RECON

Air Quality Analysis for the California Terraces Planning Area 61 Project San Diego, California

Prepared for
Mr. Allen Kashani, Director of Project Management
Pardee Homes
13400 Sabre Springs Parkway, Suite 200
San Diego, CA 92128

Prepared by
RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, CA 92101
P 619.308.9333

RECON Number 4135-1
February 26, 2019

Jessica Fleming

Jessica Fleming, Environmental Analyst

TABLE OF CONTENTS

FIGURES

TABLES

TABLE OF CONTENTS (cont.)

ATTACHMENTS

List of Abbreviations and Acronyms

°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
APCD	Air Pollution Control District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of San Diego
CO	carbon monoxide
CPA	Community Plan Amendment
CPU	Community Plan Update
DPM	diesel particulate matter
FEIR	Final Program Environmental Impact Report for the Otay Mesa Community Plan Update
HEPA	high efficiency particulate air (filter)
HVAC	heating, ventilation, and air conditioning
LOS	Level of Service
MEIR	maximally exposed individual resident
MEIW	maximally exposed individual worker
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
OEHHA	Office of Environmental Health Hazard Assessment
PA	Planning Area
Pb	lead
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 microns or less
ppb	parts per billion
ppm	parts per million
RAQS	Regional Air Quality Strategy
ROG	reactive organic gas
SANDAG	San Diego Association of Governments
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SIP	State Implementation Plan
SO_2	sulfur dioxide
SR-905	State Route 905
TACs	toxic air contaminants
TCM	Transportation Control Measures
U.S. EPA	United States Environmental Protection Agency
USC	United States Code
VOC	volatile organic compounds

Executive Summary

This report evaluates potential local and regional air quality impacts associated with the proposed California Terraces Planning Area (PA) 61 project (project) located north of State Route 905 (SR-905), southeast of the intersection of Otay Mesa Road and Ocean View Hills Parkway/Caliente Avenue in the Otay Mesa Community Plan area, in the city of San Diego, California. The project site is currently undeveloped. The project would construct up to 267 multi-family units, a 0.19-acre park, and up to 45,000 square feet of commercial uses on an approximately 14.6-acre site.

The primary goal of the San Diego Air Pollution Control District's Regional Air Quality Strategy (RAQS) is to reduce ozone precursor emissions. The project site is designated as Commercial Employment, Retail, and Services in the City's General Plan and as Community Commercial in the Otay Mesa Community Plan. The project would require a Community Plan Amendment (CPA) to allow for the construction of a mixed-use residential and commercial project. However, the project would generate less emissions than the existing land use designation upon which the current RAQS is based. Thus, it can be concluded that the project would not obstruct or conflict with the implementation of the RAQS.

Additionally, as calculated in this analysis, project construction emissions would not exceed the applicable City emissions thresholds. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Therefore, as project emissions would be well below these limits, project construction would not result in regional emissions that would exceed the National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS) or contribute to existing violations. Additionally, construction emissions would be temporary, intermittent, and would cease at the end of project construction.

Long-term emissions of regional air pollutants occur from operational sources. Based on emissions estimates, project operational emissions would not exceed the applicable regional emissions thresholds. Therefore, as project emissions would be well below these limits, project operations would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations.

California Air Resources Board (CARB) recommends that siting new sensitive land uses within 500 feet of a freeway or urban roads with 100,000 or more vehicles per day should be avoided when possible. Because this cannot always be avoided, CARB has also provided guidance for strategies that can be implemented to reduce the exposure to air pollution near heavily traveled roadways. The proposed exterior use area (park) is located more than 500 feet from the SR-905 centerline; however, residential uses at the southern portion of the project site would be located within 500 feet of SR-905. A site-specific health risk assessment was prepared for the residential buildings located at the southern portion of the project site. The site-specific health risk assessment was based on assumptions regarding emissions from diesel-fueled truck traffic on SR-905.

Based on the predicted ground level concentrations, the excess cancer risk would be approximately 27.4 in a million for the maximally exposed resident and approximately 2 in a million for a standard worker, and the non-cancer chronic risk would be less than the health hazard index. However, as the risk at the multi-family buildings exceeds 10 in one million, as a design feature, the project would include minimum efficiency reporting value 13 (MERV-13) filters. All units would be equipped with a heating, ventilation, and air conditioning (HVAC) unit with air filters capable of meeting MERV-13 or better. MERV-13 filters are capable of filtering particles ranging from 1.0 to 10.0 parts per million (ppm) in size by more than 90 percent (CARB 2017). Thus, with the provision of MERV-13 filters, the potential incremental increase in cancer risk would be reduced. It should be noted that the variability in parameters such as absorption rates, breathing rates, body weight, and frequency of exposure exists even in a narrowly defined age group or sensitive receptor subpopulation. This creates a level of uncertainty in calculating exposures and associated risks for individuals within a particular receptor population that presumably would receive the same intake doses. Thus for this analysis the Office of Environmental Health Hazard Assessment (OEHHA) standard default factors, which represent the upper limit of these exposure parameters, generally overestimate risks. Thus, the risks reported represent an upper-bound of estimated risk and are considered conservative.

The project does not include heavy industrial or agricultural uses that are typically associated with objectionable odors. The project would involve the use of diesel-powered equipment during construction. Diesel exhaust may occasionally be noticeable at adjacent properties; however, construction activities would be temporary and the odors would dissipate quickly in an outdoor environment. Therefore, this impact would be less than significant.

The project would not result in the generation of 100 pounds per day or more of particulate matter. Additionally, standard dust control measures would be implemented as a part of project construction.

Parcels located south, east, and west of the project site are currently vacant. Development is not dense enough to form an urban canyon, and buildings do not form contiguous or near contiguous frontage. The project is not anticipated to contribute to a substantial alteration of air movement that would affect air quality.

1.0 Introduction

The purpose of this report is to assess potential short-term and long-term local and regional air quality impacts resulting from development of the proposed California Terraces Planning Area (PA) 61 project (project).

Air pollution affects all southern Californians. Effects can include increased respiratory infections, increased discomfort, missed days from work and school, and increased mortality. Polluted air also damages agriculture and our natural environment.

The state of California is divided geographically into 15 air basins for managing the air resources of the state on a regional basis. Areas within each air basin are considered to share the same air masses and, therefore, are expected to have similar ambient air quality. The project site is located within the San Diego Air Basin (SDAB). The SDAB is currently classified as a federal non-attainment area for ozone, and a state non-attainment area for particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and ozone.

Air quality impacts can result from the construction and operation of the project. Construction impacts are short term and result from fugitive dust, equipment exhaust, and indirect effects associated with construction workers and deliveries. Operational impacts can occur on two levels: regional impacts resulting from growth-inducing development, or local hot-spot effects stemming from sensitive receivers being placed close to highly congested roadways. In the case of this project, operational impacts would be primarily due to emissions to the basin from mobile sources associated with vehicular travel along the roadways within the project area.

The analysis of impacts is based on federal and state Ambient Air Quality Standards and is assessed in accordance with the guidelines, policies, and standards established by the City of San Diego (City) and the San Diego Air Pollution Control District (SDAPCD). Project compatibility with the adopted air quality plan for the area is also assessed. Measures are recommended, as required, to reduce potentially significant impacts.

2.0 Project Description and Mitigation Framework

2.1 Project Description

The project site is located north of State Route 905 (SR-905), southeast of the intersection of Otay Mesa Road and Ocean View Hills Parkway/Caliente Avenue in the Otay Mesa Community Plan area, in the city of San Diego, California. Figure 1 shows the regional location. An aerial photograph of the project site and vicinity is shown in Figure 2. The project site is bounded by multi-family uses to the north, SR-905 and open space to the south, San Ysidro High School to the southwest, and vacant land to the east and west.

✱ Project Location

FIGURE 1

Regional Location

RECON

M:\JOBS2\4135.1\common_gis\fig1_PA61Nos.mxd 4/5/2018 sab

Image Source: NearMaps (flown June 2018)

🟥 Project Boundary

FIGURE 2

Project Location on Aerial Photograph

RECON

\\serverfs01\gis\JOBS2\4135.1\common_gis\fig2_PA61Nos.mxd 9/17/2018 sab

The project site is currently undeveloped. The project would construct up to 267 multi-family units, a 0.19-acre park, and up to 45,000 square feet of commercial uses on an approximately 14.6-acre site. The residential development potential on the project site would be 15 to 19 dwelling units per acre, for a total of up to 267 units. Figure 3 shows the proposed site plan.

2.2 Otay Mesa CPU Mitigation Framework

Air quality impacts associated with the Otay Mesa Community Plan Update (CPU) were addressed in the Final Program Environmental Impact Report for the Otay Mesa Community Plan Update (FEIR, Project Number 30330/304032, SCH No. 2004651076) approved by the City of San Diego (City) in 2013 (City of San Diego 2013). The following air quality mitigation framework applies to the project:

AQ-1: For projects that would exceed daily construction emissions thresholds established by the City, best available control measures/technology shall be incorporated to reduce construction emissions to below daily emission standards established by the City. Best available control measures/technology shall include:

a. Minimizing simultaneous operation of multiple pieces of construction equipment;

b. Use of more efficient, or low pollutant emitting, equipment, e.g. Tier III or IV rated equipment;

c. Use of alternative fueled construction equipment;

d. Dust control measures for construction sites to minimize fugitive dust, e.g. watering, soil stabilizers, and speed limits; and

e. Minimizing idling time by construction vehicles.

AQ-2: Development that would significantly impact air quality, either individually or cumulatively, shall receive entitlement only if it is conditioned with all reasonable mitigation to avoid, minimize, or offset the impact. As a part of this process, future projects shall be required to buffer sensitive receptors from air pollution sources through the use of landscaping, open space, and other separation techniques.

AQ-3: Prior to the issuance of building permits for any new facility that would have the potential to emit toxic air contaminants, in accordance with Assembly Bill 2588, an emissions inventory and health risk assessment shall be prepared. If adverse health impacts exceeding public notification levels (cancer risk equal to or greater than 10 in 1,000,000; see Section 5.3.5.1 [b and c]) are identified, the facility shall provide public notice to residents located within the public notification area and submit a risk reduction audit and plan to the Air Pollution Control District (APCD) that demonstrates how the facility would reduce health risks to less than significant levels within five years of the date the plan.

Map Source: CivilSense, Inc.

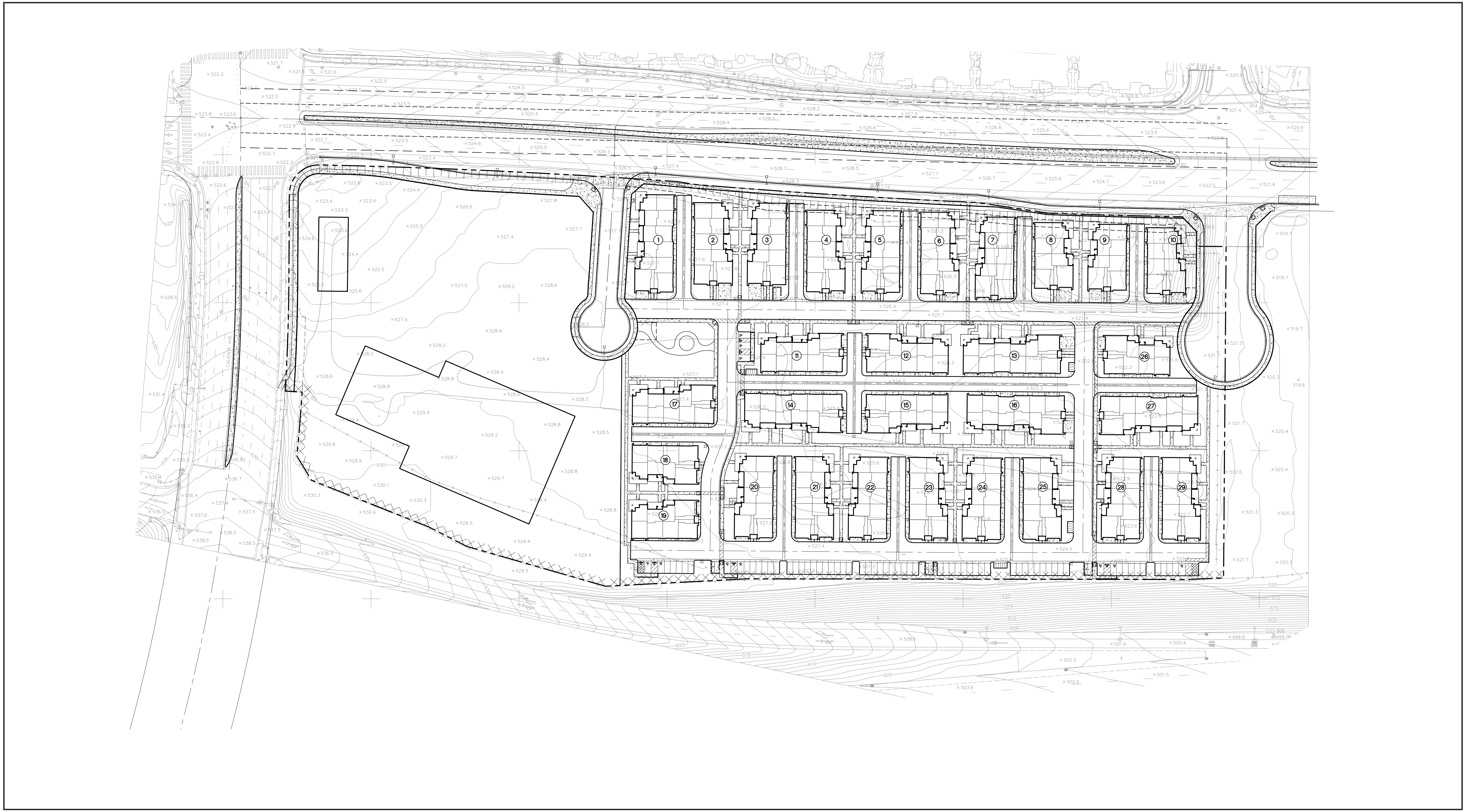


FIGURE 3
Site Plan

AQ-4: Prior to the issuance of building permits for any project containing a facility identified in Table 5.3-7 [of the FEIR], or locating air quality sensitive receptors closer than the recommended buffer distances, future projects implemented in accordance with the CPU shall be required to prepare a health risk assessment (HRA) with a Tier I analysis in accordance with APCD HRA Guidelines and the Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics "Hot Spots" Program Risk Assessment Guidelines (San Diego Air Pollution Control District [SDAPCD] 2006; OEHHA 2003).

All HRAs shall include:

1. The estimated maximum 70-year lifetime cancer risk;
2. The estimated maximum non-cancer chronic health hazard index; and
3. The estimated maximum non-cancer acute health hazard index.

Risk estimates shall each be made for the off-site point of maximum health impact (PMI), the maximally exposed individual resident (MEIR), and the maximally exposed individual worker (MEIW). The location of each of these receptors shall be specified. The lifetime cancer risk, non-cancer chronic and acute health hazard indexes for nearby sensitive receptors shall also be reported. Cancer and non-cancer chronic risk estimates shall be based on inhalation risks. HRAs shall include estimates of population exposure, including cancer burden, as well as cancer and non-cancer chronic and acute risk isopleths (contours). The HRA shall identify best available control technology required to reduce risk to less than 10 in 1,000,000.

3.0 Regulatory Framework

3.1 Federal Regulations

Ambient Air Quality Standards (AAQS) represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. The federal Clean Air Act (CAA) was enacted in 1970 and amended in 1977 and 1990 [42 United States Code (USC) 7401] for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. In 1971, in order to achieve the purposes of Section 109 of the CAA [42 USC 7409], the U.S. Environmental Protection Agency (U.S. EPA) developed primary and secondary National Ambient Air Quality Standards (NAAQS).

Six criteria pollutants of primary concern have been designated: ozone, carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and respirable particulate matter (PM_{10} and $PM_{2.5}$). The primary NAAQS ". . . in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health . . . " and the secondary standards ". . . protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air" [42 USC 7409(b)(2)]. The primary NAAQS were established, with a margin of safety, considering long-term exposure for the most sensitive groups in the general population (i.e., children, senior citizens, and people with breathing difficulties). The NAAQS are presented in Table 1 (California Air Resources Board [CARB] 2016).

Table 1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone[8]	1 Hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (137 μg/m^3)		0.070 ppm (137 μg/m^3)		
Respirable Particulate Matter (PM$_{10}$)[9]	24 Hour	50 μg/m^3	Gravimetric or Beta Attenuation	150 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 μg/m^3		–		
Fine Particulate Matter (PM$_{2.5}$)[9]	24 Hour	No Separate State Standard		35 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	12 μg/m^3	15 μg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-dispersive Infrared Photometry	35 ppm (40 mg/m^3)	–	Non-dispersive Infrared Photometry
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	
Nitrogen Dioxide (NO$_2$)[10]	1 Hour	0.18 ppm (339 μg/m^3)	Gas Phase Chemi-luminescence	100 ppb (188 μg/m^3)	–	Gas Phase Chemi-luminescence
	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)		0.053 ppm (100 μg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO$_2$)[11]	1 Hour	0.25 ppm (655 μg/m^3)	Ultraviolet Fluorescence	75 ppb (196 μg/m^3)	–	Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method)
	3 Hour	–		–	0.5 ppm (1,300 μg/m^3)	
	24 Hour	0.04 ppm (105 μg/m^3)		0.14 ppm (for certain areas)[11]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[11]	–	
Lead[12,13]	30 Day Average	1.5 μg/m^3	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 μg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	–		0.15 μg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 μg/m^3	Ion Chroma-tography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 μg/m^3)	Gas Chroma-tography			

See footnotes on next page.

Table 1
Ambient Air Quality Standards

ppm = parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter; – = not applicable.

[1] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent measurement method which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

[8] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[9] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standards of 15 µg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[10] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of ppb. California standards are in units of ppm. To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[11] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated non-attainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
Note that the 1-hour national standard is in units of ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12] The Air Resources Board has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[13] The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated non-attainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[14] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

SOURCE: CARB 2016.

An air basin is designated as either attainment or non-attainment for a particular pollutant. Once a non-attainment area has achieved the AAQS for a particular pollutant, it is re-designated as an attainment area for that pollutant. To be redesignated, the area must meet air quality standards for three consecutive years. After re-designation to attainment, the area is known as a maintenance area and must develop a 10-year plan for continuing to meet and maintain air quality standards, as well as satisfy other requirements of the federal CAA. The SDAB is a non-attainment area for the federal ozone standard.

3.2 State Regulations

3.2.1 Criteria Pollutants

The CARB has developed the California Ambient Air Quality Standards (CAAQS) and generally has set more stringent limits on the criteria pollutants than the NAAQS (see Table 1). In addition to the federal criteria pollutants, the CAAQS also specify standards for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride (see Table 1).

Similar to the federal CAA, the state classifies as either “attainment” or “non-attainment” areas for each pollutant based on the comparison of measured data with the CAAQS. The SDAB is a non-attainment area for the state ozone standards, the state PM_{10} standard, and the state $PM_{2.5}$ standard.

3.2.2 Toxic Air Contaminants

The public’s exposure to toxic air contaminants (TACs) is a significant public health issue in California. Diesel-exhaust particulate matter emissions have been established as TACs. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health (Assembly Bill [AB] 1807: Health and Safety Code Sections 39650–39674). The Legislature established a two-step process to address the potential health effects from TACs. The first step is the risk assessment (or identification) phase. The second step is the risk management (or control) phase of the process.

The California Air Toxics Program establishes the process for the identification and control of TACs and includes provisions to make the public aware of significant toxic exposures and for reducing risk. Additionally, the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly Bill) was enacted in 1987 and requires stationary sources to report the types and quantities of certain substances routinely released into the air.

The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels.

The Children’s Environmental Health Protection Act, California Senate Bill 25 (Chapter 731, Escutia, Statutes of 1999), focuses on children’s exposure to air pollutants. The act requires CARB to review its air quality standards from a children’s health perspective, evaluate the statewide air monitoring network, and develop any additional air toxic control measures needed to protect children's health. Locally, toxic air pollutants are regulated through the SDAPCD's Regulation XII. Of particular concern statewide are diesel-exhaust particulate matter emissions. Diesel-exhaust particulate matter was established as a TAC in 1998, and is estimated to represent a majority of the cancer risk from TACs statewide (based on the statewide average). Diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB and are listed as carcinogens either under the state's Proposition 65 or under the federal Hazardous Air Pollutants program.

Following the identification of diesel particulate matter (DPM) as a TAC in 1998, CARB has worked on developing strategies and regulations aimed at reducing the risk from DPM. The overall strategy for achieving these reductions is found in the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB 2000). A stated goal of the plan is to reduce the statewide cancer risk arising from exposure to DPM by 85 percent by 2020.

In April 2005, CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB 2005). The handbook makes recommendations directed at protecting sensitive land uses from air pollutant emissions while balancing a myriad of other land use issues (e.g., housing, transportation needs, economics, etc.). It notes that the handbook is not regulatory or binding on local agencies and recognizes that application takes a qualitative approach. As reflected in the CARB Handbook, there is currently no adopted standard for the significance of health effects from mobile sources. Therefore, the CARB has provided guidelines for the siting of land uses near heavily traveled roadways. Of pertinence to this study, the CARB guidelines indicate that siting new sensitive land uses within 500 feet of a freeway or urban roads with 100,000 or more vehicles/day should be avoided when possible.

However, transit-oriented, infill, and compact development characterizes many communities located near heavily traveled roadways. This type of development pattern has many benefits, including reducing traffic. To address these issues, in April 2017, CARB published the *Technical Advisory: Strategies to Reduce Air Pollution Exposure Near High Volume Roadways* (Technical Advisory; CARB 2017). The Technical Advisory acknowledges the benefits of transit-oriented infill development, which often occurs adjacent to high-volume roadways, and identifies strategies to reduce exposure, including practices and technologies that reduce traffic emissions, increase dispersion of traffic pollution, and remove pollution from the air. Strategies that reduce traffic emissions include speed reduction mechanisms (e.g., reduced speed limits, speed bumps, and roundabouts) and traffic signal management. Strategies that increase the dispersion of traffic emissions include land use designs that promote airflow and pollutant dispersion along street corridors, solid barriers (such as sound walls), and vegetation. Strategies that remove pollution from the air include indoor high efficiency filtration.

As an ongoing process, CARB will continue to establish new programs and regulations for the control of diesel particulate and other air-toxics emissions as appropriate. The continued development and implementation of these programs and policies will ensure that the public's exposure to DPM will continue to decline.

