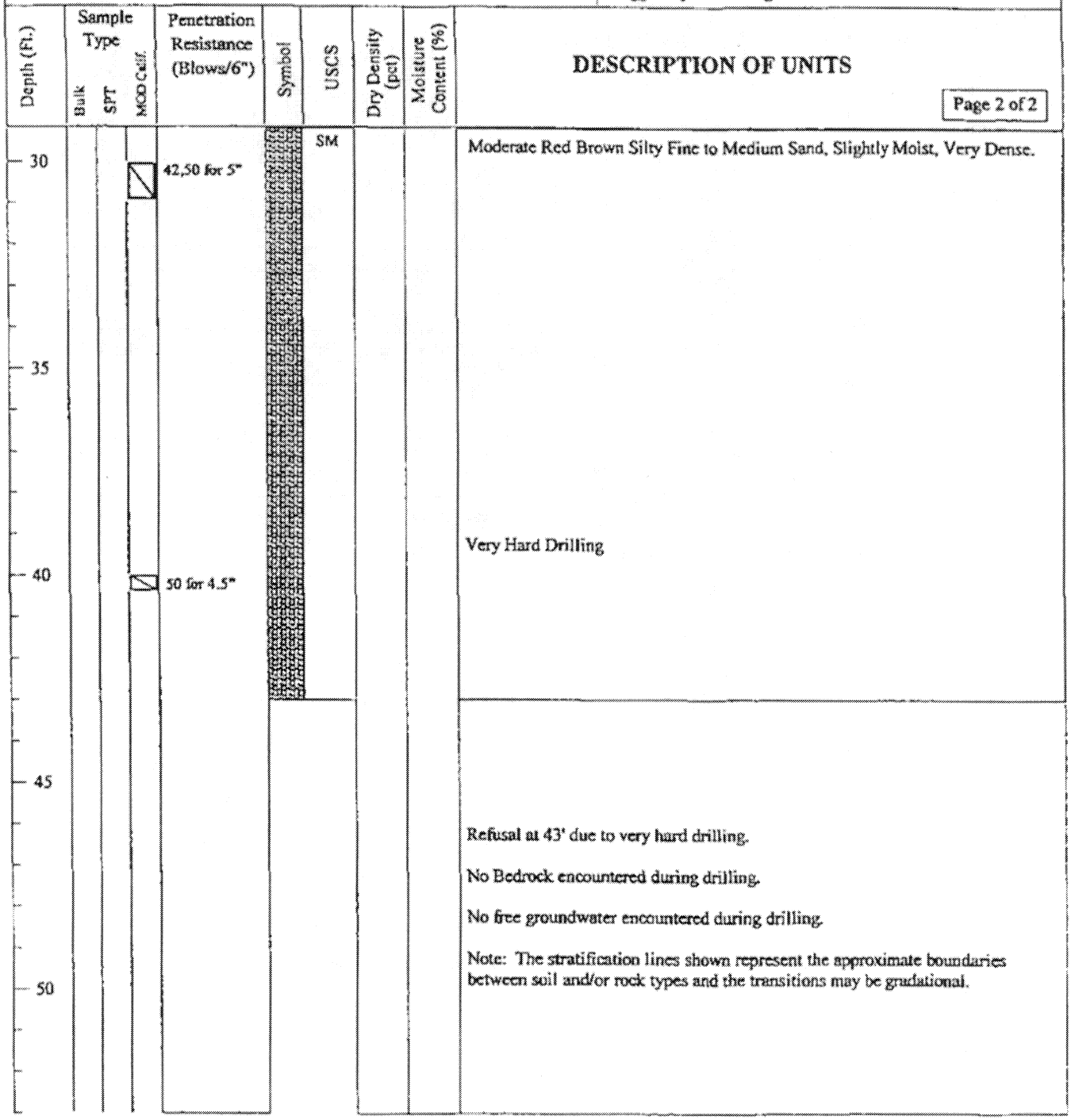
Moderate Red Brown Silty Fine to Medium Sand, Slightly Moist, Very Dense.