3.2.3 State Implementation Plan

The State Implementation Plan (SIP) is a collection of documents that set forth the state's strategies for achieving the NAAQS. In California, the SIP is a compilation of new and previously submitted plans, programs (such as air quality management plans, monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls. The CARB is the lead agency for all purposes related to the SIP under state law. Local air districts and other agencies, such as the Department of Pesticide Regulation and the Bureau of Automotive Repair, prepare SIP elements and submit them to CARB for review and approval. The CARB then forwards SIP revisions to the U.S. EPA for approval and publication in the Federal Register. All of the items included in the California SIP are listed in the Code of Federal Regulations (CFR) at 40 CFR 52.220.

The SDAPCD is responsible for preparing and implementing the portion of the SIP applicable to the SDAB. The SIP plans for San Diego County specifically include the Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County (SDAPCD 2012), and the 2004 Revision to the California State Implementation Plan for Carbon Monoxide – Updated Maintenance Plan for Ten Federal Planning Areas (CARB 2004).

3.2.4 The California Environmental Quality Act

Section 15125(d) of the California Environmental Quality Act (CEQA) Guidelines requires discussion of any inconsistencies between the project and applicable general plans and regional plans, including the applicable air quality attainment or maintenance plan (or SIP).

3.3 San Diego Air Pollution Control District

The SDAPCD is the agency that regulates air quality in the SDAB. The SDAPCD prepared the Regional Air Quality Strategy (RAQS) in response to the requirements set forth in the California CAA AB 2595 (SDAPCD 1992) and the federal CAA. Motor vehicles are San Diego County's leading source of air pollution (SDAPCD 2013). In addition to these sources, other mobile sources include construction equipment, trains, and airplanes. Reducing mobile source emissions requires the technological improvement of existing mobile sources and the examination of future mobile sources, such as those associated with new or modification projects (e.g., retrofitting older vehicles with cleaner emission technologies). In addition to mobile sources, stationary sources also contribute to air pollution in the SDAB. Stationary sources include gasoline stations, power plants, dry cleaners, and other commercial and industrial uses. Stationary sources of air pollution are regulated by the local air pollution control or management district, in this case the SDAPCD.

The SDAPCD is responsible for preparing and implementing the RAQS. As part of the RAQS, the SDAPCD developed Transportation Control Measures (TCMs) for the air quality plan prepared by the San Diego Association of Governments (SANDAG) in accordance with AB 2595 and adopted by SANDAG on March 27, 1992, as Resolution Number 92-49 and Addendum. The RAQS and TCM set forth the steps needed to accomplish attainment of NAAQS and CAAQS. The required triennial updates of the RAQS and corresponding TCM were adopted in 1995, 1998, 2001, 2004, 2009, and 2016.

The SDAPCD has also established a set of rules and regulations initially adopted on January 1, 1969 and periodically reviewed and updated. These rules and regulations are available for review on the agency's website.

4.0 Environmental Setting

4.1 Geographic Setting

The project is located in the City of San Diego, about seven miles east of the Pacific Ocean. The eastern portion of the SDAB is surrounded by mountains to the north, east, and south. These mountains tend to restrict airflow and concentrate pollutants in the valleys and low-lying areas below.

4.2 Climate

The project area, like the rest of San Diego County, has a Mediterranean climate characterized by warm, dry summers and mild winters. The mean annual temperature for the project area is 62 degrees Fahrenheit (°F). The average annual precipitation is 12 inches, falling primarily from November to April. Winter low temperatures in the project area average about 41°F, and summer high temperatures average about 78°F. The average relative humidity is 69 percent and is based on the yearly average humidity at Lindbergh Field (Western Regional Climate Center 2018).

The dominant meteorological feature affecting the region is the Pacific High Pressure Zone, which produces the prevailing westerly to northwesterly winds. These winds tend to blow pollutants away from the coast toward the inland areas. Consequently, air quality near the coast is generally better than that which occurs at the base of the coastal mountain range.

Fluctuations in the strength and pattern of winds from the Pacific High Pressure Zone interacting with the daily local cycle produce periodic temperature inversions that influence the dispersal or containment of air pollutants in the SDAB. Beneath the inversion layer pollutants become "trapped" as their ability to disperse diminishes. The mixing depth is the area under the inversion layer. Generally, the morning inversion layer is lower than the afternoon inversion layer. The greater the change between the morning and afternoon mixing depths, the greater the ability of the atmosphere to disperse pollutants.

Throughout the year, the height of the temperature inversion in the afternoon varies between approximately 1,500 and 2,500 feet above mean sea level. In winter, the morning inversion layer is about 800 feet above mean sea level. In summer, the morning inversion layer is about 1,100 feet above mean sea level. Therefore, air quality generally tends to be better in the winter than in the summer.

The prevailing westerly wind pattern is sometimes interrupted by regional “Santa Ana” conditions. A Santa Ana occurs when a strong high pressure develops over the Nevada-Utah area and overcomes the prevailing westerly coastal winds, sending strong, steady, hot, dry northeasterly winds over the mountains and out to sea.

Strong Santa Anas tend to blow pollutants out over the ocean, producing clear days. However, at the onset or during breakdown of these conditions, or if the Santa Ana is weak, local air quality may be adversely affected. In these cases, emissions from the South Coast Air Basin to the north are blown out over the ocean, and low pressure over Baja California draws this pollutant-laden air mass southward. As the high pressure weakens, prevailing northwesterly winds reassert themselves and send this cloud of contamination ashore in the SDAB. When this event does occur, the combination of transported and locally produced contaminants produce the worst air quality measurements recorded in the basin.

4.3 Existing Air Quality

Air quality at a particular location is a function of the kinds, amounts, and dispersal rates of pollutants being emitted into the air locally and throughout the basin. The major factors affecting pollutant dispersion are wind speed and direction, the vertical dispersion of pollutants (which is affected by inversions), and the local topography.

Air quality is commonly expressed as the number of days in which air pollution levels exceed state standards set by the CARB or federal standards set by the U.S. EPA. The SDAPCD maintains 10 air quality monitoring stations located throughout the greater San Diego metropolitan region. Air pollutant concentrations and meteorological information are continuously recorded at these stations. Measurements are then used by scientists to help forecast daily air pollution levels.

The Chula Vista monitoring station, located at 80 East J Street, approximately 5 miles northwest of the project site, is the nearest station to the project site that measures a range of pollutants. The Chula Vista monitoring station measures ozone, NO_2, PM_{10}, and $PM_{2.5}$. Table 2 provides a summary of measurements collected at the Chula Vista monitoring station for the years 2012 through 2016.

Table 2
Summary of Air Quality Measurements Recorded at the Chula Vista Air Quality Monitoring Station

Pollutant/Standard	2012	2013	2014	2015	2016
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	0	0	0	0	0
Days State 8-hour Standard Exceeded (0.07 ppm)	1	0	1	0	0
Days 2008 Federal 8-hour Standard Exceeded (0.075 ppm)	1	0	0	0	0
Days 2015 Federal 8-hour Standard Exceeded (0.070 ppm)	1	0	1	0	0
Max. 1-hr (ppm)	0.085	0.073	0.093	0.088	0.073
Max 8-hr (ppm)	0.079	0.063	0.072	0.067	0.069
Nitrogen Dioxide					
Days State 1-hour Standard Exceeded (0.18 ppm)	0	0	0	0	0
Days Federal 1-hour Standard Exceeded (0.100 ppm)	0	0	0	0	0
Max 1-hr (ppm)	0.057	0.057	0.055	0.049	0.054
Annual Average (ppm)	0.011	0.011	0.011	0.010	0.009
PM_{10}*					
Measured Days State 24-hour Standard Exceeded (50 μg/m^3)	0	0	0	0	0
Calculated Days State 24-hour Standard Exceeded (50 μg/m^3)	0.0	0.0	0.0	0.0	0.0
Measured Days Federal 24-hour Standard Exceeded (150 μg/m^3)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (150 μg/m^3)	0.0	0.0	0.0	0.0	0.0
Max. Daily (μg/m^3)	38.0	40.0	39.0	45.0	48.0
State Annual Average (μg/m^3)	21.5	23.7	23.4	19.8	21.8
Federal Annual Average (μg/m^3)	21.0	22.7	22.9	19.7	21.6
$PM_{2.5}$*					
Measured Days Federal 24-hour Standard Exceeded (35 μg/m^3)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (35 μg/m^3)	0.0	0.0	0.0	0.0	0.0
Max. Daily (μg/m^3)	34.3	21.9	26.5	33.5	23.9
State Annual Average (μg/m^3)	--	9.5	9.3	8.4	8.7
Federal Annual Average (μg/m^3)	10.2	9.4	9.2	8.3	8.7

SOURCE: CARB 2018.
ppm = parts per million
μg/m^3 = micrograms per cubic meter
-- = Not available.
* Calculated days value. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

4.3.1 Ozone

Nitrogen oxides and hydrocarbons (reactive organic gases [ROG]) are known as the chief “precursors” of ozone. These compounds react in the presence of sunlight to produce ozone, which is the primary air pollution problem in the SDAB. Because sunlight plays such an important role in its formation, ozone pollution—or smog—is mainly a concern during the daytime in summer months. The SDAB is currently designated a federal and state non-attainment area for ozone. During the past 25 years, San Diego had experienced a decline in the number of days with unhealthy levels of ozone despite the region’s growth in population and vehicle miles traveled (SDAPCD 2013).

About half of smog-forming emissions come from automobiles. Population growth in San Diego has resulted in a large increase in the number of automobiles expelling ozone-forming pollutants while operating on area roadways. In addition, the occasional transport of smog-filled air from the South Coast Air Basin only adds to the SDAB’s ozone problem.

Stricter automobile emission controls, including more efficient automobile engines, have played a large role in why ozone levels have steadily decreased.

In order to address adverse health effects due to prolonged exposure, the U.S. EPA phased out the national 1-hour ozone standard and replaced it with the more protective 8-hour ozone standard. The SDAB is currently a non-attainment area for the previous (1997) national 8-hour standard, and is recommended as a non-attainment area for the revised (2008) national 8-hour standard of 0.075 parts per million (ppm).

Not all of the ozone within the SDAB is derived from local sources. Under certain meteorological conditions, such as during Santa Ana wind events, ozone and other pollutants are transported from the Los Angeles Basin and combine with ozone formed from local emission sources to produce elevated ozone levels in the SDAB.

Local agencies can control neither the source nor the transportation of pollutants from outside the air basin. The SDAPCD's policy, therefore, has been to control local sources effectively enough to reduce locally produced contamination to clean air standards. Through the use of air pollution control measures outlined in the RAQS, the SDAPCD has effectively reduced ozone levels in the SDAB.

Actions that have been taken in the SDAB to reduce ozone concentrations include:

- **TCMs if vehicle travel and emissions exceed attainment demonstration levels.** TCMs are strategies that will reduce transportation-related emissions by reducing vehicle use or improving traffic flow.

- **Enhanced motor vehicle inspection and maintenance program.** The smog check program is overseen by the Bureau of Automotive Repair. The program requires most vehicles to pass a smog test once every two years before registering in the state of California. The smog check program monitors the amount of pollutants automobiles produce. One focus of the program is identifying "gross polluters," or vehicles that exceed two times the allowable emissions for a particular model. Regular maintenance and tune-ups, changing the oil, and checking tire inflation can improve gas mileage and lower air pollutant emissions. It can also reduce traffic congestion due to preventable breakdowns, further lowering emissions.

- **Air Quality Improvement Program.** This program, established by AB 118, is a voluntary incentive program administered by the CARB to fund clean vehicle and equipment projects, research on biofuels production and the air quality impacts of alternative fuels, and workforce training.

4.3.2 Carbon Monoxide

The SDAB is classified as a state attainment area and as a federal maintenance area for CO. Until 2003, no violations of the state standard for CO had been recorded in the SDAB since 1991, and no violations of the national standard had been recorded in the SDAB since 1989. The violations that took place in 2003 were likely the result of massive wildfires that occurred throughout the county. No violations of the state or federal CO standards have occurred since 2003.

Small-scale, localized concentrations of CO above the state and national standards have the potential to occur at intersections with stagnation points such as those that occur on major highways and heavily traveled and congested roadways. Localized high concentrations of CO are referred to as “CO hot spots” and are a concern at congested intersections, where automobile engines burn fuel less efficiently and their exhaust contains more CO.

4.3.3 Particulate Matter

Particulate matter is a complex mixture of microscopic solid or liquid particles including chemicals, soot, and dust. Anthropogenic sources of direct particulate emissions include crushing or grinding operations, dust stirred up by vehicle traffic, and combustion sources such as motor vehicles, power plants, wood burning, forest fires, agricultural burning and industrial processes. Additionally, indirect emissions may be formed when aerosols react with compounds found in the atmosphere.

Health studies have shown a significant association between exposure to particulate matter and premature death in people with heart or lung diseases. Other important effects include aggravation of respiratory and cardiovascular disease, lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and irregular heartbeat (U.S. EPA 2016).

As its properties vary based on the size of suspended particles, particulate matter is generally categorized as particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) or particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$)

4.3.3.1 PM_{10}

PM_{10}, occasionally referred to as “inhalable coarse particles”, has an aerodynamic diameter of about one-seventh of the diameter of a human hair. High concentrations of PM_{10} are often found near roadways, construction, mining, or agricultural operations.

4.3.3.2 $PM_{2.5}$

$PM_{2.5}$, occasionally referred to as “inhalable fine particles”, has an aerodynamic diameter of about one-thirtieth of the diameter of a human hair. $PM_{2.5}$ is the main cause of haze in many parts of the United States. Federal standards applicable to $PM_{2.5}$ were first adopted in 1997.

4.3.4 Other Criteria Pollutants

The national and state standards for NO_2, oxides of sulfur (SO_X), and the previous standard for lead are being met in the SDAB, and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future. As discussed above, new standards for these pollutants have been adopted, and new designations for the SDAB will be determined in the future. The SDAB is also in attainment of the state standards for vinyl chloride, hydrogen sulfides, sulfates, and visibility-reducing particulates.

5.0 Thresholds of Significance

Thresholds used to evaluate potential impacts to air quality are based on applicable criteria in the CEQA Guidelines Appendix G and the City of San Diego Significance Determination Thresholds. The project would have a significant air quality impact if it would (City of San Diego 2016):

1. Obstruct or conflict with the implementation of the RAQS.
2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3. Expose sensitive receptors to substantial pollutant concentration including air toxics such as diesel particulates.
4. Create objectionable odors affecting a substantial number of people.
5. Exceed 100 pounds per day of particulate matter (dust).
6. Result in a substantial alteration of air movement in the area.

The SDAPCD does not provide specific numeric thresholds for determining the significance of air quality impacts under CEQA. However, the SDAPCD does specify Air Quality Impact Analysis trigger levels for new or modified stationary sources (SDAPCD Rules 20.1, 20.2, and 20.3). The SDAPCD does not consider these trigger levels to represent adverse air quality impacts, rather, if these trigger levels are exceeded by a project, the SDAPCD requires an air quality analysis to determine if a significant air quality impact would occur. While, these trigger levels do not generally apply to mobile sources or general land development projects, for comparative purposes these levels are used to evaluate the increased emissions that would be discharged to the SDAB if the project were approved.

The SDAPCD trigger levels are also utilized by the City of San Diego in their Significance Determination Thresholds (City of San Diego 2016) as one of the considerations when determining the potential significance of air quality impacts for projects within the city. The air quality impact screening levels used in this analysis are shown in Table 3.

Table 3
Air Quality Impact Screening Levels

Pollutant	Emission Rate		
	Pounds/Hour	Pounds/Day	Tons/Year
NO_X	25	250	40
SO_X	25	250	40
CO	100	550	100
PM_{10}	--	100	15
Lead	--	3.2	0.6
VOC, ROG	--	137	15
$PM_{2.5}$[a]	--	67	10

SOURCE: SDAPCD, Rules 20.1, 20.2, 20.3; City of San Diego 2016.
[a]The City does not specify a threshold for $PM_{2.5}$. Threshold here is based on SDAPCD, Rules 20.1, 20.2, 20.3.

6.0 Air Quality Assessment

Construction impacts are short term and result from fugitive dust, equipment exhaust, and indirect effects associated with construction workers and deliveries. Operational impacts can occur on two levels: regional or local. In the case of this project, operational impacts are primarily due to emissions from mobile sources associated with vehicular travel along the roadways within the project area.

Construction and operation air emissions were calculated using California Emissions Estimator Model (CalEEMod) 2016.3.2 (California Air Pollution Control Officers Association [CAPCOA] 2017). The CalEEMod program is a tool used to estimate air emissions resulting from land development projects based on California-specific emission factors. The model estimates mass emissions from two basics sources: construction sources and operational sources (i.e., area and mobile sources).

Inputs to CalEEMod include such items as the air basin containing the project, land uses, trip generation rates, trip lengths, vehicle fleet mix (percentage of autos, medium truck, etc.), trip destination (i.e., percent of trips from home to work, etc.), duration of construction phases, construction equipment usage, grading areas, season, and ambient temperature, as well as other parameters. The CalEEMod output files contained in Attachment 1 indicate the specific outputs for each model run. Emissions of oxides of nitrogen (NO_X), CO, SO_X, PM_{10}, $PM_{2.5}$, and ROG are calculated. Emission factors are not available for lead, and consequently, lead emissions are not calculated. The SDAB is currently in attainment of the federal and state lead standards. Furthermore, fuel used in construction equipment and most other vehicles is not leaded.

6.1 Construction Emissions

Construction-related activities are temporary, short-term sources of air emissions. Sources of construction-related air emissions include:

- Fugitive dust from grading activities;
- Construction equipment exhaust;
- Construction-related trips by workers, delivery trucks, and material-hauling trucks; and
- Construction-related power consumption.

Construction-related pollutants result from dust raised during demolition and grading, emissions from construction vehicles, and chemicals used during construction. Fugitive dust emissions vary greatly during construction and are dependent on the amount and type of activity, silt content of the soil, and the weather. Vehicles moving over paved and unpaved surfaces, demolition, excavation, earth movement, grading, and wind erosion from exposed surfaces are all sources of fugitive dust. Construction operations are subject to the requirements established in Regulation 4, Rules 52, 54, and 55, of the SDAPCD's rules and regulations.

Heavy-duty construction equipment is usually diesel powered. In general, emissions from diesel-powered equipment contain more NO_X, SO_X, and particulate matter than gasoline-powered engines. However, diesel-powered engines generally produce less CO and less ROG than do gasoline-powered engines. Standard construction equipment includes tractors/loaders/backhoes, rubber-tired dozers, excavators, graders, cranes, forklifts, rollers, paving equipment, generator sets, welders, cement and mortar mixers, and air compressors.

Primary inputs are the numbers of each piece of equipment and the length of each construction stage. Specific construction phasing and equipment parameters are not available at this time. However, CalEEMod can estimate the required construction equipment when project-specific information is unavailable. The estimates are based on surveys, performed by the South Coast Air Quality Management District and the Sacramento Metropolitan Air Quality Management District, of typical construction projects which provide a basis for scaling equipment needs and schedule with a project's size. Air emission estimates in CalEEMod are based on the duration of construction phases; construction equipment type, quantity, and usage; grading area; season; and ambient temperature, among other parameters. Construction emissions were modeled assuming construction would begin in January 2019 and last for approximately 18 months. Assuming construction would begin in January 2019 is conservative, as continued implementation of regulations for off-road equipment, the primary construction emission source, would reduce emissions from these sources over time.

Table 4 shows the total projected construction maximum daily emission levels for each criteria pollutant. The CalEEMod output files for construction emissions are contained in Attachment 1.

Table 4
Summary of Worst-case Construction Emissions
(pounds per day)

	Pollutant					
Construction	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Site Preparation	4	46	23	0	21	12
Grading	5	55	34	0	11	6
Building Construction	3	26	25	0	3	2
Paving	1	14	15	0	1	1
Architectural Coatings	22	2	3	0	0	0
Maximum Daily Emissions	**22**	**55**	**34**	**0**	**21**	**12**
Significance Threshold	*137*	*250*	*550*	*250*	*100*	*67*

Standard dust control measures would be implemented as a part of project construction in accordance with SDAPCD rules and regulations. Fugitive dust emissions were calculated using CalEEMod default values, and did not take into account the required dust control measures. Thus, the emissions shown in Table 4 are conservative.

For assessing the significance of the air quality emissions resulting during construction of the project, the construction emissions were compared to the City significance thresholds shown in Table 4. As shown in Table 4, maximum daily construction emissions associated with the project are projected to be less than the applicable thresholds for all criteria pollutants. Construction related air quality impacts would be less than significant.

6.2 Operation Emissions

6.2.1 Mobile and Area Source Emissions

Mobile source emissions would originate from traffic generated by the project. Area source emissions would result from the use of natural gas, consumer products, as well as applying architectural coatings and landscaping activities.

Mobile source operational emissions are based on the trip rate, trip length for each land use type and size. According to the project traffic report, without accounting for an internal capture rate, residential uses generate 6 trips per unit, a neighborhood shopping center generates 120 trips per 1,000 square feet, and a developed park generates 50 trips per acre (LOS Engineering, Inc. 2019). Based on these trip rates, 267 units, 45,000 square feet of commercial uses, and a 0.19 acre park would generate a total of 7,536 trips. Based on regional data compiled by CARB as part of the emission factor model, the average regional trip length for all trips in San Diego County is 5.8 miles (CARB 2014). This distance is multiplied by the total trip generation of the project to determine total project annual vehicle miles traveled. Default vehicle emission factors for the soonest operational year of 2020 were used.

Area source emissions associated with the project include consumer products, natural gas used in space and water heating, architectural coatings, and landscaping equipment.

Hearths (fireplaces) and woodstoves are also a source of area emissions; however, the project would not include hearths or woodstoves. Consumer products are chemically formulated products used by household and institutional consumers, including, but not limited to, detergents, cleaning compounds, polishes, floor finishes, disinfectants, sanitizers, and aerosol paints but not including other paint products, furniture coatings, or architectural coatings. Emissions due to consumer products are calculated using total building area and product emission factors. Emissions are generated from the combustion of natural gas used in space and water heating. Emissions are based on the Residential Appliance Saturation Survey which is a comprehensive energy use assessment that includes the end use for various climate zones in California.

For architectural coatings, emissions result from evaporation of solvents contained in surface coatings such as in paints and primers. Emissions are based on the building surface area, architectural coating emission factors, and a reapplication rate of 10 percent of area per year. Landscaping maintenance includes fuel combustion emission from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers as well as air compressors, generators, and pumps. Emission calculations take into account building area, equipment emission factors, and the number of operational days (summer days).

Table 5 provides a summary of the operational emissions generated by the project. CalEEMod output files for project operation are contained in Attachment 1. As shown, project-generated emissions are projected to be less than the City's significance thresholds for all criteria pollutants.

Table 5
Summary of Project Operational Emissions
(pounds per day)

	Pollutant					
Source	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area Sources	9	0	22	0	0	0
Energy Sources	0	1	0	0	0	0
Mobile Sources	11	41	101	0	22	6
Total	**20**	**42**	**123**	**0**	**22**	**6**
Significance Threshold	*137*	*250*	*550*	*250*	*100*	*67*

Note: Totals may vary due to independent rounding.

6.2.2 Diesel Particulate Matter

As discussed in Section 3.2.2, siting sensitive land uses adjacent to heavily traveled roadways can result in the exposure sensitive receptors to elevated levels DPM. A health risk assessment was prepared as a part of the Otay Mesa CPU FEIR. In that analysis, it was calculated that the carcinogenic risks associated with operations would be less than 10 in a million within the CPU area for the maximally exposed individual resident, the maximally exposed individual worker, and the maximum chronic hazard index would be below 1.0. However, the project site was designated as a commercial use under the Otay Mesa CPU, and the residential risk was not analyzed at the site. Additionally, in 2015, subsequent to the adoption of the Otay Mesa CPU, the U.S. EPA and OEHHA revised their guidance for the methodology for evaluation of excess cancer risk to include health risks to children with higher breathing rates and applied age sensitivity factors. The change in methodology results in an increase in the calculated cancer risk from inhalation. Further, updated traffic volumes and truck counts on SR-905 have become available.

The proposed exterior use area (park) is located more than 500 feet from the SR-905 centerline; however, residential uses at the southern portion of the project site would be located within 500 feet of SR-905. For the reasons outlined above, a project-specific health risk assessment has been prepared for the residential buildings located at the southern portion of the project site.

The AERMOD dispersion model was used to calculate concentrations at the project site associated with emissions of TACs from SR-905. Surface and upper air meteorological data from the Lindberg Field and Chula Vista monitoring stations were used in the AERMOD model. The high-end excess cancer risk was calculated based on guidance from the Office of Environmental Health Hazard Assessment (OEHHA 2015), using the 95th percentile exposure assumptions for inhalation risks (CARB 2015). The risks were calculated based on 9, 30, and 70 years of exposure for excess cancer risks and chronic non-cancer hazards for ages ranging from the last trimester of birth through age 70.

One source of uncertainty in calculating exposures is the assumption that individuals within a particular receptor population (or subpopulation) will receive the same intake doses. Variability in parameters such as absorption rates, breathing rates, body weight, skin surface area, and frequency of exposure will exist even in a narrowly defined age group or sensitive receptor subpopulation. This range of uncertainty and variability is difficult to assess. In this analysis, OEHHA standard default factors representing the upper limit of these exposure parameters will generally overestimate risks. Thus, the risks reported in this analysis represent an upper-bound of estimated risk.

6.2.2.1 Exposure Assessment

The purpose of the exposure assessment is to estimate the extent of public exposure to emitted substances (OEHHA 2015). Under the OEHHA and U.S. EPA guidance, risk assessments for TACs consist of dispersion modeling of air toxic emissions to predict their downwind concentrations at the ground level. The methodology uses the model results in estimating potential health risks associated with exposure at the predicted concentrations.

The exposure assessment determines the quantities or concentrations of the risk agents received by the potentially exposed populations and receptors. The exposure assessment's emphasis is on calculating risk to maximally exposed individuals or small populations. This assessment is performed by determining the concentrations of chemicals at a location of interest and combining this information with the time that individuals or populations are exposed to the chemicals.

According to the OEHHA guidelines, an inhalation pathway cancer risk analysis must be evaluated for every health risk assessment (OEHHA 2015). Exposure through inhalation is a function of the breathing rate, the exposure frequency, and the concentration of a substance in the air (OEHHA 2015). For residential exposure, the breathing rates are determined for specific age groups, so inhalation dose (Dose-air) is calculated for each of these age groups: 3rd trimester of birth, 0 to less than 2 (0<2), 2 to less than 9 (2<9), 2 to less than 16 (2<16), 16 to less than 30 (16<30), and 16 to 70 years of age. For standard worker (non-residential) exposure, which is applicable to the project, inhalation dose is calculated for the 16- to 70-year age group. These age-specific groupings are used with the age-sensitivity factors for cancer risk assessment. A first tier (Tier 1) evaluation uses the high-end point estimate (i.e., the 95th percentiles) breathing rates for the inhalation.

Additionally, OEHHA has developed age-sensitivity factors (ASF). ASFs are used to account for the increased susceptibility of infants and children to carcinogens, as compared to adults. The ASF calculation procedure includes the use of age-specific weighting factors in calculating cancer risks from exposures of infants, children and adolescents, to reflect their anticipated special sensitivity to carcinogens. OEHHA recommends weighting cancer risk by a factor of 10 for exposures that occur from the 3rd trimester of pregnancy to 2 years of age, and by a factor of three for exposures that occur from 2 years through 16 years of age. An age sensitivity factor of 1 is applied to all other age groups.

This analysis is considered to be conservative as the potential methods used tend to overestimate rather than underestimate health risks. In addition, individuals are evaluated under scenarios using the high-end point estimates for breathing rates. These higher breathing rates result in incremental cancer risk estimates that represent the upper-range of predictions and therefore health risks that may be associated with exposure to vehicles emissions from SR-905. Furthermore, the toxicity values (i.e., the values for each chemical at which an adverse health risk is predicted) are designed to protect health with an adequate margin of safety and are therefore conservative. Therefore, the health risks calculated in this analysis represent the upper-bound of risks rather than actual values for any specific individual.

The emission factors used in the dispersion modeling and concentration estimates are based on the 2014 Emissions Factor Model (EMFAC 2014; CARB 2014) developed by CARB. Therefore, the emission factors take into account improvements in technology and rules for future emission reductions for on-road vehicles that have been implemented by CARB, but do not, and cannot take into account any future reductions that are proposed but not yet implemented. The methodology for calculating emissions based on the freeway traffic mix and by various speeds was developed from the California Department of Transportation's emissions factor model, which is currently based on EMFAC2014. The EMFAC emission factors were also based on the aggregated vehicle age grouping include in EMFAC (Attachment 2).

Based on the California Department of Transportation's report, Annual Average Daily Truck Traffic on California State Highways, 2015, in the vicinity of the project, 10.2 percent of the traffic volumes on SR-905 are trucks with more than two axels (Caltrans 2015). The remaining vehicles are classified as automobiles with two axels. This percentage of trucks was further broken down by type 1 and type 2 trucks per the CT-EMFAC method, which resulted in a final vehicle classifications mix of: 89.8 percent non-trucks, of which 1.2 percent were diesel fueled; 4.1 percent being in the Truck 1 category, of which 55.0 percent were diesel fueled; and 6.1 percent classified as truck 2, of which 94.8 percent were diesel fueled. The vehicle classification mix was used in developing emission rates entered into AERMOD to determine ground level $PM_{2.5}$ concentrations from vehicle exhaust. To estimate potential incremental cancer risks and the potential for adverse chronic non-cancer health hazards to exposures, the dose through inhalation in air of TACs were calculated for the inhalation pathway. The equation for dose through inhalation (Dose-air) is as follows:

Dose-air = (C_{air} x DBR x A x EF x 10^{-6}) ;
Where:

Dose-air = Chronic daily intake, mg/kg body weight per day
C_{air} = Ground-level concentration of TAC to which the receptor is exposed, micrograms/cubic meter
DBR = Daily breathing rate, normalized to body weight (liters per kilogram body weight per day (as listed in the Table 5.6 Point Estimates of Residential Breathing Rates [OEHHA 2015]
A = Inhalation absorption factor (OEHHA recommended factor of 1)
EF = Exposure frequency, days/year (OEHHA recommended factor of 0.96 for resident and 0.68 for workers)

The 30-year residential exposure scenario is the recommended assessment scenario identified in the OEHHA guidelines, with the 9- and 70-year exposures disclosing the low and high end of risk. Exposure frequency and breathing rate represent worst-case values for these exposure parameters. In accordance with OEHHA guidelines, residents are assumed to be exposed for 24 hours per day, 350 days per year, for the exposure period. The standard worker scenario was also assessed for the commercial portion of the project. The 95th percentile breathing rate was used to calculate exposure to TACs for the purpose of calculating excess cancer risk. For the purpose of calculating chronic and acute hazard index, the upper bound breathing rate was used.

6.2.2.2 Dose–Response Assessment

The dose-response assessment is the process of characterizing the relationship between exposure to an agent and incidence of an adverse health effect in exposed populations (OEHHA 2015). The assessment involves establishing a toxicity value or criterion to use in assessing potential health risk. The toxicity criterion, or health guidance value, for carcinogens is the cancer potency factor that describes the potential risk of developing cancer over a 70-year lifetime. It is assumed in cancer risk assessments that risk is directly proportional to dose and that there is no threshold for carcinogenesis (OEHHA 2015). Cancer potency factors are typically expressed as an high end probability of developing cancer assuming continuous lifetime exposure to a substance at a dose of one milligram per kilogram of body weight, and are expressed in units of inverse dose as a potency slope [i.e., $(mg/kg/day)_{-1}$]. The cancer potency factors in this assessment have been recommended by OEHHA (OEHHA 2015).

Non-cancer health risks (chronic and acute) are characterized by comparing the exposure to a concentration at or below a level where adverse effects are not likely to occur following specified exposure conditions. These concentrations or doses are called Reference Exposure Levels (RELs). As stated in the OEHHA guidance, it should be emphasized that exceeding the REL does not necessarily indicate that an adverse health effect will occur. Unlike cancer health effects, non-cancer health effects are generally assumed to have thresholds for adverse effects. In other words, injury from a pollutant will not occur until exposure to that pollutant has reached or exceeded a certain concentration (i.e., threshold). RELs take into account the exposure of sensitive populations and are thus intended to be health protective. A Chronic REL is a level above which prolonged exposure may have an adverse health effects. An Acute REL is a level set above the level at which short-term exposure may have an adverse health effect. The Hazard Quotient (HQ) for a substance is calculated as the exposure concentration divided by the REL.

6.2.2.3 Risk Characterization

Risk characterization is the final step of risk assessment. In this step, modeled concentrations and exposure information, which are determined through the exposure assessment, are combined with potency factors and RELs that are developed through the dose-response assessment (OEHHA 2015). In this assessment, the health risk characterization process involves integrating the exposure and the cancer potency factors to estimate two levels of potential health effects: carcinogenic and non-carcinogenic. The following sections present the approach to calculating carcinogenic and non-carcinogenic risks in this assessment.

a. Carcinogenic Risk Characterization Methodology

Carcinogenic risk characterization assumed that chemicals causing cancer do not have a threshold (i.e., a carcinogen produces a risk of causing cancer at any level of exposure). It should be noted that people are exposed to numerous chemicals from natural and artificial sources, and this background exposure may exceed the risk threshold considered to be acceptable for a particular cancer-causing mechanism. Moreover, some people may be more susceptible to cancer than others, which means that background levels of exposure may already exceed the risk threshold values for those individuals and not for others that are equally exposed. Therefore, this assessment focuses on the incremental potential cancer risk associated with exposure to emissions and does not account for natural background or individual habits.

In assessing the carcinogenic effects resulting from exposures to environmental contaminants, the lifetime excess cancer risk, which is considered to be the risk of developing cancer above the background risk level, is calculated using the following equation:

Inhalation Dose (mg/kg-day) x Cancer Potency (mg/kg-day)$_{-1}$ = Cancer Risk

Cancer risk is calculated by multiplying the inhalation dose by the inhalation cancer potency factor to yield the potential inhalation excess cancer risk. For residences, the cancer risk is expressed as the increased chance of contracting cancer during a 9-year, 30-year, and 70-year exposure period for the age ranges of 0-9, 0-30, and 0-70. Each of these age groups also include the third trimester of a fetus. For a standard worker, the cancer risk is expressed as the increased chance of contracting cancer during a 25-year worker exposure period.

b. Non-carcinogenic Risk Characterization Methodology

In this analysis, non-carcinogenic impacts are evaluated for chronic exposure inhalation exposure. Estimates of health impacts from non-carcinogenic concentrations are expressed as a HQ for individual substances, such as diesel particulate. An HQ of one or less indicates that adverse health effects are not expected to result from exposure to emissions of that substance. Reference exposure levels are defined as the concentration at which no adverse health effects are anticipated. Generally, the inhalation pathway is the largest contributor to the total dose. The HQ is calculated with the flowing equation:

Ground-Level Concentration (µg/m^3)/Reference Exposure Level (µg/m^3) = Hazard Quotient

6.2.2.4 Risk Assessment Results

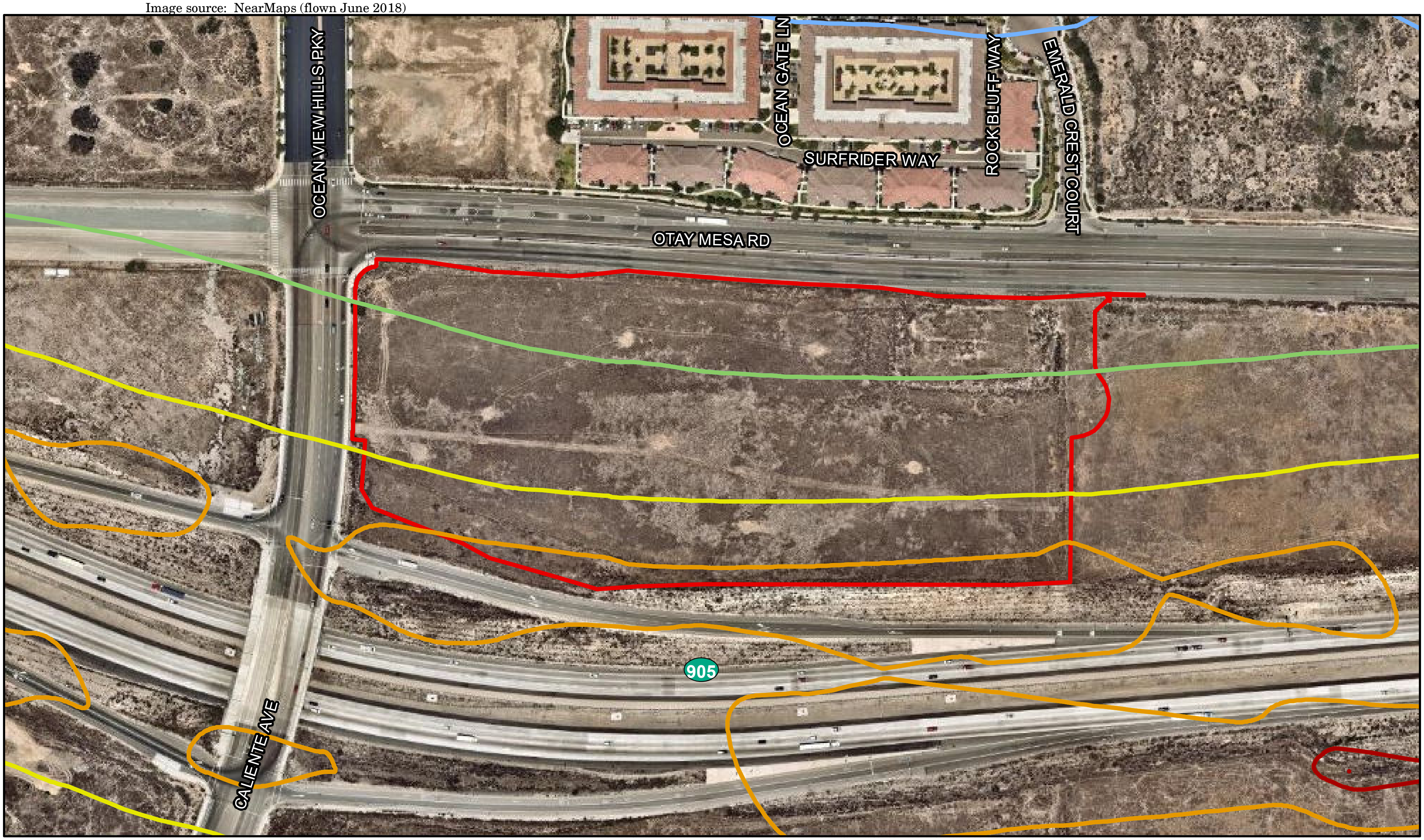
a. Cancer Risk

The highest individual excess cancer risk due to inhalation of DPM for the maximally exposed individual resident on the project site is 32.3 in a million for a 70-year exposure scenario. This point occurs in the multi-family residential dwellings immediately adjacent to SR-905. The ground-level concentration of DPM at this point is 0.04019 micrograms per cubic meter (µg/m$^{3)}$. For the 30-year residential exposure scenario, the risk at this location is 27.4 in a million. For the 9-year child residential exposure scenario, the highest individual excess cancer risk is 19.6 in a million. This concentration results in an excess cancer risk of 2.47 in a million for the standard worker. Figure 4 shows the cancer risk isopleths.

Based on studies conducted by the U.S. EPA, it is unlikely that an individual would reside in this location for the entire 70-year exposure period. Therefore, OEHHA recommends the excess cancer risk be based on a 30-year exposure, with the 9- and 70-year exposures provided for context. The risk at all other receptors is lower.

The following discussion of background risks is provided for informational purposes. Based on the CARB's *California Almanac of Emissions and Air Quality – 2009 Edition* (CARB 2009), the relative cancer risk attributable to diesel particulate emissions in San Diego County was estimated at 420 in a million for the year 2000, which represents a 52 percent drop in excess cancer risks since 1990. The reduction over time is primarily attributed to regulatory requirements and technological developments that have resulted in the reduction of toxics emitted in diesel exhaust. Based on the risk estimates, the project results of 27.4 in a million excess cancer risk for the maximally exposed individual resident in comparison with the background risks within San Diego County, this would contribute approximately 6.5 percent of the estimated existing risk to the overall cumulative risk predicted in San Diego County.

Image source: NearMaps (flown June 2018)



🟥 Project Boundary

Cancer Risk Isopleths

- 0.01 µg/m3
- 0.02 µg/m3
- 0.03 µg/m3
- 0.04 µg/m3
- 0.05 µg/m3

FIGURE 4

Cancer Risk Isopleths

M:\JOBS2\4135.1\common_gis\fig4_air.mxd 9/17/2018 sab

b. Non-Cancer Risk

Based on an annual ground level concentration of 0.04019 µg/m^3, the chronic non-cancer risk predicted at the project site was 0.008. This is below the level of 1.0 at which adverse non-cancer health risks would be anticipated.

6.3 Impact Analysis

1. Would the project obstruct or conflict with the implementation of the San Diego RAQS?

The RAQS is the applicable regional air quality plan that sets forth the SDAPCD's strategies for achieving the NAAQS and CAAQS. The SDAB is designated non-attainment for the federal and state ozone standard. Accordingly, the RAQS was developed to identify feasible emission control measures and provide expeditious progress toward attaining the standards for ozone. The two pollutants addressed in the RAQS are ROG and oxides of nitrogen (NOx), which are precursors to the formation of ozone. Projected increases in motor vehicle usage, population, and growth create challenges in controlling emissions and by extension to maintaining and improving air quality. The RAQS, in conjunction with the TCM, were most recently adopted in 2016 as the air quality plan for the region.

The growth projections used by the SDAPCD to develop the RAQS emissions budgets are based on the population, vehicle trends, and land use plans developed in general plans and used by SANDAG in the development of the regional transportation plans and sustainable communities strategy. As such, projects that propose development that is consistent with the growth anticipated by SANDAG's growth projections and/or the general plan would not conflict with the RAQS. In the event that a project would propose development that is less dense than anticipated by the growth projections, the project would likewise be consistent with the RAQS. In the event a project proposes development that is greater than anticipated in the growth projections, further analysis would be warranted to determine if the project would exceed the growth projections used in the RAQS for the specific subregional area.

The project site is designated as Commercial Employment, Retail, and Services in the City's General Plan and as Community Commercial in the Otay Mesa Community Plan. The project would require a Community Plan Amendment (CPA) to allow for the construction of a mixed-use residential and commercial project. According to the Otay Mesa CPU, the Community Commercial designation allows for shopping areas with retail, service, civic, and office uses with a floor area ratio of 0.3. Therefore, an approximately 192,000-square-foot retail use could be constructed under the adopted land use designations. Applying a trip generation rate of 120 trips per 1,000 square feet for a neighborhood shopping center (LOS Engineering, Inc. 2019), a retail use would generate 23,040 daily trips, which is significantly greater than the trips generated by the project. Therefore, the project would generate less emissions than the adopted land use designation upon which the current RAQS is based, and it can be concluded that the project would not obstruct or conflict with the implementation of the RAQS.

2. *Would the project result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?*

As shown in Table 4, project construction would not exceed the applicable regional emissions thresholds. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Therefore, as project construction emissions would be well below these limits, project construction would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations.

Long-term emissions of regional air pollutants occur from operational sources. As shown in Table 5, project operation would not exceed the applicable regional emissions thresholds. Therefore, as project operation emissions would be well below these limits, project operation would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations. Therefore, the project would result in a less than significant impact.

As discussed in Section 2.2, the FEIR prepared for the Otay Mesa CPU provides mitigation framework for projects that would result in emissions that exceed the applicable thresholds (AQ-1 and AQ-2). However, as shown in Tables 4 and 5, emissions would be less than the applicable thresholds for all criteria pollutants, and mitigation would not be required.

3. *Would the project expose sensitive receptors to substantial pollutant concentration including air toxics such as diesel particulates?*

Sensitive land uses include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities. Sensitive receptors near the project site include residential uses to the south, north, and west, and a school to the southwest.

Carbon Monoxide Hot Spots

A CO hot spot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. CO hot spots have the potential to violate state and federal CO standards at intersections, even if the broader basin is in attainment for federal and state levels. The California Department of Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) screening procedures have been utilized to determine if the project could potentially result in a CO hot spot (U.C. Davis Institute of Transportation Studies 1997). As indicated by the CO Protocol, CO hot spots occur nearly exclusively at signalized intersections operating at level of service (LOS) E or F. Accordingly, the CO Protocol recommends detailed air quality dispersion modeling for projects that may worsen traffic flow at any signalized intersections operating at LOS E or F.