Earth Systems Consultants •
Southern California

1024 W Ave. M-4, Palmdale, Ca. 93551
(661) 948-7538/(661) 948-7963

Boring No: 1
Project Name: John Jay Inn
Project Number: PL-05329-01
Boring Location: Per Plan

Drilling Date: December 10,1999
Drilling Method: Hollow Stem
Drill Type: CME 55
Logged By: Rob Ferguson



DESCRIPTION OF UNITS

Moderate Red Brown Silty Fine to Medium Sand, Slightly Moist, Very Dense.

Very Hard Drilling

Refusal at 43' due to very hard drilling.

No Bedrock encountered during drilling.

No free groundwater encountered during drilling.

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradational.

Earth Systems Consultants •
Southern California

1024 W. Ave., M-4, Palmdale, Ca. 93551
(661) 948-7538/(661) 948-7963

Boring No: 2
Project Name: John Jay Inn
Project Number: PL-05329-01
Boring Location: Per Plan

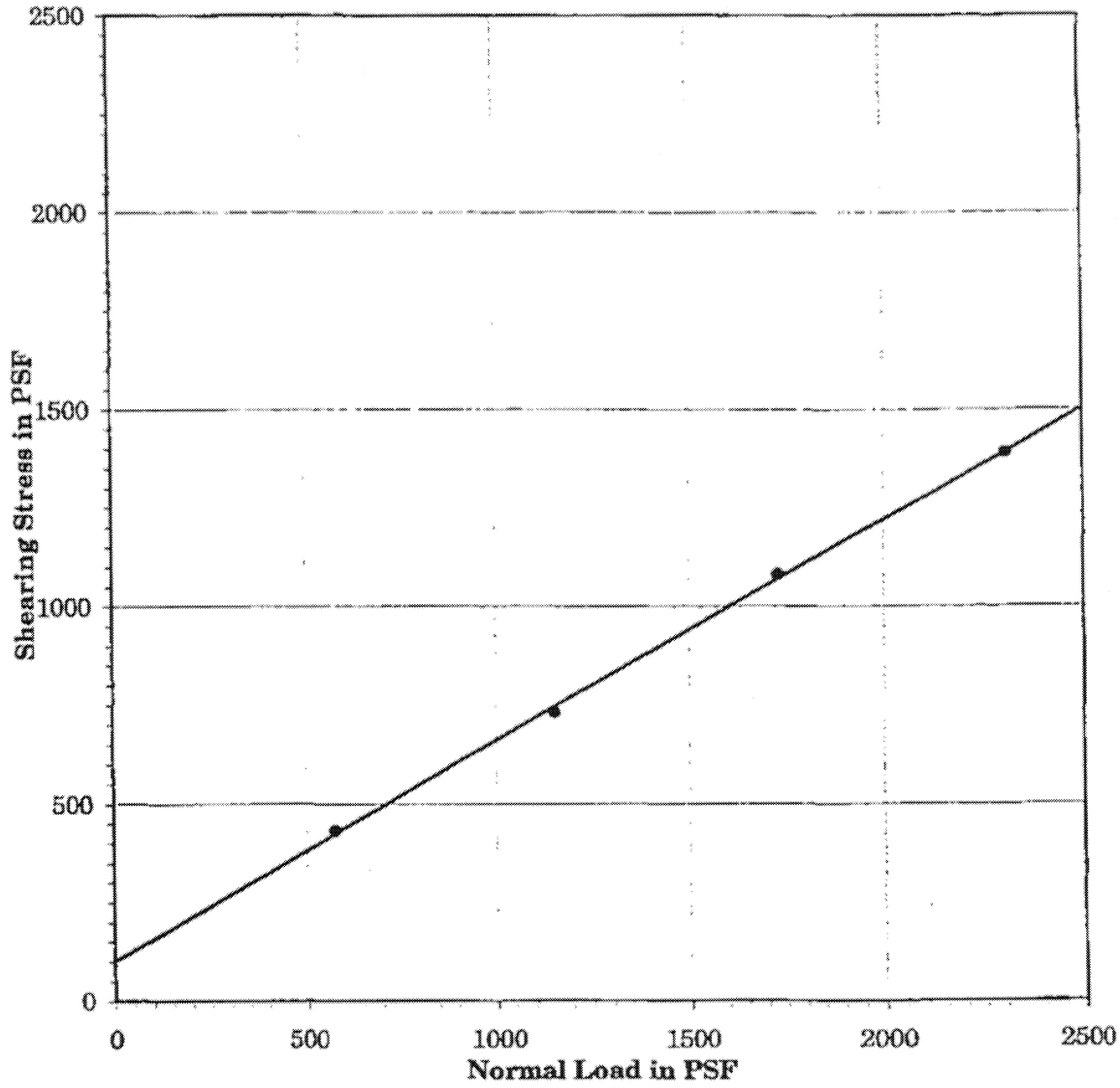
Drilling Date: December 10,1999
Drilling Method: Hollow Stem
Drill Type: CME 55
Logged By: Rob Ferguson