Due to increased requirements for cleaner vehicles, equipment, and fuels, CO levels in the state have dropped substantially. All air basins are attainment or maintenance areas for CO. Therefore, more recent screening procedures based on more current methodologies have been developed. The Sacramento Metropolitan Air Quality Management District developed a screening threshold in 2011, which states that any project involving an intersection experiencing 31,600 vehicles per hour or more will require detailed analysis. In addition, the Bay Area Air Quality Management District developed a screening threshold in 2010 which states that any project involving an intersection experiencing 44,000 vehicles per hour would require detailed analysis. This analysis conservatively assesses potential CO hot spots using the SCAQMD screening threshold of 31,600 vehicles per hour.

Based on the Traffic Impact Analysis prepared for the project, in horizon year 2062 with the project, the intersection of Ocean View Hills Parkway at Otay Mesa Road is anticipated to operate at LOS E in the PM peak hour, and the intersection of Caliente Avenue at the SR-905 westbound ramp is anticipated to operate at LOS F in the PM peak hour. However, the traffic volumes at these intersections would be well less than 31,600 vehicles per hour. All other signalized intersections are projected to operate at LOS D or better. Therefore, the project is not anticipated to result in a CO hot spot.

Diesel Particulate Matter – Construction

Construction of the project and associated infrastructure would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Construction of the project would result in the generation of diesel-exhaust DPM emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities and on-road diesel equipment used to bring materials to and from the project site.

Generation of DPM from construction projects typically occurs in a single area for a short period. Construction is anticipated to last for approximately 18 months. The dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2015). Thus, if the duration of proposed construction activities near any specific sensitive receptor were 18 months, the exposure would be 5 percent of the total exposure period used for health risk calculation.

Therefore, DPM generated by project construction is not expected to create conditions where the probability is greater than 10 in 1 million of contracting cancer for the Maximally Exposed Individual or to generate ground-level concentrations of noncarcinogenic TACs that exceed a Hazard Index greater than 1 for the Maximally Exposed Individual. Additionally, with ongoing implementation of U.S. EPA and CARB requirements for cleaner fuels; off-road diesel engine retrofits; and new, low-emission diesel engine types, the DPM emissions of individual equipment would be substantially reduced over the years as the project construction continues. Therefore, project construction would not expose sensitive receptors to substantial pollutant concentration.

Diesel Particulate Matter – Freeway

As discussed in Section 6.2.2, a health risk assessment was prepared as a part of the Otay Mesa CPU FEIR. However, the project site was designated as a commercial use under the Otay Mesa CPU, and the residential risk was not analyzed at the site. The proposed exterior use area (park) is located more than 500 feet from the SR-905 centerline of the right-of-way, however, residential uses at the southern portion of the project site would be located within 500 feet of SR-905. A site-specific health risk assessment was prepared for the residential buildings located at the southern portion of the project site. The project-level health risk assessment conducted in this analysis was based on assumptions regarding emissions from diesel-fueled truck traffic on SR-905. To provide an estimate of emissions to estimate a 9-year, 30-year, and 70-year exposure scenarios, emission rates were calculated from the EMFAC2014 model.

Based on the predicted ground level concentrations, the excess cancer risk would be approximately 27 in a million for the maximally exposed resident and approximately 2 in a million for a standard worker, and the non-cancer chronic risk would be less than health hazard index. However, as the risk at the multi-family buildings exceeds 10 in one million, as a design feature, the project would include minimum efficiency reporting value 13 (MERV-13) filters. MERV is a rating of the effectiveness of air filters. A higher MERV rating corresponds to more particles being captured, with a MERV-16 filter capturing more than 95 percent of particles. A MERV-7 to 13 is equivalent to a high efficiency particulate air (HEPA) filter. CARB's Technical Advisory includes these high-efficiency filters as a strategy to remove pollution from the air. Particle filtration systems and devices, specifically this high-efficiency filtration with mechanical ventilation, can be highly effective for reducing indoor pollution concentrations. All units would be equipped with a heating, ventilation, and air conditioning (HVAC) unit with air filters capable of meeting MERV-13 or better. MERV-13 filters are capable of filtering particles ranging from 1.0 to 10.0 ppm in size by more than 90 percent (CARB 2017). Thus, with the provision of MERV-13 filters, the potential incremental increase in cancer risk would be reduced.

Stationary Sources

CARB provides guidance on siting land uses near major emitters or facilities of concern. These facilities include distribution centers, chrome platers, dry cleaners using percholoroethylene, and large gas stations. CARB siting constraints are summarized in Table 6.

As discussed in Section 2.2, the FEIR prepared for the Otay Mesa CPU provides mitigation framework for projects that would include or site a sensitive receptor within the buffer distances of one of these stationary source of toxic emissions (AQ-3 and AQ-4).

The project site is not located in the vicinity of the sources included in Table 6. The project proposes residential and commercial uses, and the commercial use would be a neighborhood shopping center consisting of uses such as a small grocery store and coffee shop. The project would not construct a stationary source of toxic emissions, and mitigation measures AQ-3 and AQ-4 would not apply.

Table 6
CARB Land Use Siting Constraints

Source Category	Recommended Buffer Distances (feet)
Distribution centers (that accommodate more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units per day, or where transport refrigeration unit operations exceed 300 hours per week)	1,000
Chrome platers	1,000
Dry cleaners using perchloroethylene (1 machine)	300
Dry cleaners using perchloroethylene (2 machines)	500
Dry cleaners using perchloroethylene (3 or more machines)	Requires consultation with APCD
Large gas station (3.6 million gallons or more per year)	300
Other gas stations	50

SOURCE: CARB 2005.

4. Would the project create objectionable odors affecting a substantial number of people?

The project does not include heavy industrial or agricultural uses that are typically associated with odor complaints. During construction, diesel equipment may generate some nuisance odors. Sensitive receptors near the project site include seniors within the existing retirement community; however, exposure to odors associated with project construction would be short term and temporary in nature. Impacts would be less than significant.

5. Would the project exceed 100 pounds per day of particulate matter (dust)?

As shown in Tables 4 and 5, emissions of PM_{10} during construction and operation of the project would be less than 100 pounds per day. Standard dust control measures would be implemented as a part of project construction.

6. Would the project result in substantial alteration of air movement in the area?

Local topographic variation such as that caused by the height and shape of a row of buildings can influence air movement in a given location (Boston Redevelopment Authority 1986). Alterations in the built environment may increase the dispersion of air pollutants or cause stagnation that may result in a harmful concentration of air pollutants. Urban canyons are places where the street is flanked by buildings on both sides creating a canyon-like environment. Where urban canyons are oriented perpendicular to the prevailing wind patterns, the likelihood of restricted air movement and associated pollutant accumulation may increase.

Roadways in the vicinity of the project include SR-905, Otay Mesa Road, and Caliente Avenue. Vacant parcels are located to the south, east, and west of the project site. Development is not dense enough to form an urban canyon, and buildings do not form contiguous or near contiguous frontage. The project is not anticipated to contribute to a substantial alteration of air movement that would affect air quality, and impacts would be less than significant

7.0 Conclusions

The primary goal of the RAQS is to reduce ozone precursor emissions. The project site is designated as Commercial Employment, Retail, and Services in the City's General Plan and as Community Commercial in the Otay Mesa Community Plan. The project would require a CPA to allow for the construction of a mixed-use residential and commercial project. However, the project would generate less emissions than the adopted land use designation upon which the current RAQS is based. Thus, it can be concluded that the project would not obstruct or conflict with the implementation of the RAQS.

As shown in Table 4, project construction emissions would not exceed the applicable regional emissions thresholds. These thresholds are designed to provide limits below which project emissions would not significantly change regional air quality. Therefore, as project emissions would be well below these limits, project construction would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations. Additionally, construction emissions would be temporary, intermittent, and would cease at the end of project construction.

Long-term emissions of regional air pollutants occur from operational sources. As shown in Table 5, project operational emissions would not exceed the applicable regional emissions thresholds. Therefore, as project emissions would be well below these limits, project operations would not result in regional emissions that would exceed the NAAQS or CAAQS or contribute to existing violations.

The site-specific health risk assessment was based on assumptions regarding emissions from diesel-fueled truck traffic on SR-905. Based on the predicted ground level concentrations, the excess cancer risk would be approximately 27.4 in a million for the maximally exposed resident and approximately 2 in a million for a standard worker, and the non-cancer chronic risk would be less than the health hazard index. However, as the risk at the multi-family buildings exceeds 10 in one million, as a design feature, the project would include MERV-13 filters. All units would be equipped with a HVAC unit with air filters capable of meeting MERV-13 or better. MERV-13 filters are capable of filtering particles ranging from 1.0 to 10.0 ppm in size by more than 90 percent (CARB 2017). Thus, with the provision of MERV-13 filters, the potential incremental increase in cancer risk would be reduced. It should be noted that the variability in parameters such as absorption rates, breathing rates, body weight, and frequency of exposure exists even in a narrowly defined age group or sensitive receptor subpopulation. This creates a level of uncertainty in calculating exposures and associated risks for individuals within a particular receptor population that presumably would receive the same intake doses. Thus for this analysis the OEHHA standard default factors, which represent the upper limit of these exposure parameters, generally overestimate risks. Thus, the risks reported represent an upper-bound of estimated risk and are considered conservative.

The project does not include heavy industrial or agricultural uses that are typically associated with objectionable odors. The project would involve the use of diesel-powered construction equipment. Diesel exhaust may be noticeable temporarily at adjacent properties; however, construction activities would be temporary. Therefore, odor impacts would be less than significant.

The project would not result in the generation of 100 pounds per day or more of particulate matter. Standard dust control measures would be implemented as a part of project construction.

Vacant parcels are located south, east, and west of the project site. Development is not dense enough to form an urban canyon, and buildings do not form contiguous or near contiguous frontage. The project is not anticipated to contribute to a substantial alteration of air movement that would affect air quality.

8.0 References Cited

Boston Redevelopment Authority
1986 Air Quality at Street-Level: Strategies for Urban Design. June 1986.

California Air Pollution Control Officers Association (CAPCOA)
2009 *Health Risk Assessments for Proposed Land Use Projects*. July 2009.

2017 California Emissions Estimator model (CalEEMod). User's Guide Version 2016.3.2. October, 2017.

California Air Resources Board (CARB)
2000 Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. California Air Resources Board. Stationary Source Division, Mobile Source Control Division. October.

2004 2004 Revisions to the California State Implementation Plan for Carbon Monoxide. Updated Maintenance Plan for Ten Federal Planning Areas. Adopted July 22, 2004.

2005 Air Quality and Land Use Handbook: A Community Health Perspective. California Air Resources Board. April.

2014 2014 Emission Factors Web Database model. Available at https://www.arb.ca.gov/emfac/2014/.

2016 Ambient Air Quality Standards. California Air Resources Board. May 4

2017 Technical Advisory: Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways. April 2017.

2018 California Air Quality Data Statistics. Available at http://www.arb.ca.gov/adam/welcome.html. Top 4 Summary and Hourly Listing. Accessed on June 5, 2018.

California Department of Transportation (Caltrans)
2015 2015 Annual Average Daily Truck Traffic on the California State Highway System.

LOS Engineering, Inc.
2019 Traffic Impact Analysis for the California Terraces PA-61 (Mixed-Use) Project. PTS 581648. January 14, 2019.

Office of Environmental Health Hazard Assessment (OEHHA)
2003 The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. August.

2015 Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments (Guidance Manual), February.

San Diego Air Pollution Control District (SDAPCD)
1992 1991/1992 Regional Air Quality Strategies. Air Pollution Control District. June.

2006 *Supplemental Guidelines for Submission of Air Toxics "Hot Spots" Program Health Health* [sic] *Risk Assessments (HRAs).* San Diego Air Pollution Control District. June.

2012 Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County. Adopted December 5, 2012.

2013 Air Quality in San Diego County. 2013 Annual Report.

San Diego, City of
2013 Final Program Environmental Impact Report for the Otay Mesa Community Plan Update. Project Number 30330/304032, SCH No. 2004651076. December 18.

2016 California Environmental Quality Act Significance Determination Thresholds. July.

U.S. Environmental Protection Agency (U.S. EPA)
2016 Criteria Air Pollutants, Particulate Matter. Available at https://www3.epa.gov/airquality/particlepollution/index.html. Last updated February 23.

U.C. Davis Institute of Transportation Studies
1997 Transportation Project-Level Carbon Monoxide Protocol. December. Davis, CA.

Western Regional Climate Center
2018 Western U.S. Climate Historical Summaries. Available at https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0968 and http://www.wrcc.dri.edu/cgi-bin/clilcd.pl?ca23188. Accessed on May 9, 2018.

ATTACHMENTS

ATTACHMENT 1

CalEEMod Output – Project Emissions

4135.1 PA 61

San Diego County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.19	Acre	0.19	8,276.40	0
Apartments Mid Rise	267.00	Dwelling Unit	9.84	267,000.00	764
Strip Mall	45.00	1000sqft	4.63	45,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	457.25	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Energy intensity factors updated based on SDG&E renewable procurement
(457.25, 0.018, 0.004)

Land Use - Residential - 267 units
Commercial - 45,000 sf, 4.63 acres
Park - 0.19 acres
Total Site 14.66 acres

Construction Phase - Arch coatings simultaneous with building construction

Off-road Equipment - Paving defaults

Trips and VMT -

On-road Fugitive Dust -

Architectural Coating - SDAPCD Rule 67.0.1

Vehicle Trips - Residential - 6 trips/unit
Commercial - 120 trips/ksf
Park - 50 trips/acre
5.8 mile trip length

Woodstoves - No woodstoves or fireplaces

Area Coating - SDAPCD Rule 67.0.1

Energy Use -

Water And Wastewater - CalGreen - 20% decrease in indoor water use
Residential - 13,916,899.87
Retail - 2,666,610.78

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Residential_Exterior	250	150

tblAreaCoating	Area_EF_Residential_Interior	250	100
tblConstructionPhase	NumDays	20.00	200.00
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberGas	146.85	0.00
tblFireplaces	NumberNoFireplace	26.70	267.00
tblFireplaces	NumberWood	93.45	0.00
tblLandUse	LotAcreage	7.03	9.84
tblLandUse	LotAcreage	1.03	4.63
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	457.25
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	HO_TL	7.50	5.80
tblVehicleTrips	HS_TL	7.30	5.80
tblVehicleTrips	HW_TL	10.80	5.80
tblVehicleTrips	ST_TR	6.39	6.00
tblVehicleTrips	ST_TR	22.75	50.00
tblVehicleTrips	ST_TR	42.04	120.00
tblVehicleTrips	SU_TR	5.86	6.00
tblVehicleTrips	SU_TR	16.74	50.00

tblVehicleTrips	SU_TR	20.43	120.00
tblVehicleTrips	WD_TR	6.65	6.00
tblVehicleTrips	WD_TR	1.89	50.00
tblVehicleTrips	WD_TR	44.32	120.00
tblWater	IndoorWaterUseRate	17,396,124.84	13,916,899.87
tblWater	IndoorWaterUseRate	3,333,263.47	2,666,610.78
tblWoodstoves	NumberCatalytic	13.35	0.00
tblWoodstoves	NumberNoncatalytic	13.35	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	25.0660	54.5817	33.9616	0.0636	18.2141	2.3914	20.6055	9.9699	2.2001	12.1700	0.0000	6,303.4022	6,303.4022	1.9479	0.0000	6,352.1000
2020	24.6958	25.7381	26.5941	0.0598	2.3206	1.2633	3.5839	0.6212	1.1946	1.8158	0.0000	5,888.0738	5,888.0738	0.7900	0.0000	5,907.8228
Maximum	**25.0660**	**54.5817**	**33.9616**	**0.0636**	**18.2141**	**2.3914**	**20.6055**	**9.9699**	**2.2001**	**12.1700**	**0.0000**	**6,303.4022**	**6,303.4022**	**1.9479**	**0.0000**	**6,352.1000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	25.0660	54.5817	33.9616	0.0636	18.2141	2.3914	20.6055	9.9699	2.2001	12.1700	0.0000	6,303.4022	6,303.4022	1.9479	0.0000	6,352.1000
2020	24.6958	25.7381	26.5941	0.0598	2.3206	1.2633	3.5839	0.6212	1.1946	1.8158	0.0000	5,888.0738	5,888.0738	0.7900	0.0000	5,907.8228
Maximum	**25.0660**	**54.5817**	**33.9616**	**0.0636**	**18.2141**	**2.3914**	**20.6055**	**9.9699**	**2.2001**	**12.1700**	**0.0000**	**6,303.4022**	**6,303.4022**	**1.9479**	**0.0000**	**6,352.1000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.5091	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215	0.0000	39.6734	39.6734	0.0387	0.0000	40.6409
Energy	0.0616	0.5278	0.2358	3.3600e-003		0.0425	0.0425		0.0425	0.0425		671.6595	671.6595	0.0129	0.0123	675.6508
Mobile	10.1066	37.7615	92.4620	0.2438	19.7592	0.2596	20.0188	5.2814	0.2434	5.5249		24,749.3697	24,749.3697	1.6032		24,789.4501
Total	**18.6773**	**38.5449**	**114.8035**	**0.2483**	**19.7592**	**0.4237**	**20.1829**	**5.2814**	**0.4075**	**5.6889**	**0.0000**	**25,460.7026**	**25,460.7026**	**1.6548**	**0.0123**	**25,505.7419**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.5091	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215	0.0000	39.6734	39.6734	0.0387	0.0000	40.6409
Energy	0.0616	0.5278	0.2358	3.3600e-003		0.0425	0.0425		0.0425	0.0425		671.6595	671.6595	0.0129	0.0123	675.6508
Mobile	10.1066	37.7615	92.4620	0.2438	19.7592	0.2596	20.0188	5.2814	0.2434	5.5249		24,749.3697	24,749.3697	1.6032		24,789.4501
Total	**18.6773**	**38.5449**	**114.8035**	**0.2483**	**19.7592**	**0.4237**	**20.1829**	**5.2814**	**0.4075**	**5.6889**	**0.0000**	**25,460.7026**	**25,460.7026**	**1.6548**	**0.0123**	**25,505.7419**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2019	1/14/2019	5	10	
2	Grading	Grading	1/15/2019	2/25/2019	5	30	
3	Building Construction	Building Construction	2/26/2019	4/20/2020	5	300	
4	Architectural Coating	Architectural Coating	7/16/2019	4/20/2020	5	200	
5	Paving	Paving	4/21/2020	5/18/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 540,675; Residential Outdoor: 180,225; Non-Residential Indoor: 67,500; Non-Residential Outdoor: 22,500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	210.00	37.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	42.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.452 9	3,766.452 9	1.1917		3,796.244 5
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.452 9**	**3,766.452 9**	**1.1917**		**3,796.244 5**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0799	0.0554	0.5263	1.4800e-003	0.1479	1.0500e-003	0.1489	0.0392	9.7000e-004	0.0402		147.0445	147.0445	4.7400e-003		147.1631
Total	**0.0799**	**0.0554**	**0.5263**	**1.4800e-003**	**0.1479**	**1.0500e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**147.0445**	**147.0445**	**4.7400e-003**		**147.1631**

3.2 Site Preparation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.452 9	3,766.452 9	1.1917		3,796.244 5
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**	**0.0000**	**3,766.452 9**	**3,766.452 9**	**1.1917**		**3,796.244 5**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0799	0.0554	0.5263	1.4800e-003	0.1479	1.0500e-003	0.1489	0.0392	9.7000e-004	0.0402		147.0445	147.0445	4.7400e-003		147.1631
Total	**0.0799**	**0.0554**	**0.5263**	**1.4800e-003**	**0.1479**	**1.0500e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**147.0445**	**147.0445**	**4.7400e-003**		**147.1631**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0888	0.0616	0.5848	1.6400e-003	0.1643	1.1700e-003	0.1655	0.0436	1.0800e-003	0.0447		163.3828	163.3828	5.2700e-003		163.5146
Total	**0.0888**	**0.0616**	**0.5848**	**1.6400e-003**	**0.1643**	**1.1700e-003**	**0.1655**	**0.0436**	**1.0800e-003**	**0.0447**		**163.3828**	**163.3828**	**5.2700e-003**		**163.5146**

3.3 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0888	0.0616	0.5848	1.6400e-003	0.1643	1.1700e-003	0.1655	0.0436	1.0800e-003	0.0447		163.3828	163.3828	5.2700e-003		163.5146
Total	**0.0888**	**0.0616**	**0.5848**	**1.6400e-003**	**0.1643**	**1.1700e-003**	**0.1655**	**0.0436**	**1.0800e-003**	**0.0447**		**163.3828**	**163.3828**	**5.2700e-003**		**163.5146**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1776	4.5913	1.3131	9.9600e-003	0.2505	0.0325	0.2830	0.0721	0.0311	0.1032		1,067.4509	1,067.4509	0.0900		1,069.6998
Worker	0.9326	0.6463	6.1403	0.0172	1.7251	0.0123	1.7374	0.4576	0.0113	0.4689		1,715.5189	1,715.5189	0.0554		1,716.9027
Total	**1.1102**	**5.2375**	**7.4534**	**0.0272**	**1.9756**	**0.0448**	**2.0204**	**0.5297**	**0.0424**	**0.5721**		**2,782.9698**	**2,782.9698**	**0.1453**		**2,786.6026**

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1776	4.5913	1.3131	9.9600e-003	0.2505	0.0325	0.2830	0.0721	0.0311	0.1032		1,067.4509	1,067.4509	0.0900		1,069.6998
Worker	0.9326	0.6463	6.1403	0.0172	1.7251	0.0123	1.7374	0.4576	0.0113	0.4689		1,715.5189	1,715.5189	0.0554		1,716.9027
Total	**1.1102**	**5.2375**	**7.4534**	**0.0272**	**1.9756**	**0.0448**	**2.0204**	**0.5297**	**0.0424**	**0.5721**		**2,782.9698**	**2,782.9698**	**0.1453**		**2,786.6026**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1448	4.1687	1.1796	9.8700e-003	0.2505	0.0208	0.2713	0.0721	0.0199	0.0920		1,059.9102	1,059.9102	0.0853		1,062.0424
Worker	0.8728	0.5830	5.6122	0.0167	1.7251	0.0121	1.7372	0.4576	0.0112	0.4687		1,661.3771	1,661.3771	0.0500		1,662.6276
Total	**1.0176**	**4.7517**	**6.7918**	**0.0265**	**1.9756**	**0.0329**	**2.0085**	**0.5297**	**0.0311**	**0.5607**		**2,721.2873**	**2,721.2873**	**0.1353**		**2,724.6700**