DESCRIPTION OF UNITS

Depth (Ft.)	Sample Type (Bulk / SPT / MOD Calif.)	Penetration Resistance (Blows/6")	Symbol	USCS	Dry Density (pcf)	Moisture Content (%)	Description
0				SM			Dark Yellow Brown Silty Fine to Medium Sand, Slightly Moist, Medium Dense.
	MOD	10,13			112.5	3.8	
				SM			Moderate Red Brown Silty Fine to Medium Sand, Slightly Moist, Medium Dense.
	MOD	12,23			115.0	3.0	
5				SM			Moderate Red Brown Silty Fine to Coarse Sand with Slight Clay, Moist, Very Dense.
	MOD	50 for 5.5"			114.9	5.5	
				SM			Moderate Yellow Brown Silty Fine to Medium Sand with Clay, Moist, Very Dense.
10	MOD	33,50 for 5.5"			115.0	11.1	
				SM			Pale Yellow Brown Silty Fine to Medium Sand with Clay and Gravel to 3/4", Moist, Very Dense.
15	MOD	36,50 for 4.5"			110.9	9.7	
							Total Depth = 15.9'.
							No Bedrock encountered during drilling.
20							No free groundwater encountered during drilling.
							Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradational.

APPENDIX B

Summary of Laboratory Test Results



DIRECT SHEAR DATA*

Sample Location: Boring 3@0-5', Remolded.
Material: Silty Fine to Medium Sand (SM)
Dry Density (pcf): 117.9
ϕ Angle of Friction (degrees): 29
c Cohesive Strength (psf): 100
Test Type: Peak

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
John Jay Inn Palmdale, California	
Earth Systems Consultants - Southern California	
12/30/99	PL-05329-01

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO 200 SIEVE SIZE				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGAINC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