3.4 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1448	4.1687	1.1796	9.8700e-003	0.2505	0.0208	0.2713	0.0721	0.0199	0.0920		1,059.9102	1,059.9102	0.0853		1,062.0424
Worker	0.8728	0.5830	5.6122	0.0167	1.7251	0.0121	1.7372	0.4576	0.0112	0.4687		1,661.3771	1,661.3771	0.0500		1,662.6276
Total	**1.0176**	**4.7517**	**6.7918**	**0.0265**	**1.9756**	**0.0329**	**2.0085**	**0.5297**	**0.0311**	**0.5607**		**2,721.2873**	**2,721.2873**	**0.1353**		**2,724.6700**

3.5 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.1417					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**21.4081**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1865	0.1293	1.2281	3.4400e-003	0.3450	2.4600e-003	0.3475	0.0915	2.2700e-003	0.0938		343.1038	343.1038	0.0111		343.3806
Total	**0.1865**	**0.1293**	**1.2281**	**3.4400e-003**	**0.3450**	**2.4600e-003**	**0.3475**	**0.0915**	**2.2700e-003**	**0.0938**		**343.1038**	**343.1038**	**0.0111**		**343.3806**

3.5 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.1417					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**21.4081**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1865	0.1293	1.2281	3.4400e-003	0.3450	2.4600e-003	0.3475	0.0915	2.2700e-003	0.0938		343.1038	343.1038	0.0111		343.3806
Total	**0.1865**	**0.1293**	**1.2281**	**3.4400e-003**	**0.3450**	**2.4600e-003**	**0.3475**	**0.0915**	**2.2700e-003**	**0.0938**		**343.1038**	**343.1038**	**0.0111**		**343.3806**

3.5 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.1417					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**21.3839**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1746	0.1166	1.1224	3.3300e-003	0.3450	2.4200e-003	0.3474	0.0915	2.2300e-003	0.0938		332.2754	332.2754	0.0100		332.5255
Total	**0.1746**	**0.1166**	**1.1224**	**3.3300e-003**	**0.3450**	**2.4200e-003**	**0.3474**	**0.0915**	**2.2300e-003**	**0.0938**		**332.2754**	**332.2754**	**0.0100**		**332.5255**

3.5 Architectural Coating - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.1417					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**21.3839**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1746	0.1166	1.1224	3.3300e-003	0.3450	2.4200e-003	0.3474	0.0915	2.2300e-003	0.0938		332.2754	332.2754	0.0100		332.5255
Total	**0.1746**	**0.1166**	**1.1224**	**3.3300e-003**	**0.3450**	**2.4200e-003**	**0.3474**	**0.0915**	**2.2300e-003**	**0.0938**		**332.2754**	**332.2754**	**0.0100**		**332.5255**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0623	0.0416	0.4009	1.1900e-003	0.1232	8.6000e-004	0.1241	0.0327	8.0000e-004	0.0335		118.6698	118.6698	3.5700e-003		118.7591
Total	**0.0623**	**0.0416**	**0.4009**	**1.1900e-003**	**0.1232**	**8.6000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**118.6698**	**118.6698**	**3.5700e-003**		**118.7591**

3.6 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926	0.0000	2,207.733 4	2,207.733 4	0.7140		2,225.584 1
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**	**0.0000**	**2,207.733 4**	**2,207.733 4**	**0.7140**		**2,225.584 1**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0623	0.0416	0.4009	1.1900e-003	0.1232	8.6000e-004	0.1241	0.0327	8.0000e-004	0.0335		118.6698	118.6698	3.5700e-003		118.7591
Total	**0.0623**	**0.0416**	**0.4009**	**1.1900e-003**	**0.1232**	**8.6000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**118.6698**	**118.6698**	**3.5700e-003**		**118.7591**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	10.1066	37.7615	92.4620	0.2438	19.7592	0.2596	20.0188	5.2814	0.2434	5.5249		24,749.3697	24,749.3697	1.6032		24,789.4501
Unmitigated	10.1066	37.7615	92.4620	0.2438	19.7592	0.2596	20.0188	5.2814	0.2434	5.5249		24,749.3697	24,749.3697	1.6032		24,789.4501

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,602.00	1,602.00	1602.00	3,003,401	3,003,401
City Park	9.50	9.50	9.50	14,662	14,662
Strip Mall	5,400.00	5,400.00	5400.00	6,299,748	6,299,748
Total	7,011.50	7,011.50	7,011.50	9,317,811	9,317,811

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	5.80	5.80	5.80	41.60	18.80	39.60	86	11	3
City Park	5.80	5.80	5.80	33.00	48.00	19.00	66	28	6
Strip Mall	5.80	5.80	5.80	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271
City Park	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271
Strip Mall	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0616	0.5278	0.2358	3.3600e-003		0.0425	0.0425		0.0425	0.0425		671.6595	671.6595	0.0129	0.0123	675.6508
NaturalGas Unmitigated	0.0616	0.5278	0.2358	3.3600e-003		0.0425	0.0425		0.0425	0.0425		671.6595	671.6595	0.0129	0.0123	675.6508

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	5434.17	0.0586	0.5008	0.2131	3.2000e-003		0.0405	0.0405		0.0405	0.0405		639.3146	639.3146	0.0123	0.0117	643.1137
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	274.932	2.9600e-003	0.0270	0.0226	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3449	32.3449	6.2000e-004	5.9000e-004	32.5371
Total		**0.0616**	**0.5278**	**0.2357**	**3.3600e-003**		**0.0425**	**0.0425**		**0.0425**	**0.0425**		**671.6595**	**671.6595**	**0.0129**	**0.0123**	**675.6508**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	5.43417	0.0586	0.5008	0.2131	3.2000e-003		0.0405	0.0405		0.0405	0.0405		639.3146	639.3146	0.0123	0.0117	643.1137
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.274932	2.9600e-003	0.0270	0.0226	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3449	32.3449	6.2000e-004	5.9000e-004	32.5371
Total		**0.0616**	**0.5278**	**0.2357**	**3.3600e-003**		**0.0425**	**0.0425**		**0.0425**	**0.0425**		**671.6595**	**671.6595**	**0.0129**	**0.0123**	**675.6508**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.5091	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215	0.0000	39.6734	39.6734	0.0387	0.0000	40.6409
Unmitigated	8.5091	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215	0.0000	39.6734	39.6734	0.0387	0.0000	40.6409

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1585					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.6772					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6734	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215		39.6734	39.6734	0.0387		40.6409
Total	**8.5091**	**0.2557**	**22.1057**	**1.1600e-003**		**0.1215**	**0.1215**		**0.1215**	**0.1215**	**0.0000**	**39.6734**	**39.6734**	**0.0387**	**0.0000**	**40.6409**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1585					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.6772					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6734	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215		39.6734	39.6734	0.0387		40.6409
Total	**8.5091**	**0.2557**	**22.1057**	**1.1600e-003**		**0.1215**	**0.1215**		**0.1215**	**0.1215**	**0.0000**	**39.6734**	**39.6734**	**0.0387**	**0.0000**	**40.6409**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

4135.1 PA 61

San Diego County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.19	Acre	0.19	8,276.40	0
Apartments Mid Rise	267.00	Dwelling Unit	9.84	267,000.00	764
Strip Mall	45.00	1000sqft	4.63	45,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	457.25	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Energy intensity factors updated based on SDG&E renewable procurement
(457.25, 0.018, 0.004)

Land Use - Residential - 267 units
Commercial - 45,000 sf, 4.63 acres
Park - 0.19 acres
Total Site 14.66 acres

Construction Phase - Arch coatings simultaneous with building construction

Off-road Equipment - Paving defaults

Trips and VMT -

On-road Fugitive Dust -

Architectural Coating - SDAPCD Rule 67.0.1

Vehicle Trips - Residential - 6 trips/unit
Commercial - 120 trips/ksf
Park - 50 trips/acre
5.8 mile trip length

Woodstoves - No woodstoves or fireplaces

Area Coating - SDAPCD Rule 67.0.1

Energy Use -

Water And Wastewater - CalGreen - 20% decrease in indoor water use
Residential - 13,916,899.87
Retail - 2,666,610.78

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Residential_Exterior	250	150

tblAreaCoating	Area_EF_Residential_Interior	250	100
tblConstructionPhase	NumDays	20.00	200.00
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberGas	146.85	0.00
tblFireplaces	NumberNoFireplace	26.70	267.00
tblFireplaces	NumberWood	93.45	0.00
tblLandUse	LotAcreage	7.03	9.84
tblLandUse	LotAcreage	1.03	4.63
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	457.25
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	HO_TL	7.50	5.80
tblVehicleTrips	HS_TL	7.30	5.80
tblVehicleTrips	HW_TL	10.80	5.80
tblVehicleTrips	ST_TR	6.39	6.00
tblVehicleTrips	ST_TR	22.75	50.00
tblVehicleTrips	ST_TR	42.04	120.00
tblVehicleTrips	SU_TR	5.86	6.00
tblVehicleTrips	SU_TR	16.74	50.00

tblVehicleTrips	SU_TR	20.43	120.00
tblVehicleTrips	WD_TR	6.65	6.00
tblVehicleTrips	WD_TR	1.89	50.00
tblVehicleTrips	WD_TR	44.32	120.00
tblWater	IndoorWaterUseRate	17,396,124.84	13,916,899.87
tblWater	IndoorWaterUseRate	3,333,263.47	2,666,610.78
tblWoodstoves	NumberCatalytic	13.35	0.00
tblWoodstoves	NumberNoncatalytic	13.35	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	24.9291	54.5750	33.9956	0.0638	18.2141	2.3914	20.6055	9.9699	2.2001	12.1700	0.0000	6,314.0594	6,314.0594	1.9482	0.0000	6,362.7643
2020	24.5667	25.6650	26.8860	0.0613	2.3206	1.2629	3.5835	0.6212	1.1942	1.8154	0.0000	6,046.1820	6,046.1820	0.7883	0.0000	6,065.8900
Maximum	**24.9291**	**54.5750**	**33.9956**	**0.0638**	**18.2141**	**2.3914**	**20.6055**	**9.9699**	**2.2001**	**12.1700**	**0.0000**	**6,314.0594**	**6,314.0594**	**1.9482**	**0.0000**	**6,362.7643**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	24.9291	54.5750	33.9956	0.0638	18.2141	2.3914	20.6055	9.9699	2.2001	12.1700	0.0000	6,314.0594	6,314.0594	1.9482	0.0000	6,362.7643
2020	24.5667	25.6650	26.8860	0.0613	2.3206	1.2629	3.5835	0.6212	1.1942	1.8154	0.0000	6,046.1820	6,046.1820	0.7883	0.0000	6,065.8900
Maximum	**24.9291**	**54.5750**	**33.9956**	**0.0638**	**18.2141**	**2.3914**	**20.6055**	**9.9699**	**2.2001**	**12.1700**	**0.0000**	**6,314.0594**	**6,314.0594**	**1.9482**	**0.0000**	**6,362.7643**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.5091	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215	0.0000	39.6734	39.6734	0.0387	0.0000	40.6409
Energy	0.0616	0.5278	0.2358	3.3600e-003		0.0425	0.0425		0.0425	0.0425		671.6595	671.6595	0.0129	0.0123	675.6508
Mobile	10.4102	37.1496	89.1514	0.2575	19.7592	0.2563	20.0155	5.2814	0.2403	5.5217		26,152.4996	26,152.4996	1.5589		26,191.4719
Total	**18.9809**	**37.9330**	**111.4929**	**0.2620**	**19.7592**	**0.4204**	**20.1796**	**5.2814**	**0.4044**	**5.6858**	**0.0000**	**26,863.8324**	**26,863.8324**	**1.6105**	**0.0123**	**26,907.7636**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.5091	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215	0.0000	39.6734	39.6734	0.0387	0.0000	40.6409
Energy	0.0616	0.5278	0.2358	3.3600e-003		0.0425	0.0425		0.0425	0.0425		671.6595	671.6595	0.0129	0.0123	675.6508
Mobile	10.4102	37.1496	89.1514	0.2575	19.7592	0.2563	20.0155	5.2814	0.2403	5.5217		26,152.4996	26,152.4996	1.5589		26,191.4719
Total	**18.9809**	**37.9330**	**111.4929**	**0.2620**	**19.7592**	**0.4204**	**20.1796**	**5.2814**	**0.4044**	**5.6858**	**0.0000**	**26,863.8324**	**26,863.8324**	**1.6105**	**0.0123**	**26,907.7636**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2019	1/14/2019	5	10	
2	Grading	Grading	1/15/2019	2/25/2019	5	30	
3	Building Construction	Building Construction	2/26/2019	4/20/2020	5	300	
4	Architectural Coating	Architectural Coating	7/16/2019	4/20/2020	5	200	
5	Paving	Paving	4/21/2020	5/18/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 540,675; Residential Outdoor: 180,225; Non-Residential Indoor: 67,500; Non-Residential Outdoor: 22,500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	210.00	37.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	42.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0707	0.0493	0.5569	1.5700e-003	0.1479	1.0500e-003	0.1489	0.0392	9.7000e-004	0.0402		156.6359	156.6359	5.0000e-003		156.7610
Total	**0.0707**	**0.0493**	**0.5569**	**1.5700e-003**	**0.1479**	**1.0500e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**156.6359**	**156.6359**	**5.0000e-003**		**156.7610**

3.2 Site Preparation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0707	0.0493	0.5569	1.5700e-003	0.1479	1.0500e-003	0.1489	0.0392	9.7000e-004	0.0402		156.6359	156.6359	5.0000e-003		156.7610
Total	**0.0707**	**0.0493**	**0.5569**	**1.5700e-003**	**0.1479**	**1.0500e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**156.6359**	**156.6359**	**5.0000e-003**		**156.7610**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0785	0.0548	0.6188	1.7500e-003	0.1643	1.1700e-003	0.1655	0.0436	1.0800e-003	0.0447		174.0399	174.0399	5.5600e-003		174.1789
Total	**0.0785**	**0.0548**	**0.6188**	**1.7500e-003**	**0.1643**	**1.1700e-003**	**0.1655**	**0.0436**	**1.0800e-003**	**0.0447**		**174.0399**	**174.0399**	**5.5600e-003**		**174.1789**

3.3 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0785	0.0548	0.6188	1.7500e-003	0.1643	1.1700e-003	0.1655	0.0436	1.0800e-003	0.0447		174.0399	174.0399	5.5600e-003		174.1789
Total	**0.0785**	**0.0548**	**0.6188**	**1.7500e-003**	**0.1643**	**1.1700e-003**	**0.1655**	**0.0436**	**1.0800e-003**	**0.0447**		**174.0399**	**174.0399**	**5.5600e-003**		**174.1789**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1703	4.5875	1.1844	0.0102	0.2505	0.0319	0.2824	0.0721	0.0305	0.1026		1,095.2615	1,095.2615	0.0846		1,097.3756
Worker	0.8246	0.5755	6.4977	0.0184	1.7251	0.0123	1.7374	0.4576	0.0113	0.4689		1,827.4192	1,827.4192	0.0584		1,828.8781
Total	**0.9949**	**5.1630**	**7.6820**	**0.0286**	**1.9756**	**0.0442**	**2.0198**	**0.5297**	**0.0419**	**0.5716**		**2,922.6808**	**2,922.6808**	**0.1429**		**2,926.2536**

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1703	4.5875	1.1844	0.0102	0.2505	0.0319	0.2824	0.0721	0.0305	0.1026		1,095.2615	1,095.2615	0.0846		1,097.3756
Worker	0.8246	0.5755	6.4977	0.0184	1.7251	0.0123	1.7374	0.4576	0.0113	0.4689		1,827.4192	1,827.4192	0.0584		1,828.8781
Total	**0.9949**	**5.1630**	**7.6820**	**0.0286**	**1.9756**	**0.0442**	**2.0198**	**0.5297**	**0.0419**	**0.5716**		**2,922.6808**	**2,922.6808**	**0.1429**		**2,926.2536**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1383	4.1721	1.0629	0.0101	0.2505	0.0204	0.2709	0.0721	0.0195	0.0916		1,087.9483	1,087.9483	0.0803		1,089.9548
Worker	0.7706	0.5192	5.9526	0.0178	1.7251	0.0121	1.7372	0.4576	0.0112	0.4687		1,769.7688	1,769.7688	0.0528		1,771.0899
Total	**0.9089**	**4.6913**	**7.0155**	**0.0279**	**1.9756**	**0.0325**	**2.0081**	**0.5297**	**0.0307**	**0.5604**		**2,857.7171**	**2,857.7171**	**0.1331**		**2,861.0447**

3.4 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1383	4.1721	1.0629	0.0101	0.2505	0.0204	0.2709	0.0721	0.0195	0.0916		1,087.9483	1,087.9483	0.0803		1,089.9548
Worker	0.7706	0.5192	5.9526	0.0178	1.7251	0.0121	1.7372	0.4576	0.0112	0.4687		1,769.7688	1,769.7688	0.0528		1,771.0899
Total	**0.9089**	**4.6913**	**7.0155**	**0.0279**	**1.9756**	**0.0325**	**2.0081**	**0.5297**	**0.0307**	**0.5604**		**2,857.7171**	**2,857.7171**	**0.1331**		**2,861.0447**

3.5 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.1417					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		282.0423
Total	**21.4081**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**282.0423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1649	0.1151	1.2995	3.6700e-003	0.3450	2.4600e-003	0.3475	0.0915	2.2700e-003	0.0938		365.4839	365.4839	0.0117		365.7756
Total	**0.1649**	**0.1151**	**1.2995**	**3.6700e-003**	**0.3450**	**2.4600e-003**	**0.3475**	**0.0915**	**2.2700e-003**	**0.0938**		**365.4839**	**365.4839**	**0.0117**		**365.7756**

3.5 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.1417					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		282.0423
Total	**21.4081**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**282.0423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1649	0.1151	1.2995	3.6700e-003	0.3450	2.4600e-003	0.3475	0.0915	2.2700e-003	0.0938		365.4839	365.4839	0.0117		365.7756
Total	**0.1649**	**0.1151**	**1.2995**	**3.6700e-003**	**0.3450**	**2.4600e-003**	**0.3475**	**0.0915**	**2.2700e-003**	**0.0938**		**365.4839**	**365.4839**	**0.0117**		**365.7756**

3.5 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.1417					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**21.3839**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1541	0.1038	1.1905	3.5500e-003	0.3450	2.4200e-003	0.3474	0.0915	2.2300e-003	0.0938		353.9538	353.9538	0.0106		354.2180
Total	**0.1541**	**0.1038**	**1.1905**	**3.5500e-003**	**0.3450**	**2.4200e-003**	**0.3474**	**0.0915**	**2.2300e-003**	**0.0938**		**353.9538**	**353.9538**	**0.0106**		**354.2180**

3.5 Architectural Coating - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.1417					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**21.3839**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1541	0.1038	1.1905	3.5500e-003	0.3450	2.4200e-003	0.3474	0.0915	2.2300e-003	0.0938		353.9538	353.9538	0.0106		354.2180
Total	**0.1541**	**0.1038**	**1.1905**	**3.5500e-003**	**0.3450**	**2.4200e-003**	**0.3474**	**0.0915**	**2.2300e-003**	**0.0938**		**353.9538**	**353.9538**	**0.0106**		**354.2180**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/day								lb/day			
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					lb/day								lb/day			
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0550	0.0371	0.4252	1.2700e-003	0.1232	8.6000e-004	0.1241	0.0327	8.0000e-004	0.0335		126.4121	126.4121	3.7700e-003		126.5064
Total	**0.0550**	**0.0371**	**0.4252**	**1.2700e-003**	**0.1232**	**8.6000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**126.4121**	**126.4121**	**3.7700e-003**		**126.5064**

3.6 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926	0.0000	2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**	**0.0000**	**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0550	0.0371	0.4252	1.2700e-003	0.1232	8.6000e-004	0.1241	0.0327	8.0000e-004	0.0335		126.4121	126.4121	3.7700e-003		126.5064
Total	**0.0550**	**0.0371**	**0.4252**	**1.2700e-003**	**0.1232**	**8.6000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**126.4121**	**126.4121**	**3.7700e-003**		**126.5064**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	10.4102	37.1496	89.1514	0.2575	19.7592	0.2563	20.0155	5.2814	0.2403	5.5217		26,152.4996	26,152.4996	1.5589		26,191.4719
Unmitigated	10.4102	37.1496	89.1514	0.2575	19.7592	0.2563	20.0155	5.2814	0.2403	5.5217		26,152.4996	26,152.4996	1.5589		26,191.4719

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,602.00	1,602.00	1602.00	3,003,401	3,003,401
City Park	9.50	9.50	9.50	14,662	14,662
Strip Mall	5,400.00	5,400.00	5400.00	6,299,748	6,299,748
Total	7,011.50	7,011.50	7,011.50	9,317,811	9,317,811

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	5.80	5.80	5.80	41.60	18.80	39.60	86	11	3
City Park	5.80	5.80	5.80	33.00	48.00	19.00	66	28	6
Strip Mall	5.80	5.80	5.80	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271
City Park	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271
Strip Mall	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0616	0.5278	0.2358	3.3600e-003		0.0425	0.0425		0.0425	0.0425		671.6595	671.6595	0.0129	0.0123	675.6508
NaturalGas Unmitigated	0.0616	0.5278	0.2358	3.3600e-003		0.0425	0.0425		0.0425	0.0425		671.6595	671.6595	0.0129	0.0123	675.6508

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	5434.17	0.0586	0.5008	0.2131	3.2000e-003		0.0405	0.0405		0.0405	0.0405		639.3146	639.3146	0.0123	0.0117	643.1137
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	274.932	2.9600e-003	0.0270	0.0226	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3449	32.3449	6.2000e-004	5.9000e-004	32.5371
Total		**0.0616**	**0.5278**	**0.2357**	**3.3600e-003**		**0.0425**	**0.0425**		**0.0425**	**0.0425**		**671.6595**	**671.6595**	**0.0129**	**0.0123**	**675.6508**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	5.43417	0.0586	0.5008	0.2131	3.2000e-003		0.0405	0.0405		0.0405	0.0405		639.3146	639.3146	0.0123	0.0117	643.1137
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.274932	2.9600e-003	0.0270	0.0226	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003		32.3449	32.3449	6.2000e-004	5.9000e-004	32.5371
Total		**0.0616**	**0.5278**	**0.2357**	**3.3600e-003**		**0.0425**	**0.0425**		**0.0425**	**0.0425**		**671.6595**	**671.6595**	**0.0129**	**0.0123**	**675.6508**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.5091	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215	0.0000	39.6734	39.6734	0.0387	0.0000	40.6409
Unmitigated	8.5091	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215	0.0000	39.6734	39.6734	0.0387	0.0000	40.6409

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1585					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.6772					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6734	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215		39.6734	39.6734	0.0387		40.6409
Total	**8.5091**	**0.2557**	**22.1057**	**1.1600e-003**		**0.1215**	**0.1215**		**0.1215**	**0.1215**	**0.0000**	**39.6734**	**39.6734**	**0.0387**	**0.0000**	**40.6409**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1585					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.6772					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6734	0.2557	22.1057	1.1600e-003		0.1215	0.1215		0.1215	0.1215		39.6734	39.6734	0.0387		40.6409
Total	**8.5091**	**0.2557**	**22.1057**	**1.1600e-003**		**0.1215**	**0.1215**		**0.1215**	**0.1215**	**0.0000**	**39.6734**	**39.6734**	**0.0387**	**0.0000**	**40.6409**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT 2

Health Risk Assessment Calculations

4135.1 California Terraces PA61
Cancer Risk Calculation

Max Concentration: 0.04019

Onsite Maximum Exposure	**Resident**						**Standard Worker**
	3rd Trimester	**0<2**	**2<9**	**2<16**	**16<30**	**16-70**	**16-70**
Cair	4.02E-02	4.02E-02	4.02E-02	4.02E-02	4.02E-02	4.02E-02	0.04019
DBR	361	1090	861	745	335	290	1
A	1	1	1	1	1	1	230
EF	0.96	0.96	0.96	0.96	0.96	0.96	1
Dose-air	1.39E-05	4.21E-05	3.32E-05	2.87E-05	1.29E-05	1.12E-05	0.68
CPF	1.10	1.10	1.10	1.10	1.10	1.10	0.0000
ASF	10	10	3	3	1	1	1.10
ED	0.25	2	7	14	14	54	1
AT	70	70	70	70	70	70	25
FAH	0.85	0.85	0.72	0.72	0.73	0.73	70
Risk in 1 mill	**0.47**	**11.23**	**7.89**	**13.66**	**2.08**	**6.93**	**2.47**
	5.00	5.00	5.00	5.00	5.00	5.00	5.0
Chronic Exposure	**0.0080**	**0.0080**	**0.0080**	**0.0080**	**0.0080**	**0.0080**	**0.0080**

0-9	19.59	9.25
0-30	27.43	30.25
0-70	32.29	70.25

4135.1 California Terraces PA61
HRA Traffic

SANDAG Series 13 Traffic Data		Traffic Year		
Segment	2012	2020	2035	2050
SR 905 WB	35,200	38,600	48,500	58,500
SR 905 WB Off-Ramp	500	1,700	3,200	4,900
SR 905 WB On-Ramp	4,400	7,500	12,600	11,700
SR 905 EB	37,100	39,300	48,200	49,800
SR 905 EB Off-Ramp	5,000	7,500	11,400	10,600
SR 905 EB On-Ramp	400	2,000	4,300	4,000
Total	82,600	96,600	128,200	139,500

Caltrans Truck Report			T1		T2 Trucks		T2 Total
Segment	Total	Trucks	2	3	4	5+	3+
SR-905 at I-805 B	64,000	5,184	2,685	809	161	1,529	2,499
SR-905 at I-805 A	79,000	9,392	3,213	923	378	4,878	6,179
Sum	143,000	14,576	5,900	1,735	543	6,407	8,678
Ratios	89.81%	10.19%	4.13%	0.0121	0.0038	0.0448	6.07%

SANDAG 2050 Series 13 Average	111,725

CT-EMFAC	2018	2020	2035	2050	
DPM Emission	374.00	241.30	42.20	33.4	g/day
DPM Emission	0.0043287	0.002793	0.000488	0.000387	g/s
Average Emission Rate	0.00199913	g/s			