UNIFIED SOIL CLASSIFICATION SYSTEM

John Jay Inn

Palmdale, California

Earth Systems Consultants · Southern California

12-30-99 | PL-05329-01

JURUPA AVENUE IMPROVEMENT PROJECT EIR - FEE PROPOSAL

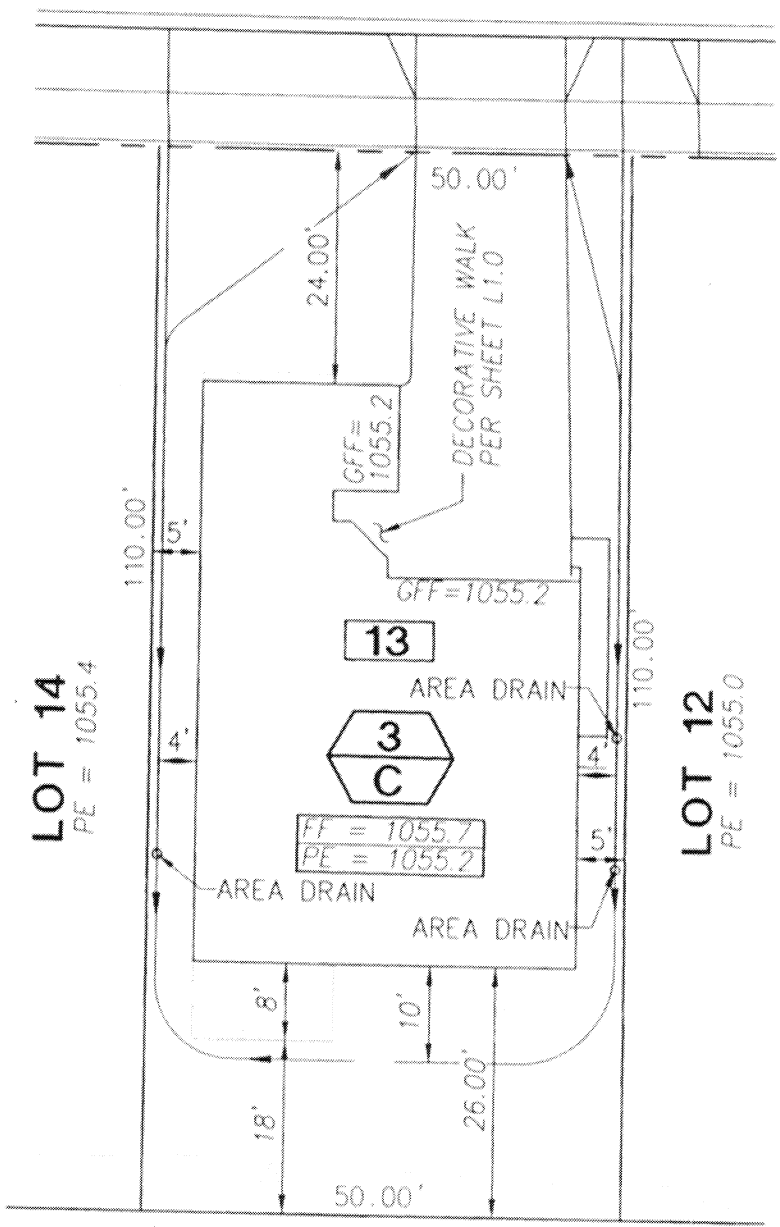
TASK	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Total Cost
1 RESEARCH AND INVESTIGATION													
1.1 Kickoff Meeting		2					6			8			$1,120
1.2 Research and Investigation		2					5	16		23			$2,238
Task 1 Sub-Total													$3,358
2 NOTICE OF PREPARATION													
2.2 Notice of Preparation (not [illegible])										5			$3,470
Task 2 Sub-Total													$3,470
3 PREPARATION OF SCREENCHECK DRAFT EIR												$1,500	$1,500
3.1 Introduction and Purpose		1						4		5			$482
3.2 Executive Summary		1						8		9			$794
3.3 Project Description		2					24	8	4	38			$4,444
3.4 Environmental Analysis													
A Geology/Soils							16	8	1	25			$2,794
B Biological Resources							8	4		12	$500		$1,852
C Hydrology/Drainage/Water Quality					2	8	16	16		42			$4,828
D Cultural Resources							4	4		8	$1,950		$2,782
E Transportation/Circulation				60			24	4		88			$13,632
F Air Quality			20					5		25			$2,710
G Land Use/Relevant Planning							16	4		20			$2,392
H Noise			20					4		24			$2,632
I Aesthetics/Visual/Glare							8	4		12			$1,352
J Public Services/Utilities							8	8		16			$1,664
3.5 Growth Inducement							8	4		12			$1,352
3.6 Cumulative Impacts							4	4		8			$832
3.7A Alternatives to the Proposed Action							8	4		12			$1,352
3.8 Additional Sections							2	8		10			$884
3.9 Graphic Exhibits			8					24		32			$2,800
3.10 Project Meetings		4	6	6			8			24			$3,436
Task 3 Sub-Total													$54,514
4 DRAFT EIR													
4.1 Preliminary Draft EIR	1	[illegible]	2	8			40	6	2	68			$9,160
4.2 Completion of Draft EIR			2				16			24		$5,000	$7,912
4.3 Project Meetings							4			4			$600
Task 4 Sub-Total													$17,932
5 FINAL EIR													
5.1 Response to Comments		2	4	4	2		20	8		40		$2,000	$7,040
5.2 Final EIR	1	1					8	10		20		$5,000	$7,200
5.3 Findings and Statement of Overriding Considerations		1					5	5		11			$1,210
5.4 Mitigation Monitoring and Reporting Program		1					1	6		8			$768
5.5 Project Meetings and Hearings		2					12	8		22			$2,524
Task 5 Sub-Total													$18,742
6 PROJECT REVIEW AND MANAGEMENT	2	10								12			$2,120
Task 6 Sub-Total													$2,120
TOTAL HOURS	4	36	62	78	8	12	274	198	7	679			
*Percent of Total Labor (Hours)	0.6%	5.3%	9.1%	11.5%	1.2%	1.8%	40.4%	29.2%	1.0%				
TOTAL LABOR AND DELIVERABLE COSTS	$840	$6,120	$7,192	$13,260	$1,328	$1,752	$39,620	$15,444	$630		$2,450	$15,500	$100,138
Maximum Contingency (10% of Total Costs)													$10,014