Volume Source Dimension	60.000	meters
Volume Source Dimension	182.88	feet
Volume Source Dimension	0.0346	miles

```
↑ *** AERMOD - VERSION 16216r ***   *** C:\AERSCREEN\4135.1\PA61\PA61.isc
                          ***       06/04/18
 *** AERMET - VERSION  16216 ***    ***
                        ***       15:44:24

                                    PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                             ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for    38 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =      3000.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
         ADJ_U*   - Use ADJ_U* BETA option for SBL in AERMET
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM_2.5

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:     38 Source(s);       1 Source Group(s); and    1774
Receptor(s)

                with:      0 POINT(s), including
```

```
                    0 POINTCAP(s) and      0 POINTHOR(s)
          and:     38 VOLUME source(s)
          and:      0 AREA type source(s)
          and:      0 LINE source(s)
          and:      0 OPENPIT source(s)
          and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE 
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE 
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing 
Hours
                                                                 b for Both Calm 
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    49.00 ;  Decay 
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                               ; 
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.7 MB of RAM.

 **Detailed Error/Message File:   PA61.err

 **File for Summary of Results:   PA61.sum

↑ *** AERMOD - VERSION 16216r ***   *** C:\AERSCREEN\4135.1\PA61\PA61.isc
                          ***        06/04/18
 *** AERMET - VERSION  16216 ***   ***                                      
                        ***        15:44:24

                                   PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                            *** METEOROLOGICAL DAYS SELECTED FOR 
PROCESSING ***
                                                               (1=YES; 0=NO)
```

```
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                          (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,
10.80,
↑ *** AERMOD - VERSION 16216r ***   *** C:\AERSCREEN\4135.1\PA61\PA61.isc
                          ***       06/04/18
 *** AERMET - VERSION  16216 ***   ***
                        ***       15:44:24

                                   PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   N:\AIR_GHG_NOISE_Technical\001_AIR\HRA\AERMOD Met Data\Chula
Vista 2010-2012\CVA   Met Version:  16216
   Profile file:   N:\AIR_GHG_NOISE_Technical\001_AIR\HRA\AERMOD Met Data\Chula
Vista 2010-2012\CVA
   Surface format: FREE

   Profile format: FREE

   Surface station no.:    23188                  Upper air station no.:     3190
```

```
                  Name: SAN_DIEGO/LINDBERGH_FIELD                  Name: UNKNOWN

                  Year:   2010                                     Year:   2010

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 10 01 01   1 01   -5.7  0.108 -9.000 -9.000 -999.   85.     20.1  0.42   1.07
1.00    0.89   48.   10.0  283.1   10.0
 10 01 01   1 02   -6.5  0.116 -9.000 -9.000 -999.   94.     21.6  0.48   1.07
1.00    0.89   62.   10.0  283.1   10.0
 10 01 01   1 03   -5.7  0.108 -9.000 -9.000 -999.   85.     20.1  0.42   1.07
1.00    0.89   45.   10.0  282.5   10.0
 10 01 01   1 04   -6.5  0.116 -9.000 -9.000 -999.   94.     21.5  0.48   1.07
1.00    0.89   79.   10.0  281.9   10.0
 10 01 01   1 05   -1.8  0.072 -9.000 -9.000 -999.   47.     19.3  0.34   1.07
1.00    0.44  356.   10.0  280.9   10.0
 10 01 01   1 06   -5.7  0.108 -9.000 -9.000 -999.   85.     20.0  0.42   1.07
1.00    0.89   45.   10.0  280.9   10.0
 10 01 01   1 07   -5.7  0.108 -9.000 -9.000 -999.   85.     20.1  0.42   1.07
1.00    0.89   47.   10.0  281.9   10.0
 10 01 01   1 08   -4.9  0.117 -9.000 -9.000 -999.   97.     29.7  0.48   1.07
0.49    0.89   78.   10.0  282.5   10.0
 10 01 01   1 09   20.0  0.132  0.299  0.009   48.  115.    -10.4  0.25   1.07
0.30    0.89   24.   10.0  286.4   10.0
 10 01 01   1 10   62.9  0.163  0.574  0.009  109.  158.     -6.3  0.34   1.07
0.23    0.89  351.   10.0  288.1   10.0
 10 01 01   1 11   61.6  0.261  0.739  0.008  237.  320.    -26.1  0.35   1.07
0.21    1.78  311.   10.0  290.9   10.0
 10 01 01   1 12   70.0  0.312  0.881  0.008  354.  419.    -39.4  0.35   1.07
0.20    2.23  313.   10.0  292.5   10.0
 10 01 01   1 13   69.3  0.264  0.945  0.008  441.  326.    -23.9  0.35   1.07
0.20    1.78  305.   10.0  293.6   10.0
 10 01 01   1 14   59.8  0.310  0.942  0.008  504.  414.    -44.9  0.35   1.07
0.21    2.23  278.   10.0  294.8   10.0
 10 01 01   1 15   40.5  0.398  0.847  0.008  541.  603.   -140.6  0.35   1.07
0.24    3.12  289.   10.0  293.1   10.0
 10 01 01   1 16   21.6  0.290  0.694  0.008  558.  382.   -101.6  0.35   1.07
0.33    2.23  296.   10.0  291.4   10.0
 10 01 01   1 17  -10.6  0.154 -9.000 -9.000 -999.  157.     30.7  0.34   1.07
0.60    1.34  337.   10.0  291.4   10.0
 10 01 01   1 18  -11.2  0.153 -9.000 -9.000 -999.  143.     28.9  0.34   1.07
1.00    1.34  337.   10.0  290.4   10.0
 10 01 01   1 19   -2.0  0.075 -9.000 -9.000 -999.   51.     18.6  0.47   1.07
1.00    0.44  252.   10.0  288.6   10.0
 10 01 01   1 20   -1.9  0.074 -9.000 -9.000 -999.   48.     18.8  0.43   1.07
```

```
1.00    0.44  113.   10.0  287.5   10.0
 10 01 01   1 21   -4.4  0.095 -9.000 -9.000 -999.   70.     17.6  0.28   1.07
1.00    0.89  122.   10.0  286.9   10.0
 10 01 01   1 22  -13.4  0.168 -9.000 -9.000 -999.  166.     32.2  0.43   1.07
1.00    1.34   99.   10.0  286.4   10.0
 10 01 01   1 23   -4.9  0.101 -9.000 -9.000 -999.   78.     18.7  0.34   1.07
1.00    0.89  331.   10.0  285.4   10.0
 10 01 01   1 24   -5.6  0.108 -9.000 -9.000 -999.   85.     20.2  0.42   1.07
1.00    0.89   40.   10.0  285.4   10.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 10 01 01 01   10.0 1   48.    0.89   283.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 16216r ***   *** C:\AERSCREEN\4135.1\PA61\PA61.isc
                          ***       06/04/18
 *** AERMET - VERSION  16216 ***   ***
                        ***       15:44:24

                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   3 YEARS ***


                                    ** CONC OF PM_2.5   IN MICROGRAMS/M**3
                **



                         NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR,
ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.05466 AT (  499225.72,  3603153.58,
155.10,   155.60,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS       0.05265 AT (  498425.72,  3603353.58,
161.80,   165.20,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS       0.05262 AT (  498275.72,  3603403.58,
162.10,   163.10,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS       0.05142 AT (  499275.72,  3603153.58,
155.50,   155.50,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS       0.05133 AT (  499575.72,  3603203.58,
149.00,   154.40,    0.00)  GC  UCART1
```

```
          6TH HIGHEST VALUE IS       0.05051 AT (  499525.72,  3603203.58,
148.70,   154.70,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS       0.04943 AT (  499075.72,  3603253.58,
159.50,   159.70,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS       0.04929 AT (  498725.72,  3603253.58,
163.60,   163.60,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS       0.04888 AT (  499525.72,  3603253.58,
150.90,   150.90,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS       0.04871 AT (  498925.72,  3603153.58,
155.90,   158.60,    0.00)  GC  UCART1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION 16216r ***   *** C:\AERSCREEN\4135.1\PA61\PA61.isc
                         ***       06/04/18
 *** AERMET - VERSION  16216 ***   ***
                       ***       15:44:24

                                 PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of          39 Warning Message(s)
 A Total of         341 Informational Message(s)

 A Total of       26304 Hours Were Processed

 A Total of          16 Calm Hours Identified

 A Total of         325 Missing Hours Identified (  1.24 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 CO W320      22       URBOPT: Input Parameter May Be Out-of-Range for Parameter
   URB-POP
 ME W186     177       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
```

```
ME W187     177        MEOPEN: ADJ_U* Option for Low Winds used in AERMET

MX W441   14167         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081407
MX W441   14168         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081408
MX W441   14169         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081409
MX W441   14170         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081410
MX W441   14171         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081411
MX W441   14172         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081412
MX W441   14173         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081413
MX W441   14174         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081414
MX W441   14175         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081415
MX W441   14176         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081416
MX W441   14177         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081417
MX W441   14178         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081418
MX W441   14191         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081507
MX W441   14192         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081508
MX W441   14193         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081509
MX W441   14194         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081510
MX W441   14195         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081511
MX W441   14196         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081512
MX W441   14197         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081513
MX W441   14198         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081514
MX W441   14199         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081515
MX W441   14200         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081516
MX W441   14201         METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081517
```

```
MX W441   14202        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081518
MX W441   14215        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081607
MX W441   14216        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081608
MX W441   14217        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081609
MX W441   14218        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081610
MX W441   14219        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081611
MX W441   14220        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081612
MX W441   14221        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081613
MX W441   14222        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081614
MX W441   14223        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081615
MX W441   14224        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081616
MX W441   14225        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081617
MX W441   14226        METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=
 11081618
```

```
      File Name:       San Diego (SD) - 2018 - Annual.EC
CT-EMFAC Version:       6.0.0.29548
       Run Date:       5/30/2018 10:59:58 AM
           Area:       San Diego (SD)
   Analysis Year:       2018
         Season:       Annual

=======================================================================

Vehicle Category        VMT Fraction        Diesel VMT Fraction
                        Across Category   Within Category
         Truck 1               0.041              0.550
         Truck 2               0.061              0.948
       Non-Truck               0.898              0.012

=======================================================================

     Road Length:         0.0346 miles
          Volume:       111,725 vehicles per hour
 Number of Hours:            24 hours
Avg. Idling Time:             0 minutes per vehicle
Tot. Idling Time:          0.00 hours

VMT Distribution by Speed (mph):
              5           0.00%
             10           0.00%
             15           0.00%
             20           0.00%
             25           0.00%
             30           0.00%
             35           0.00%
             40           0.00%
             45           0.00%
             50           0.00%
             55         100.00%
             60           0.00%
             65           0.00%
             70           0.00%
             75           0.00%

===================================================================================
====================================================

Summary of Project Emissions

                        Running Exhaust  Idling Exhaust    Running Loss       Tire
Wear          Brake Wear           Total           Total
```

```
       Pollutant Name           (grams)         (grams)         (grams)
(grams)         (grams)         (grams)       (US tons)
                   HC           4,163.5             0.0         2,969.6
  -                   -         7,133.2           0.008
                  ROG           3,456.0             0.0         3,174.9
  -                   -         6,630.9           0.007
                  TOG           4,678.6             0.0         3,174.9
  -                   -         7,853.5           0.009
                   CO          86,617.9             0.0               -
  -                   -        86,617.9           0.095
                  NOx          39,866.6             0.0               -
  -                   -        39,866.6           0.044
                  CO2      34,729,121.6             0.0               -
  -                   -    34,729,121.6          38.282
                  CH4           1,032.5             0.0               -
  -                   -         1,032.5           0.001
                 PM10             480.6             0.0               -
853.4           4,042.6         5,376.6           0.006
                PM2.5             455.9             0.0               -
213.4           1,732.6         2,401.9           0.003
              Benzene             111.7             0.0            31.7
  -                   -           143.5          <0.001
             Acrolein               4.8             0.0               -
  -                   -             4.8          <0.001
         Acetaldehyde              87.7             0.0               -
  -                   -            87.7          <0.001
         Formaldehyde             210.2             0.0               -
  -                   -           210.2          <0.001
            Butadiene              23.0             0.0             0.0
  -                   -            23.0          <0.001
          Naphthalene               3.2             0.0             4.4
  -                   -             7.7          <0.001
                  POM               5.2             0.0               -
  -                   -             5.2          <0.001
            Diesel PM             374.0             0.0               -
  -                   -           374.0          <0.001
                 DEOG             971.5             0.0               -
  -                   -           971.5           0.001

==========================================================END======================
====================================================
```

```
       File Name:       San Diego (SD) - 2018 - Annual.EF
CT-EMFAC Version:       6.0.0.29548
        Run Date:       5/30/2018 10:58:06 AM
            Area:       San Diego (SD)
   Analysis Year:       2018
          Season:       Annual

=======================================================================

Vehicle Category        VMT Fraction        Diesel VMT Fraction
                        Across Category   Within Category
         Truck 1               0.041               0.550
         Truck 2               0.061               0.948
       Non-Truck               0.898               0.012

=======================================================================

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

       Pollutant Name         5 mph          10 mph          15 mph          20 mph
     25 mph          30 mph          35 mph          40 mph          45 mph
 50 mph      55 mph          60 mph          65 mph          70 mph          75 mph
                   HC      0.408703        0.278330        0.180943        0.122608
   0.091807        0.072549        0.059815        0.051591        0.046714
0.044559           0.044877        0.047860        0.053709        0.058099
0.058099
                  ROG      0.335360        0.229803        0.150273        0.102438
   0.076874        0.060798        0.050119        0.043179        0.039018
0.037112           0.037251        0.039629        0.044372        0.047848
0.047848
                  TOG      0.469735        0.322368        0.208570        0.140408
   0.105036        0.082928        0.068214        0.058636        0.052885
0.050247           0.050429        0.053660        0.060088        0.064923
0.064923
                   CO      2.559285        2.170824        1.837414        1.593510
   1.417899        1.281192        1.171583        1.084050        1.015702
0.965369           0.933619        0.924167        0.942279        0.964942
0.964942
                  NOx      1.333311        1.111603        0.834213        0.658694
   0.563838        0.511195        0.477187        0.454707        0.440360
0.432352           0.429706        0.433956        0.443298        0.449320
0.449320
                  CO2   1228.361328      950.940674      736.838684      598.630310
 509.071777      448.182983      408.662811      382.915344      368.650879
366.205017       374.331238      393.619354      426.938812      449.408844
449.408844
                  CH4      0.113443        0.077832        0.048906        0.031780
```

```
   0.023551        0.018506        0.015143        0.012954        0.011646
0.011060           0.011129        0.011874        0.013325        0.014507
0.014507
                 PM10      0.021618        0.015892        0.011299        0.008327
   0.006726        0.005756        0.005148        0.004820        0.004729
0.004852           0.005180        0.005513        0.005789        0.006009
0.006009
                PM2.5      0.020305        0.014965        0.010650        0.007854
   0.006351        0.005441        0.004871        0.004565        0.004481
0.004600           0.004914        0.005229        0.005487        0.005694
0.005694
              Benzene      0.010797        0.007359        0.004799        0.003263
   0.002447        0.001936        0.001599        0.001381        0.001252
0.001196           0.001204        0.001278        0.001426        0.001426
0.001426
             Acrolein      0.000400        0.000259        0.000176        0.000126
   0.000096        0.000076        0.000064        0.000056        0.000052
0.000051           0.000052        0.000056        0.000063        0.000063
0.000063
         Acetaldehyde      0.012732        0.009632        0.005776        0.003482
   0.002564        0.002002        0.001595        0.001305        0.001108
0.000990           0.000945        0.000956        0.001006        0.001006
0.001006
         Formaldehyde      0.028401        0.021162        0.012843        0.007889
   0.005826        0.004559        0.003653        0.003017        0.002594
0.002347           0.002266        0.002315        0.002468        0.002468
0.002468
            Butadiene      0.002051        0.001362        0.000908        0.000634
   0.000478        0.000379        0.000315        0.000275        0.000253
0.000244           0.000248        0.000265        0.000298        0.000298
0.000298
          Naphthalene      0.000334        0.000233        0.000150        0.000099
   0.000074        0.000059        0.000048        0.000041        0.000037
0.000035           0.000035        0.000037        0.000041        0.000041
0.000041
                  POM      0.000554        0.000394        0.000245        0.000156
   0.000117        0.000093        0.000077        0.000066        0.000059
0.000056           0.000056        0.000059        0.000064        0.000064
0.000064
            Diesel PM      0.011308        0.009350        0.006931        0.005255
   0.004447        0.003976        0.003681        0.003547        0.003563
0.003725           0.004031        0.004240        0.004289        0.004289
0.004289
                 DEOG      0.155273        0.119409        0.070638        0.041654
   0.030545        0.023779        0.018789        0.015183        0.012692
0.011133           0.010471        0.010428        0.010760        0.010760
0.010760
```

```
=======================================================================

Fleet Average Idling Exhaust Emission Factors (grams/veh-idle hour)

       Pollutant Name   Emission Factor
                   HC          1.225407
                  ROG          0.976511
                  TOG          1.370538
                   CO          8.490419
                  NOx          4.782186
                  CO2       3072.311035
                  CH4          0.337835
                 PM10          0.053292
                PM2.5          0.050058
              Benzene          0.031418
             Acrolein          0.001555
         Acetaldehyde          0.022182
         Formaldehyde          0.054718
            Butadiene          0.006453
          Naphthalene          0.000843
                  POM          0.001354
            Diesel PM          0.028085
                 DEOG          0.245877

=======================================================================

Fleet Average Running Loss Emission Factors (grams/veh-hour)

       Pollutant Name   Emission Factor
                   HC          1.680447
                  ROG          1.796615
                  TOG          1.796615
              Benzene          0.017966
            Butadiene          0.000000
          Naphthalene          0.002515

=======================================================================

Fleet Average Tire Wear Factors (grams/veh-mile)

       Pollutant Name   Emission Factor
                 PM10          0.009198
                PM2.5          0.002300

=======================================================================

Fleet Average Brake Wear Factors (grams/veh-mile)
```

```
                      5_San Diego (SD) - 2018 - Annual.EF.txt
       Pollutant Name   Emission Factor
                 PM10          0.043574
                PM2.5          0.018675

=============================END=======================================
```

```
       File Name:       San Diego (SD) - 2020 - Annual.EC
CT-EMFAC Version:       6.0.0.29548
        Run Date:       5/30/2018 11:02:49 AM
            Area:       San Diego (SD)
   Analysis Year:       2020
          Season:       Annual

=======================================================================

Vehicle Category        VMT Fraction        Diesel VMT Fraction
                        Across Category   Within Category
         Truck 1               0.041               0.578
         Truck 2               0.061               0.949
       Non-Truck               0.898               0.013

=======================================================================

     Road Length:         0.0346 miles
          Volume:       111,725 vehicles per hour
 Number of Hours:            24 hours
Avg. Idling Time:             0 minutes per vehicle
Tot. Idling Time:          0.00 hours

VMT Distribution by Speed (mph):
              5            0.00%
             10            0.00%
             15            0.00%
             20            0.00%
             25            0.00%
             30            0.00%
             35            0.00%
             40            0.00%
             45            0.00%
             50            0.00%
             55          100.00%
             60            0.00%
             65            0.00%
             70            0.00%
             75            0.00%

===================================================================================
====================================================

Summary of Project Emissions

                        Running Exhaust  Idling Exhaust    Running Loss       Tire
Wear         Brake Wear           Total            Total
```

```
       Pollutant Name           (grams)         (grams)         (grams)
(grams)         (grams)         (grams)       (US tons)
                   HC           3,453.9             0.0         2,635.3
  -                   -         6,089.2           0.007
                  ROG           2,822.4             0.0         2,817.5
  -                   -         5,639.8           0.006
                  TOG           3,864.0             0.0         2,817.5
  -                   -         6,681.5           0.007
                   CO          72,277.0             0.0               -
  -                   -        72,277.0           0.080
                  NOx          30,948.5             0.0               -
  -                   -        30,948.5           0.034
                  CO2      32,822,620.6             0.0               -
  -                   -    32,822,620.6          36.181
                  CH4             887.0             0.0               -
  -                   -           887.0          <0.001
                 PM10             349.8             0.0               -
853.6           4,031.4         5,234.8           0.006
                PM2.5             330.7             0.0               -
213.4           1,727.8         2,271.8           0.003
              Benzene              90.5             0.0            28.2
  -                   -           118.7          <0.001
             Acrolein               4.0             0.0               -
  -                   -             4.0          <0.001
         Acetaldehyde              68.7             0.0               -
  -                   -            68.7          <0.001
         Formaldehyde             165.7             0.0               -
  -                   -           165.7          <0.001
            Butadiene              18.6             0.0             0.0
  -                   -            18.6          <0.001
          Naphthalene               2.6             0.0             3.9
  -                   -             6.5          <0.001
                  POM               4.1             0.0               -
  -                   -             4.1          <0.001
            Diesel PM             241.3             0.0               -
  -                   -           241.3          <0.001
                 DEOG             754.9             0.0               -
  -                   -           754.9          <0.001

==========================================================END======================
====================================================
```

```
       File Name:       San Diego (SD) - 2020 - Annual.EF
CT-EMFAC Version:       6.0.0.29548
        Run Date:       5/30/2018 11:01:49 AM
            Area:       San Diego (SD)
   Analysis Year:       2020
          Season:       Annual

=======================================================================

Vehicle Category        VMT Fraction        Diesel VMT Fraction
                        Across Category   Within Category
         Truck 1               0.041                0.578
         Truck 2               0.061                0.949
       Non-Truck               0.898                0.013

=======================================================================

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

       Pollutant Name         5 mph          10 mph          15 mph          20 mph
     25 mph          30 mph          35 mph          40 mph          45 mph
 50 mph      55 mph          60 mph          65 mph          70 mph          75 mph
                   HC      0.343949        0.233547        0.152983        0.104574
   0.078128        0.061497        0.050518        0.043410        0.039144
0.037160           0.037228        0.039613        0.044521        0.048197
0.048197
                  ROG      0.276180        0.188255        0.124530        0.086029
   0.064428        0.050742        0.041682        0.035788        0.032211
0.030487           0.030421        0.032291        0.036256        0.039160
0.039160
                  TOG      0.392490        0.268470        0.175412        0.119445
   0.089171        0.070113        0.057457        0.049200        0.044179
0.041752           0.041649        0.044205        0.049602        0.053649
0.053649
                   CO      2.169767        1.846064        1.559341        1.350345
   1.200894        1.084284        0.990318        0.914679        0.854807
0.809530           0.779045        0.766388        0.775321        0.790164
0.790164
                  NOx      1.232571        1.014921        0.744287        0.569280
   0.469165        0.415392        0.381795        0.359896        0.345763
0.337360           0.333581        0.336263        0.343808        0.348639
0.348639
                  CO2   1154.386963      894.677917      693.450134      564.073242
 480.308167      423.292969      386.339783      362.185242      348.718750
346.323822       353.781830      371.665588      402.700806      423.609497
423.609497
                  CH4      0.099313        0.068301        0.043146        0.028203
```

```
   0.020863        0.016336        0.013312        0.011332        0.010132
0.009562           0.009561        0.010166        0.011399        0.012393
0.012393
                 PM10      0.016680        0.011764        0.008480        0.006414
   0.005178        0.004411        0.003934        0.003666        0.003562
0.003599           0.003770        0.003991        0.004249        0.004452
0.004452
                PM2.5      0.015569        0.011009        0.007949        0.006020
   0.004868        0.004153        0.003708        0.003459        0.003364
0.003401           0.003564        0.003772        0.004013        0.004203
0.004203
              Benzene      0.008856        0.006024        0.003959        0.002715
   0.002032        0.001602        0.001318        0.001134        0.001024
0.000973           0.000976        0.001034        0.001154        0.001154
0.001154
             Acrolein      0.000338        0.000218        0.000148        0.000106
   0.000080        0.000063        0.000053        0.000047        0.000043
0.000042           0.000043        0.000046        0.000052        0.000052
0.000052
         Acetaldehyde      0.010136        0.007698        0.004740        0.002959
   0.002176        0.001686        0.001332        0.001079        0.000904
0.000791           0.000740        0.000738        0.000778        0.000778
0.000778
         Formaldehyde      0.022711        0.016968        0.010546        0.006679
   0.004926        0.003827        0.003044        0.002492        0.002117
0.001883           0.001786        0.001806        0.001928        0.001928
0.001928
            Butadiene      0.001691        0.001120        0.000748        0.000525
   0.000394        0.000312        0.000259        0.000225        0.000206
0.000199           0.000201        0.000215        0.000242        0.000242
0.000242
          Naphthalene      0.000271        0.000189        0.000123        0.000083
   0.000062        0.000049        0.000040        0.000034        0.000030
0.000028           0.000028        0.000030        0.000033        0.000033
0.000033
                  POM      0.000436        0.000307        0.000195        0.000127
   0.000095        0.000075        0.000062        0.000053        0.000047
0.000044           0.000044        0.000046        0.000051        0.000051
0.000051
            Diesel PM      0.006164        0.005108        0.004040        0.003290
   0.002862        0.002600        0.002441        0.002369        0.002374
0.002452           0.002601        0.002705        0.002742        0.002742
0.002742
                 DEOG      0.123263        0.095271        0.058034        0.035620
   0.026100        0.020142        0.015779        0.012614        0.010377
0.008885           0.008137        0.007966        0.008219        0.008219
0.008219
```

```
=======================================================================

Fleet Average Idling Exhaust Emission Factors (grams/veh-idle hour)

       Pollutant Name   Emission Factor
                   HC          1.081309
                  ROG          0.863304
                  TOG          1.211406
                   CO          7.432194
                  NOx          4.304866
                  CO2       2890.425537
                  CH4          0.297928
                 PM10          0.051486
                PM2.5          0.048301
              Benzene          0.027053
             Acrolein          0.001361
         Acetaldehyde          0.019742
         Formaldehyde          0.048307
            Butadiene          0.005524
          Naphthalene          0.000727
                  POM          0.001193
            Diesel PM          0.025656
                 DEOG          0.221624

=======================================================================

Fleet Average Running Loss Emission Factors (grams/veh-hour)

       Pollutant Name   Emission Factor
                   HC          1.491260
                  ROG          1.594350
                  TOG          1.594350
              Benzene          0.015944
            Butadiene          0.000000
          Naphthalene          0.002232

=======================================================================

Fleet Average Tire Wear Factors (grams/veh-mile)

       Pollutant Name   Emission Factor
                 PM10          0.009201
                PM2.5          0.002300

=======================================================================

Fleet Average Brake Wear Factors (grams/veh-mile)
```

```
                      7_San Diego (SD) - 2020 - Annual.EF.txt
       Pollutant Name   Emission Factor
                 PM10          0.043453
                PM2.5          0.018623

=============================END=======================================
```

```
       File Name:       San Diego (SD) - 2035 - Annual.EC
CT-EMFAC Version:       6.0.0.29548
        Run Date:       5/30/2018 11:04:26 AM
            Area:       San Diego (SD)
   Analysis Year:       2035
          Season:       Annual

=======================================================================

Vehicle Category        VMT Fraction        Diesel VMT Fraction
                        Across Category   Within Category
         Truck 1               0.041               0.684
         Truck 2               0.061               0.950
       Non-Truck               0.898               0.013

=======================================================================

     Road Length:        0.0346 miles
          Volume:       111,725 vehicles per hour
 Number of Hours:            24 hours
Avg. Idling Time:             0 minutes per vehicle
Tot. Idling Time:          0.00 hours

VMT Distribution by Speed (mph):
              5            0.00%
             10            0.00%
             15            0.00%
             20            0.00%
             25            0.00%
             30            0.00%
             35            0.00%
             40            0.00%
             45            0.00%
             50            0.00%
             55          100.00%
             60            0.00%
             65            0.00%
             70            0.00%
             75            0.00%

===================================================================================
====================================================

Summary of Project Emissions

                        Running Exhaust  Idling Exhaust    Running Loss       Tire
Wear          Brake Wear           Total           Total
```

```
      Pollutant Name           (grams)          (grams)          (grams)
(grams)          (grams)           (grams)       (US tons)
                  HC           1,943.2              0.0          1,284.3
  -                 -          3,227.5            0.004
                 ROG           1,562.4              0.0          1,373.1
  -                 -          2,935.5            0.003
                 TOG           2,146.4              0.0          1,373.1
  -                 -          3,519.5            0.004
                  CO          36,788.1              0.0                -
  -                 -         36,788.1            0.041
                 NOx           6,927.1              0.0                -
  -                 -          6,927.1            0.008
                 CO2      23,570,596.6              0.0                -
  -                 -     23,570,596.6           25.982
                 CH4             503.9              0.0                -
  -                 -            503.9           <0.001
                PM10              97.2              0.0                -
854.1            4,005.8         4,957.1            0.005
               PM2.5              91.0              0.0                -
213.5            1,716.7         2,021.2            0.002
             Benzene              51.7              0.0             13.7
  -                 -             65.4           <0.001
            Acrolein               2.3              0.0                -
  -                 -              2.3           <0.001
        Acetaldehyde              34.2              0.0                -
  -                 -             34.2           <0.001
        Formaldehyde              85.2              0.0                -
  -                 -             85.2           <0.001
           Butadiene              10.9              0.0              0.0
  -                 -             10.9           <0.001
         Naphthalene               1.5              0.0              1.9
  -                 -              3.4           <0.001
                 POM               1.9              0.0                -
  -                 -              1.9           <0.001
           Diesel PM              42.2              0.0                -
  -                 -             42.2           <0.001
                DEOG             356.8              0.0                -
  -                 -            356.8           <0.001

==========================================================END=====================
====================================================
```

```
       File Name:       San Diego (SD) - 2035 - Annual.EF
CT-EMFAC Version:       6.0.0.29548
        Run Date:       5/30/2018 11:03:44 AM
            Area:       San Diego (SD)
   Analysis Year:       2035
          Season:       Annual

=======================================================================

Vehicle Category        VMT Fraction        Diesel VMT Fraction
                        Across Category   Within Category
         Truck 1               0.041               0.684
         Truck 2               0.061               0.950
       Non-Truck               0.898               0.013

=======================================================================

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

       Pollutant Name         5 mph          10 mph          15 mph          20 mph
     25 mph          30 mph          35 mph          40 mph          45 mph
 50 mph      55 mph          60 mph          65 mph          70 mph          75 mph
                   HC      0.211203        0.143895        0.094244        0.064214
   0.047412        0.036859        0.029902        0.025369        0.022583
0.021164           0.020945        0.022160        0.024903        0.026908
0.026908
                  ROG      0.167754        0.114043        0.074538        0.050662
   0.037405        0.029134        0.023705        0.020186        0.018039
0.016967           0.016840        0.017842        0.020068        0.021683
0.021683
                  TOG      0.239943        0.164605        0.107350        0.072694
   0.053559        0.041563        0.033621        0.028416        0.025182
0.023488           0.023135        0.024407        0.027384        0.029561
0.029561
                   CO      1.250067        1.061437        0.869447        0.734649
   0.646493        0.579342        0.525163        0.481163        0.445600
0.417489           0.396524        0.384508        0.382399        0.385471
0.385471
                  NOx      1.011203        0.779896        0.492168        0.302302
   0.191070        0.139800        0.111883        0.095306        0.084997
0.078535           0.074664        0.074225        0.076250        0.077568
0.077568
                  CO2    796.463135      624.348022      484.651154      396.590485
 340.523712      302.361481      277.826874      261.375946      251.798981
249.741119       254.057983      265.122192      284.825317      298.000153
298.000153
                  CH4      0.062116        0.043489        0.028276        0.019035
```

```
   0.013965        0.010743        0.008567        0.007107        0.006165
0.005626           0.005431        0.005664        0.006313        0.006800
0.006800
                 PM10      0.006850        0.004633        0.003263        0.002420
   0.001893        0.001555        0.001334        0.001189        0.001100
0.001055           0.001048        0.001091        0.001191        0.001266
0.001266
                PM2.5      0.006350        0.004304        0.003037        0.002256
   0.001767        0.001454        0.001248        0.001113        0.001030
0.000987           0.000981        0.001021        0.001112        0.001182
0.001182
              Benzene      0.005467        0.003723        0.002441        0.001665
   0.001231        0.000959        0.000780        0.000664        0.000593
0.000557           0.000557        0.000592        0.000664        0.000664
0.000664
             Acrolein      0.000206        0.000132        0.000089        0.000063
   0.000048        0.000038        0.000031        0.000028        0.000025
0.000025           0.000025        0.000027        0.000031        0.000031
0.000031
         Acetaldehyde      0.006475        0.004966        0.003085        0.001931
   0.001382        0.001039        0.000796        0.000621        0.000496
0.000409           0.000369        0.000364        0.000380        0.000380
0.000380
         Formaldehyde      0.014419        0.010873        0.006805        0.004312
   0.003102        0.002346        0.001813        0.001437        0.001173
0.000994           0.000918        0.000921        0.000980        0.000980
0.000980
            Butadiene      0.001040        0.000688        0.000457        0.000319
   0.000238        0.000187        0.000154        0.000133        0.000121
0.000116           0.000118        0.000126        0.000143        0.000143
0.000143
          Naphthalene      0.000171        0.000120        0.000078        0.000052
   0.000038        0.000030        0.000024        0.000020        0.000018
0.000016           0.000016        0.000017        0.000019        0.000019
0.000019
                  POM      0.000229        0.000160        0.000102        0.000068
   0.000049        0.000038        0.000031        0.000026        0.000023
0.000021           0.000021        0.000022        0.000024        0.000024
0.000024
            Diesel PM      0.001360        0.001176        0.000968        0.000812
   0.000704        0.000629        0.000572        0.000529        0.000496
0.000472           0.000455        0.000453        0.000458        0.000458
0.000458
                 DEOG      0.078803        0.061591        0.037932        0.023374
   0.016622        0.012411        0.009378        0.007175        0.005573
0.004416           0.003846        0.003669        0.003711        0.003711
0.003711
```

```
=======================================================================

Fleet Average Idling Exhaust Emission Factors (grams/veh-idle hour)

       Pollutant Name   Emission Factor
                   HC          0.645057
                  ROG          0.539177
                  TOG          0.732987
                   CO          4.669874
                  NOx          2.363614
                  CO2       1995.023071
                  CH4          0.161831
                 PM10          0.028851
                PM2.5          0.027105
              Benzene          0.016493
             Acrolein          0.000848
         Acetaldehyde          0.014238
         Formaldehyde          0.033570
            Butadiene          0.003303
          Naphthalene          0.000466
                  POM          0.000657
            Diesel PM          0.015436
                 DEOG          0.165057

=======================================================================

Fleet Average Running Loss Emission Factors (grams/veh-hour)

       Pollutant Name   Emission Factor
                   HC          0.726774
                  ROG          0.777015
                  TOG          0.777015
              Benzene          0.007770
            Butadiene          0.000000
          Naphthalene          0.001088

=======================================================================

Fleet Average Tire Wear Factors (grams/veh-mile)

       Pollutant Name   Emission Factor
                 PM10          0.009206
                PM2.5          0.002301

=======================================================================

Fleet Average Brake Wear Factors (grams/veh-mile)
```

```
                      9_San Diego (SD) - 2035 - Annual.EF.txt
       Pollutant Name   Emission Factor
                 PM10          0.043177
                PM2.5          0.018504

=============================END=======================================
```

```
       File Name:       San Diego (SD) - 2050 - Annual.EC
CT-EMFAC Version:       6.0.0.29548
        Run Date:       5/30/2018 11:06:15 AM
            Area:       San Diego (SD)
   Analysis Year:       2050
          Season:       Annual

=======================================================================

Vehicle Category        VMT Fraction        Diesel VMT Fraction
                        Across Category   Within Category
         Truck 1               0.041               0.698
         Truck 2               0.061               0.955
       Non-Truck               0.898               0.013

=======================================================================

     Road Length:        0.0346 miles
          Volume:       111,725 vehicles per hour
 Number of Hours:            24 hours
Avg. Idling Time:             0 minutes per vehicle
Tot. Idling Time:          0.00 hours

VMT Distribution by Speed (mph):
              5            0.00%
             10            0.00%
             15            0.00%
             20            0.00%
             25            0.00%
             30            0.00%
             35            0.00%
             40            0.00%
             45            0.00%
             50            0.00%
             55          100.00%
             60            0.00%
             65            0.00%
             70            0.00%
             75            0.00%

===================================================================================
====================================================

Summary of Project Emissions

                        Running Exhaust  Idling Exhaust    Running Loss       Tire
Wear         Brake Wear           Total           Total
```

```
       Pollutant Name           (grams)         (grams)         (grams)
(grams)         (grams)         (grams)       (US tons)
                   HC           1,800.7             0.0           960.6
  -                   -         2,761.3           0.003
                  ROG           1,455.0             0.0         1,027.0
  -                   -         2,482.0           0.003
                  TOG           1,985.2             0.0         1,027.0
  -                   -         3,012.2           0.003
                   CO          32,578.5             0.0               -
  -                   -        32,578.5           0.036
                  NOx           4,831.5             0.0               -
  -                   -         4,831.5           0.005
                  CO2      22,710,149.4             0.0               -
  -                   -    22,710,149.4          25.034
                  CH4             456.9             0.0               -
  -                   -           456.9          <0.001
                 PM10              70.8             0.0               -
854.6           4,002.3         4,927.6           0.005
                PM2.5              66.3             0.0               -
213.7           1,715.3         1,995.3           0.002
              Benzene              48.2             0.0            10.3
  -                   -            58.5          <0.001
             Acrolein               2.2             0.0               -
  -                   -             2.2          <0.001
         Acetaldehyde              30.5             0.0               -
  -                   -            30.5          <0.001
         Formaldehyde              76.6             0.0               -
  -                   -            76.6          <0.001
            Butadiene              10.3             0.0             0.0
  -                   -            10.3          <0.001
          Naphthalene               1.4             0.0             1.4
  -                   -             2.8          <0.001
                  POM               1.7             0.0               -
  -                   -             1.7          <0.001
            Diesel PM              33.4             0.0               -
  -                   -            33.4          <0.001
                 DEOG             310.5             0.0               -
  -                   -           310.5          <0.001

==========================================================END======================
====================================================
```

```
       File Name:       San Diego (SD) - 2050 - Annual.EF
CT-EMFAC Version:       6.0.0.29548
        Run Date:       5/30/2018 11:05:33 AM
            Area:       San Diego (SD)
   Analysis Year:       2050
          Season:       Annual

=======================================================================

Vehicle Category        VMT Fraction        Diesel VMT Fraction
                        Across Category   Within Category
         Truck 1               0.041               0.698
         Truck 2               0.061               0.955
       Non-Truck               0.898               0.013

=======================================================================

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

       Pollutant Name         5 mph          10 mph          15 mph          20 mph
     25 mph          30 mph          35 mph          40 mph          45 mph
 50 mph      55 mph          60 mph          65 mph          70 mph          75 mph
                   HC      0.198786        0.135600        0.088840        0.060520
   0.044603        0.034611        0.028023        0.023722        0.021062
0.019679           0.019409        0.020493        0.023013        0.024835
0.024835
                  ROG      0.160112        0.109091        0.071030        0.048033
   0.035373        0.027499        0.022327        0.018966        0.016902
0.015849           0.015683        0.016585        0.018636        0.020117
0.020117
                  TOG      0.226367        0.155543        0.101397        0.068581
   0.050419        0.039045        0.031513        0.026565        0.023470
0.021812           0.021398        0.022519        0.025240        0.027207
0.027207
                   CO      1.151269        0.973170        0.787904        0.659472
   0.577803        0.516352        0.467051        0.427200        0.395127
0.369881           0.351151        0.340703        0.339355        0.342370
0.342370
                  NOx      0.996883        0.763702        0.473410        0.281367
   0.168832        0.117497        0.089722        0.073238        0.062900
0.056267           0.052077        0.051105        0.052402        0.053278
0.053278
                  CO2    762.159546      598.442383      464.808655      380.696655
 327.202515      291.008667      267.779694      252.040344      243.007568
240.998291       244.783569      254.950439      273.567902      286.001801
286.001801
                  CH4      0.056661        0.039692        0.026050        0.017714
```

```
   0.012984        0.009962        0.007923        0.006552        0.005661
0.005138           0.004925        0.005114        0.005693        0.006113
0.006113
                 PM10      0.004652        0.003190        0.002286        0.001727
   0.001369        0.001138        0.000985        0.000882        0.000815
0.000777           0.000763        0.000783        0.000842        0.000885
0.000885
                PM2.5      0.004312        0.002965        0.002129        0.001612
   0.001280        0.001066        0.000923        0.000827        0.000765
0.000729           0.000715        0.000734        0.000787        0.000827
0.000827
              Benzene      0.005178        0.003530        0.002313        0.001577
   0.001164        0.000905        0.000735        0.000624        0.000556
0.000521           0.000520        0.000552        0.000620        0.000620
0.000620
             Acrolein      0.000194        0.000124        0.000084        0.000060
   0.000045        0.000035        0.000030        0.000026        0.000024
0.000023           0.000024        0.000026        0.000029        0.000029
0.000029
         Acetaldehyde      0.006186        0.004756        0.002957        0.001849
   0.001317        0.000985        0.000750        0.000580        0.000458
0.000371           0.000329        0.000321        0.000334        0.000334
0.000334
         Formaldehyde      0.013753        0.010396        0.006509        0.004121
   0.002951        0.002221        0.001708        0.001344        0.001086
0.000907           0.000826        0.000823        0.000874        0.000874
0.000874
            Butadiene      0.000985        0.000651        0.000433        0.000302
   0.000225        0.000176        0.000145        0.000125        0.000114
0.000109           0.000111        0.000119        0.000134        0.000134
0.000134
          Naphthalene      0.000164        0.000115        0.000074        0.000050
   0.000037        0.000028        0.000023        0.000019        0.000017
0.000015           0.000015        0.000016        0.000018        0.000018
0.000018
                  POM      0.000199        0.000139        0.000090        0.000060
   0.000044        0.000034        0.000027        0.000023        0.000020
0.000018           0.000018        0.000019        0.000021        0.000021
0.000021
            Diesel PM      0.000915        0.000838        0.000724        0.000633
   0.000561        0.000509        0.000467        0.000433        0.000405
0.000381           0.000360        0.000354        0.000354        0.000354
0.000354
                 DEOG      0.075249        0.058982        0.036356        0.022387
   0.015833        0.011754        0.008819        0.006680        0.005108
0.003948           0.003347        0.003145        0.003145        0.003145
0.003145
```

```
=======================================================================

Fleet Average Idling Exhaust Emission Factors (grams/veh-idle hour)

       Pollutant Name   Emission Factor
                   HC          0.580751
                  ROG          0.494611
                  TOG          0.663517
                   CO          4.317546
                  NOx          1.929891
                  CO2       1909.373535
                  CH4          0.139426
                 PM10          0.021083
                PM2.5          0.019837
              Benzene          0.015020
             Acrolein          0.000778
         Acetaldehyde          0.014056
         Formaldehyde          0.032606
            Butadiene          0.002978
          Naphthalene          0.000437
                  POM          0.000561
            Diesel PM          0.012039
                 DEOG          0.164990

=======================================================================

Fleet Average Running Loss Emission Factors (grams/veh-hour)

       Pollutant Name   Emission Factor
                   HC          0.543569
                  ROG          0.581145
                  TOG          0.581145
              Benzene          0.005811
            Butadiene          0.000000
          Naphthalene          0.000814

=======================================================================

Fleet Average Tire Wear Factors (grams/veh-mile)

       Pollutant Name   Emission Factor
                 PM10          0.009211
                PM2.5          0.002303

=======================================================================

Fleet Average Brake Wear Factors (grams/veh-mile)
```

```
     Pollutant Name   Emission Factor
               PM10          0.043139
              PM2.5          0.018488

==============================END========================================
```

CLIMATE ACTION PLAN
CONSISTENCY CHECKLIST INTRODUCTION

In December 2015, the City adopted a Climate Action Plan (CAP) that outlines the actions that City will undertake to achieve its proportional share of State greenhouse gas (GHG) emission reductions. The purpose of the Climate Action Plan Consistency Checklist (Checklist) is to, in conjunction with the CAP, provide a streamlined review process for proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to the California Environmental Quality Act (CEQA).[1]

Analysis of GHG emissions and potential climate change impacts from new development is required under CEQA. The CAP is a plan for the reduction of GHG emissions in accordance with CEQA Guidelines Section 15183.5. Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP.