Note: All work will be performed at a "Not to exceed" contract price, which will become the firm fixed price upon completion of negotiations with the Client. The total budget includes all miscellaneous costs for travel/mileage, reproduction, reimburseables, telephone, postal, delivery, reference

RC=Ron Craig, KT = Kevin Thomas, ET = Edward Torres, BM = Bob Matson, JM = John McCarthy, AL = Anna Lantin, Sr Pr/En = Senior Planner/Engineer , RCE = Civil Engineer

PLAN 3
FIRST FLOOR: 1281 S.F.
SECOND FLOOR: 1324 S.F.
TOTAL LIVING AREA: 2605 S.F.
GARAGE 1: 447 S.F.
GARAGE 2: 223 S.F.
COVERED PORCH: 35 S.F.
COVERED PATIO: 117 S.F.
NO SEWER BACKFLOW PREVENTER REQUIRED

INCLUDED OPTIONS: NONE



PLOT PLAN

10996 WHITE OAK LANE

SCALE: 1"=20'

REGISTERED PROFESSIONAL ENGINEER
MATTHEW C. HICKS
No. 63494
Exp. 9/30/06
CIVIL
STATE OF CALIFORNIA

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

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909.581.0196 ▪ FAX 909.581.0192 ▪ www.RBF.com

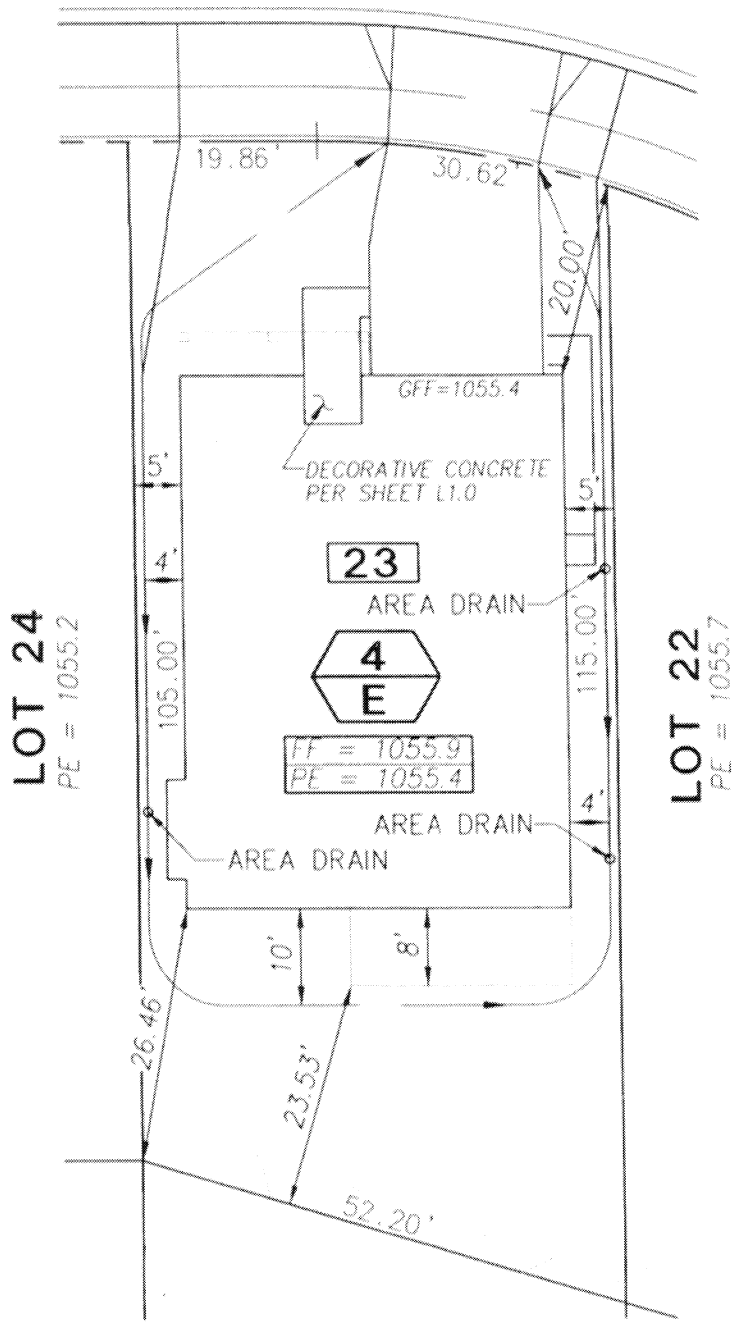
PREPARED FOR:

EMPIRE COMMUNITIES
3536 CONCOURS, SUITE 310
ONTARIO, CA 91764
(909) 987-7788

CITY APPROVALS	SIGNATURE	DATE
PLANNING		
BUILDING AND SAFETY		

DEVELOPER/OWNER: EMPIRE COMMUNITIES
TRACT 16495 – PHASE NUMBER: PHASE 2
SPECIFIC PLAN: ALMERIA
LOT NUMBER: 13

PLAN 4
FIRST FLOOR: 1513 S.F.
SECOND FLOOR: 1386 S.F.
TOTAL LIVING AREA: 2899 S.F.
GARAGE: 701 S.F.
COVERED PATIO: 184 S.F.
COVERED PORCH: 149 S.F.
NO SEWER BACKFLOW PREVENTER REQUIRED
INCLUDED OPTIONS: NONE



PLOT PLAN

10987 WHITE OAK LANE

SCALE: 1" = 20'

REGISTERED PROFESSIONAL ENGINEER
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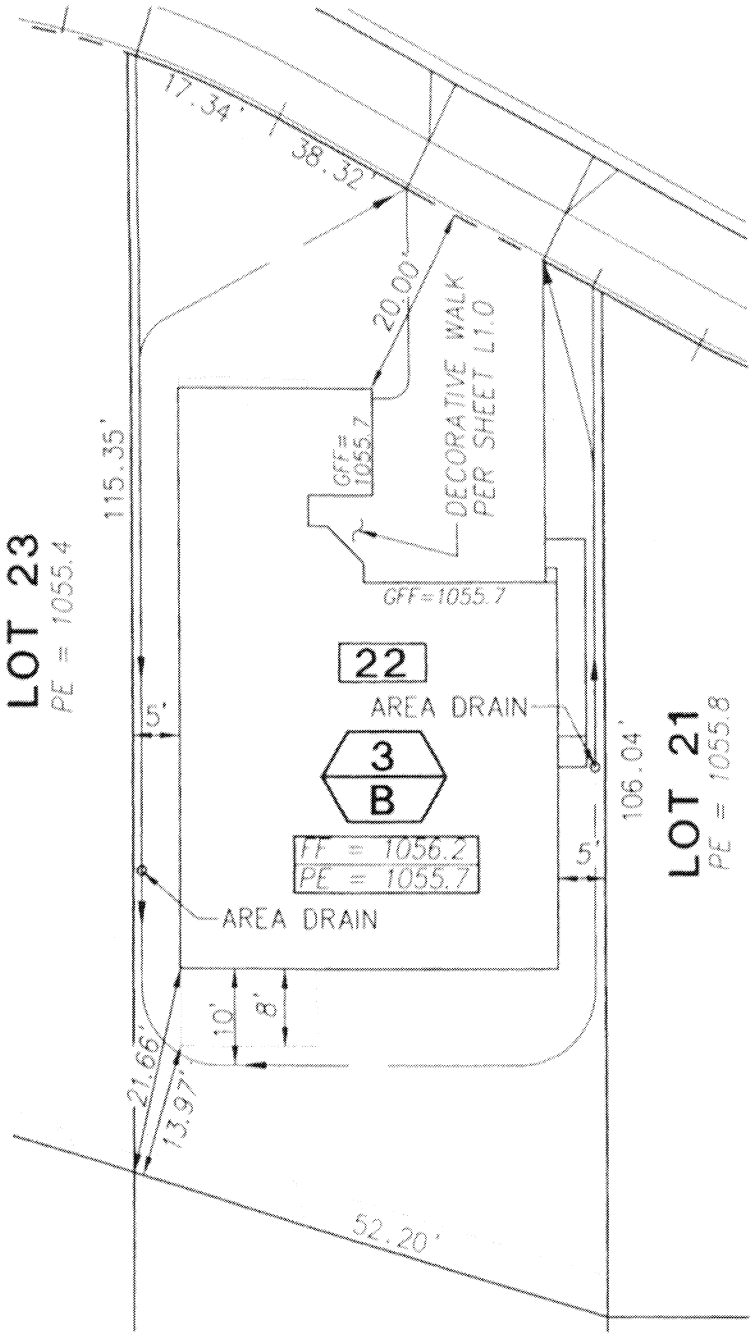
CITY APPROVALS	SIGNATURE	DATE
PLANNING		
BUILDING AND SAFETY		

DEVELOPER/OWNER: EMPIRE COMMUNITIES
TRACT 16495 – PHASE NUMBER: PHASE 2
SPECIFIC PLAN: ALMERIA
LOT NUMBER: 23

PLAN 3
FIRST FLOOR: 1281 S.F.
SECOND FLOOR: 1324 S.F.
TOTAL LIVING AREA: 2605 S.F.
GARAGE 1: 447 S.F.
GARAGE 2: 223 S.F.
COVERED PORCH: 54 S.F.
COVERED PATIO: 117 S.F.
NO SEWER BACKFLOW PREVENTER REQUIRED
INCLUDED OPTIONS: NONE



REGISTERED PROFESSIONAL ENGINEER
MATTHEW C. HICKS
No. 63494
Exp. 9/30/06
CIVIL
STATE OF CALIFORNIA

PLOT PLAN

10961 WHITE OAK LANE

SCALE: 1" = 20'

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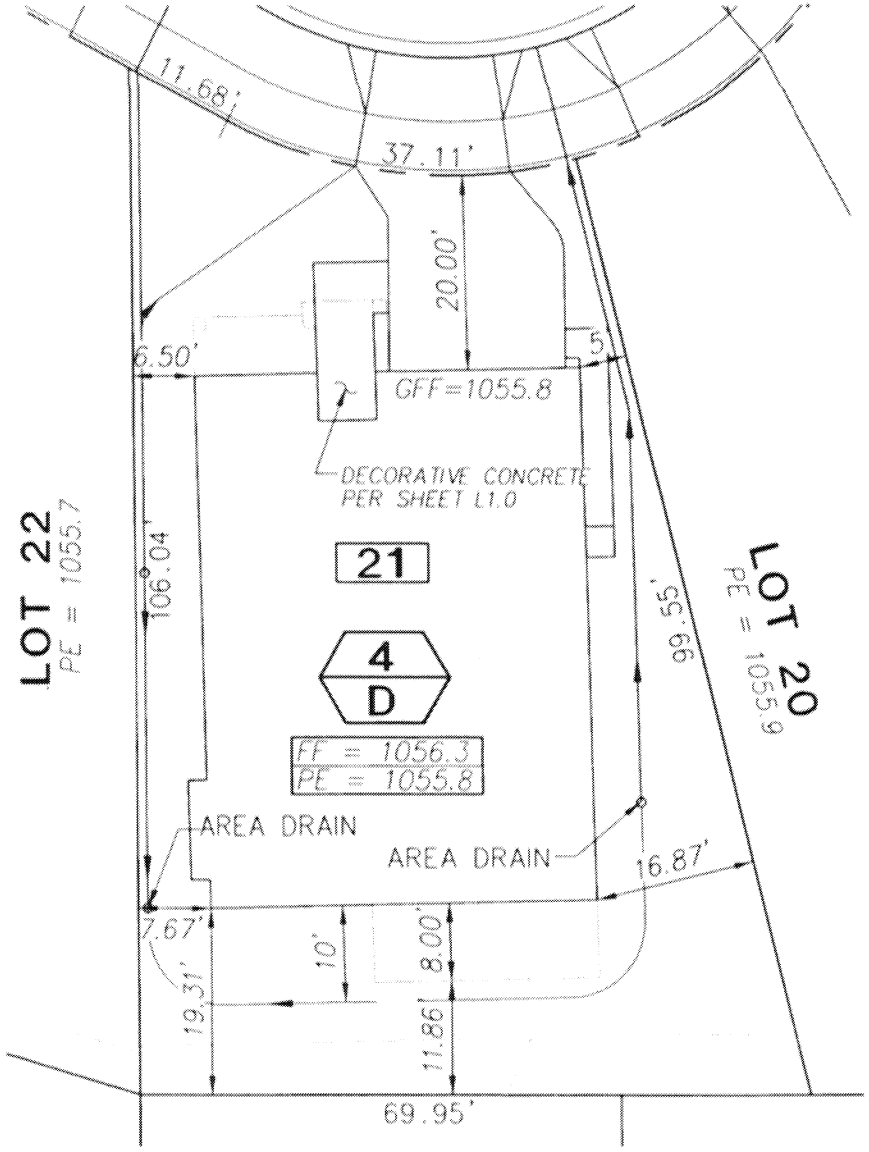
ONTARIO, CA 91764
(909) 987-7788

CITY APPROVALS	SIGNATURE	DATE
PLANNING		
BUILDING AND SAFETY		

DEVELOPER/OWNER: EMPIRE COMMUNITIES
TRACT 16495 – PHASE NUMBER: PHASE 2
SPECIFIC PLAN: ALMERIA
LOT NUMBER: 22

PLAN 4
FIRST FLOOR: 1513 S.F.
SECOND FLOOR: 1386 S.F.
TOTAL LIVING AREA: 2899 S.F.
GARAGE: 701 S.F.
COVERED PATIO: 184 S.F.
COVERED PORCH: 194 S.F.
NO SEWER BACKFLOW PREVENTER REQUIRED
INCLUDED OPTIONS: NONE



REGISTERED PROFESSIONAL ENGINEER
MATTHEW C. HICKS
No. 63494
Exp. 9/30/06
CIVIL
STATE OF CALIFORNIA

PLOT PLAN

10971 WHITE OAK LANE

SCALE: 1" = 20'

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ONTARIO, CA 91764
(909) 987-7788

CITY APPROVALS	SIGNATURE	DATE
PLANNING		
BUILDING AND SAFETY		

DEVELOPER/OWNER: EMPIRE COMMUNITIES
TRACT 16495 – PHASE NUMBER: PHASE 2
SPECIFIC PLAN: ALMERIA
LOT NUMBER: 21