This Checklist is part of the CAP and contains measures that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the CAP are achieved. Implementation of these measures would ensure that new development is consistent with the CAP's assumptions for relevant CAP strategies toward achieving the identified GHG reduction targets. Projects that are consistent with the CAP as determined through the use of this Checklist may rely on the CAP for the cumulative impacts analysis of GHG emissions. Projects that are not consistent with the CAP must prepare a comprehensive project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and incorporation of the measures in this Checklist to the extent feasible. Cumulative GHG impacts would be significant for any project that is not consistent with the CAP.

The Checklist may be updated to incorporate new GHG reduction techniques or to comply with later amendments to the CAP or local, State, or federal law.

---

[1] Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.

This page intentionally left blank

CAP CONSISTENCY CHECKLIST SUBMITTAL APPLICATION

- The Checklist is required only for projects subject to CEQA review.[2]
- If required, the Checklist must be included in the project submittal package. Application submittal procedures can be found in Chapter 11: Land Development Procedures of the City's Municipal Code.
- The requirements in the Checklist will be included in the project's conditions of approval.
- The applicant must provide an explanation of how the proposed project will implement the requirements described herein to the satisfaction of the Planning Department.

Application Information

Contact Information

Project No./Name: California Terraces Planning Area 61 (PA-61)

Property Address: Corner of Otay Mesa Road and Caliente Avenue

Applicant Name/Co.:

Contact Phone: Contact Email:

Was a consultant retained to complete this checklist? ☒ Yes ☐ No If Yes, complete the following

Consultant Name: Jessica Fleming Contact Phone: 619-308-9333

Company Name: RECON Environmental Contact Email: jfleming@reconenvironmental.com

Project Information

1. What is the size of the project (acres)?
2. Identify all applicable proposed land uses:
   - ☐ Residential (indicate # of single-family units):
   - ☒ Residential (indicate # of multi-family units): 267 units (10% affordable)
   - ☒ Commercial (total square footage): 45,000 square feet
   - ☐ Industrial (total square footage):
   - ☐ Other (describe):
3. Is the project or a portion of the project located in a Transit Priority Area? ☒ Yes ☐ No
4. Provide a brief description of the project proposed:

The project proposes up to 45,000 SF of commercial uses within Lot 1 totaling 195,867.91 SF (4.50 AC) and up to 267 multi-family units (with 10% affordable) and a private recreation park within Lot 2 totaling 400,809.57 SF (9.20 AC). The residential development permits a density of 15 to 29 units per acre within the RM-2-5 zone and would allow Lot 2 to construct up to a maximum of 267 multi-family residential units. The 14.6 gross acres project site is located at the southeast corner of Otay Mesa Road and Caliente Ave and within the Otay Mesa Community Plan Area.

---

[2] Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.

CAP CONSISTENCY CHECKLIST QUESTIONS

Step 1: Land Use Consistency

The first step in determining CAP consistency for discretionary development projects is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the City to determine a project's consistency with the land use assumptions used in the CAP.

Step 1: Land Use Consistency

Checklist Item (Check the appropriate box and provide explanation and supporting documentation for your answer)	Yes	No
A. Is the proposed project consistent with the existing General Plan and Community Plan land use and zoning designations?;[3] OR, B. If the proposed project is not consistent with the existing land use plan and zoning designations, and includes a land use plan and/or zoning designation amendment, would the proposed amendment result in an increased density within a Transit Priority Area (TPA)[4] and implement CAP Strategy 3 actions, as determined in Step 3 to the satisfaction of the Development Services Department?; OR, C. If the proposed project is not consistent with the existing land use plan and zoning designations, does the project include a land use plan and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations?	☑	☐

If "***Yes***," proceed to Step 2 of the Checklist. For question B above, complete Step 3. For question C above, provide estimated project emissions under both existing and proposed designation(s) for comparison. Compare the maximum buildout of the existing designation and the maximum buildout of the proposed designation.

If "***No***," in accordance with the City's Significance Determination Thresholds, the project's GHG impact is significant. The project must nonetheless incorporate each of the measures identified in Step 2 to mitigate cumulative GHG emissions impacts unless the decision maker finds that a measure is infeasible in accordance with CEQA Guidelines Section 15091. Proceed and complete Step 2 of the Checklist.

The project site is designated as Commercial Employment, Retail, Services in the City's General Plan and as Community Commercial in the Otay Mesa Community Plan, and is zoned CC-1-3 (Community Commercial). The existing designations would allow for the operation of a 192,000-square-foot retail use.

The project would require a rezone to RM-2-5 (Residential - Multiple Unit) and a Community Plan Amendment (CPA) to allow for the construction of a mixed-use project. The project would increase density within a TPA and would implement CAP Strategy 3 actions (see attached).

Additionally, emissions due to operation of the residential and retail uses were calculated by RECON (attached). It was found that the project would be less GHG-intensive when compared to the existing designations. The project would be consistent with the growth projections used in the development of the CAP per Step 1(A) for the residentia component and Step 1(B) for the residential component.

---

[3] This question may also be answered in the affirmative if the project is consistent with SANDAG Series 12 growth projections, which were used to determine the CAP projections, as determined by the Planning Department.

[4] This category applies to all projects that answered in the affirmative to question 3 on the previous page: Is the project or a portion of the project located in a transit priority area.

Step 2: CAP Strategies Consistency

The second step of the CAP consistency review is to review and evaluate a project's consistency with the applicable strategies and actions of the CAP. Step 2 only applies to development projects that involve permits that would require a certificate of occupancy from the Building Official or projects comprised of one and two family dwellings or townhouses as defined in the California Residential Code and their accessory structures.[5] All other development projects that would not require a certificate of occupancy from the Building Official shall implement Best Management Practices for construction activities as set forth in the Greenbook (for public projects).

Step 2: CAP Strategies Consistency			
Checklist Item (Check the appropriate box and provide explanation for your answer)	Yes	No	N/A
Strategy 1: Energy & Water Efficient Buildings			
1. *Cool/Green Roofs*. • Would the project include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under California Green Building Standards Code (Attachment A)?; OR • Would the project roof construction have a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot as specified in the voluntary measures under California Green Building Standards Code?; OR • Would the project include a combination of the above two options? Check "N/A" only if the project does not include a roof component. Residential: The project will provide a "Cool Roof," which will include roofing materials with a minimum 3-year aged solar reflectance (SR) and thermal emittance (TE) or solar reflection index (SRI) equal or greater than the values specified in the voluntary measures under California Green Building Standards Code. Commercial: The 2016 Nonresidential Compliance Manual for the 2016 Building Energy Efficiency Standards provides prescriptive criteria for nonresidential roofing products. The SR, TE, and SRI requirements (see attached table) are equal to or greater than those required in CAP Attachment A. The future construction of the commercial component would be required to meet these standards per the California Building Code.	☑	☐	☐

---

[5] Actions that are not subject to Step 2 would include, for example: 1) discretionary map actions that do not propose specific development, 2) permits allowing wireless communication facilities, 3) special events permits, 4) use permits or other permits that do not result in the expansion or enlargement of a building (e.g., decks, garages, etc.), and 5) non-building infrastructure projects such as roads and pipelines. Because such actions would not result in new occupancy buildings from which GHG emissions reductions could be achieved, the items contained in Step 2 would not be applicable.

2. *Plumbing fixtures and fittings* With respect to plumbing fixtures or fittings provided as part of the project, would those low-flow fixtures/appliances be consistent with each of the following: Residential buildings: • Kitchen faucets: maximum flow rate not to exceed 1.5 gallons per minute at 60 psi; • Standard dishwashers: 4.25 gallons per cycle; • Compact dishwashers: 3.5 gallons per cycle; and • Clothes washers: water factor of 6 gallons per cubic feet of drum capacity? Nonresidential buildings: • Plumbing fixtures and fittings that do not exceed the maximum flow rate specified in Table A5.303.2.3.1 (voluntary measures) of the California Green Building Standards Code (See Attachment A); and • Appliances and fixtures for commercial applications that meet the provisions of Section A5.303.3 (voluntary measures) of the California Green Building Standards Code (See Attachment A)? Check "N/A" only if the project does not include any plumbing fixtures or fittings. Residential: The kitchen faucets, standard dishwashers, compact dishwashers, and clothes washers installed in the residential portion of the project would be consistent with the requirements specified above. Commercial: Plumbing fixtures and fittings used in the commercial portion of the project would meet the requirements specified in Table A5.303.2.3.1 (voluntary measures) of CalGreen, and appliances and fixtures would meet the flow requirements specified in Section A5.303.3 of CalGreen.	☑	☐	☐

Strategy 3: Bicycling, Walking, Transit & Land Use

3. *Electric Vehicle Charging*

- <u>Multiple-family projects of 17 dwelling units or less</u>: Would 3% of the total parking spaces required, or a minimum of one space, whichever is greater, be provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official, to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents?

- <u>Multiple-family projects of more than 17 dwelling units</u>: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents?

- <u>Non-residential projects</u>: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use?

Check "N/A" only if the project is a single-family project or would not require the provision of listed cabinets, boxes, or enclosures connected to a conduit linking the parking spaces with electrical service, e.g., projects requiring fewer than 10 parking spaces.

Residential: As currently proposed, the project would provide a total of 342 garage spaces, 10 accessible spaces, 20 motorcycle spaces, and 59 open spaces, for a total of 427 parking spaces. The residential portion of the project would provide 13 spaces (3%) with the listed cabinets, boxes, or enclosures and 7 of those (50%) would include the electrical vehicle supply equipment.

Commercial: The commercial component of the project would include 194 parking spaces. 6 spaces (3%) would be equipped with a listed cabinet, box, or enclosure, and 3 spaces would have the necessary electric vehicle supply equipment.

☑ ☐ ☐

Strategy 3: Bicycling, Walking, Transit & Land Use

(Complete this section if project includes non-residential or mixed uses)

4. *Bicycle Parking Spaces*

Would the project provide more short- and long-term bicycle parking spaces than required in the City's Municipal Code (Chapter 14, Article 2, Division 5)?[6]

Check "N/A" only if the project is a residential project.

Residential: N/A

Commercial: The project would provide 194 automobile parking spaces. Per the SDMC, the number of short term and long term bicycle parking spaces is 5% the number of automobile parking spaces. Per these requirements, minimum number of required spaces would be 10 short term and 10 long term bicycle parking spaces. The project would provide 12 short term and 12 long term bicycle parking spaces.

☑ ☐ ☐

---

[6] Non-portable bicycle corrals within 600 feet of project frontage can be counted towards the project's bicycle parking requirements.

5. *Shower facilities*

If the project includes nonresidential development that would accommodate over 10 tenant occupants (employees), would the project include changing/shower facilities in accordance with the voluntary measures under the California Green Building Standards Code as shown in the table below?

Number of Tenant Occupants (Employees)	Shower/Changing Facilities Required	Two-Tier (12" X 15" X 72") Personal Effects Lockers Required
0-10	0	0
11-50	1 shower stall	2
51-100	1 shower stall	3
101-200	1 shower stall	4
Over 200	1 shower stall plus 1 additional shower stall for each 200 additional tenant-occupants	1 two-tier locker plus 1 two-tier locker for each 50 additional tenant-occupants

Check "N/A" only if the project is a residential project, or if it does not include nonresidential development that would accommodate over 10 tenant occupants (employees).

Residential: N/A

Commercial: It is estimated that the project would include 140 employees. Therefore, the project would include 1 shower stall and 4 lockers.

☑ ☐ ☐

6. *Designated Parking Spaces*

If the project includes a nonresidential use in a TPA, would the project provide designated parking for a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles in accordance with the following table?

Number of Required Parking Spaces	Number of Designated Parking Spaces
0-9	0
10-25	2
26-50	4
51-75	6
76-100	9
101-150	11
151-200	18
201 and over	At least 10% of total

This measure does not cover electric vehicles. See Question 4 for electric vehicle parking requirements.

☑ ☐ ☐

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces. The required designated parking spaces are to be provided within the overall minimum parking requirement, not in addition to it.

Check "N/A" only if the project is a residential project, or if it does not include nonresidential use in a TPA.

Residential: N/A

Commercial: The commercial portion of the project would require 194 parking spaces. Therefore, 18 of these parking spaces would be designated for low-emitting, fuel-efficient, and carpool/vanpool vehicles.

7. *Transportation Demand Management Program*

If the project would accommodate over 50 tenant-occupants (employees), would it include a transportation demand management program that would be applicable to existing tenants and future tenants that includes:

At least one of the following components:

- Parking cash out program
- Parking management plan that includes charging employees market-rate for single-occupancy vehicle parking and providing reserved, discounted, or free spaces for registered carpools or vanpools
- Unbundled parking whereby parking spaces would be leased or sold separately from the rental or purchase fees for the development for the life of the development

And at least three of the following components:

- Commitment to maintaining an employer network in the SANDAG iCommute program and promoting its RideMatcher service to tenants/employees
- On-site carsharing vehicle(s) or bikesharing
- Flexible or alternative work hours
- Telework program
- Transit, carpool, and vanpool subsidies
- Pre-tax deduction for transit or vanpool fares and bicycle commute costs
- Access to services that reduce the need to drive, such as cafes, commercial stores, banks, post offices, restaurants, gyms, or childcare, either onsite or within 1,320 feet (1/4 mile) of the structure/use?

☑ ☐ ☐

Check "N/A" only if the project is a residential project or if it would not accommodate over 50 tenant-occupants (employees).

Residential: N/A

Commercial: Consistent with the project's Transportation Impact Analysis (LOS Engineering, Inc., 2018), a Transportation Demand Management (TDM) plan will provide the means to disseminate information to help tenants and employees learn about and use alternative forms of transportation other than single-occupancy vehicles. The TDM plan would include the following:
1) Provide information about the SANDAG's iCommute program (www.icommutesd.com),
2) Encourage carpooling,
3) Encourage bike and transit usage,
4) Display maps, routes, and schedules for public transit near the retail buildings, and
5) Provide a bike rack.

Step 3: Project CAP Conformance Evaluation (if applicable)

The third step of the CAP consistency review only applies if Step 1 is answered in the affirmative under option B. The purpose of this step is to determine whether a project that is located in a TPA but that includes a land use plan and/or zoning designation amendment is nevertheless consistent with the assumptions in the CAP because it would implement CAP Strategy 3 actions. In general, a project that would result in a reduction in density inside a TPA would not be consistent with Strategy 3.The following questions must each be answered in the affirmative and fully explained.

1. **Would the proposed project implement the General Plan's City of Villages strategy in an identified Transit Priority Area (TPA) that will result in an increase in the capacity for transit-supportive residential and/or employment densities?**
   Considerations for this question:
   - Does the proposed land use and zoning designation associated with the project provide capacity for transit-supportive residential densities within the TPA?
   - Is the project site suitable to accommodate mixed-use village development, as defined in the General Plan, within the TPA?
   - Does the land use and zoning associated with the project increase the capacity for transit-supportive employment intensities within the TPA?

2. **Would the proposed project implement the General Plan's Mobility Element in Transit Priority Areas to increase the use of transit?**
   Considerations for this question:
   - Does the proposed project support/incorporate identified transit routes and stops/stations?
   - Does the project include transit priority measures?

3. **Would the proposed project implement pedestrian improvements in Transit Priority Areas to increase walking opportunities?**
   Considerations for this question:
   - Does the proposed project circulation system provide multiple and direct pedestrian connections and accessibility to local activity centers (such as transit stations, schools, shopping centers, and libraries)?
   - Does the proposed project urban design include features for walkability to promote a transit supportive environment?

4. **Would the proposed project implement the City of San Diego's Bicycle Master Plan to increase bicycling opportunities?**
   Considerations for this question:
   - Does the proposed project circulation system include bicycle improvements consistent with the Bicycle Master Plan?
   - Does the overall project circulation system provide a balanced, multimodal, "complete streets" approach to accommodate mobility needs of all users?

5. **Would the proposed project incorporate implementation mechanisms that support Transit Oriented Development?**
   Considerations for this question:
   - Does the proposed project include new or expanded urban public spaces such as plazas, pocket parks, or urban greens in the TPA?
   - Does the land use and zoning associated with the proposed project increase the potential for jobs within the TPA?
   - Do the zoning/implementing regulations associated with the proposed project support the efficient use of parking through mechanisms such as: shared parking, parking districts, unbundled parking, reduced parking, paid or time-limited parking, etc.?

6. **Would the proposed project implement the Urban Forest Management Plan to increase urban tree canopy coverage?**
   Considerations for this question:
   - Does the proposed project provide at least three different species for the primary, secondary and accent trees in order to accommodate varying parkway widths?
   - Does the proposed project include policies or strategies for preserving existing trees?
   - Does the proposed project incorporate tree planting that will contribute to the City's 20% urban canopy tree coverage goal?

CLIMATE ACTION PLAN CONSISTENCY CHECKLIST
ATTACHMENT A

This attachment provides performance standards for applicable Climate Action Pan (CAP) Consistency Checklist measures.

Table 1 **Roof Design Values for Question 1: Cool/Green Roofs supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan**

Land Use Type	Roof Slope	Minimum 3-Year Aged Solar Reflectance	Thermal Emittance	Solar Reflective Index
Low-Rise Residential	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16
High-Rise Residential Buildings, Hotels and Motels	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16
Non-Residential	≤ 2:12	0.55	0.75	64
	> 2:12	0.20	0.75	16

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 residential and non-residential voluntary measures shown in Tables A4.106.5.1 and A5.106.11.2.2, respectively. Roof installation and verification shall occur in accordance with the CALGreen Code.

CALGreen does not include recommended values for low-rise residential buildings with roof slopes of ≤ 2:12 for San Diego's climate zones (7 and 10). Therefore, the values for climate zone 15 that covers Imperial County are adapted here.

Solar Reflectance Index (SRI) equal to or greater than the values specified in this table may be used as an alternative to compliance with the aged solar reflectance values and thermal emittance.

Table 2 Fixture Flow Rates for Non-Residential Buildings related to Question 2: Plumbing Fixtures and Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan

Fixture Type	Maximum Flow Rate
Showerheads	1.8 gpm @ 80 psi
Lavatory Faucets	0.35 gpm @60 psi
Kitchen Faucets	1.6 gpm @ 60 psi
Wash Fountains	1.6 [rim space(in.)/20 gpm @ 60 psi]
Metering Faucets	0.18 gallons/cycle
Metering Faucets for Wash Fountains	0.18 [rim space(in.)/20 gpm @ 60 psi]
Gravity Tank-type Water Closets	1.12 gallons/flush
Flushometer Tank Water Closets	1.12 gallons/flush
Flushometer Valve Water Closets	1.12 gallons/flush
Electromechanical Hydraulic Water Closets	1.12 gallons/flush
Urinals	0.5 gallons/flush

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Tables A5.303.2.3.1 and A5.106.11.2.2, respectively. See the California Plumbing Code for definitions of each fixture type.

Where complying faucets are unavailable, aerators rated at 0.35 gpm or other means may be used to achieve reduction.

Acronyms:
gpm = gallons per minute
psi = pounds per square inch (unit of pressure)
in. = inch

Table 3 **Standards for Appliances and Fixtures for Commercial Application related to Question 2: Plumbing Fixtures and Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan**

Appliance/Fixture Type	Standard	
Clothes Washers	Maximum Water Factor (WF) that will reduce the use of water by 10 percent below the California Energy Commissions' WF standards for commercial clothes washers located in Title 20 of the *California Code of Regulations.*	
Conveyor-type Dishwashers	0.70 maximum gallons per rack (2.6 L) (High-Temperature)	0.62 maximum gallons per rack (4.4 L) (Chemical)
Door-type Dishwashers	0.95 maximum gallons per rack (3.6 L) (High-Temperature)	1.16 maximum gallons per rack (2.6 L) (Chemical)
Undercounter-type Dishwashers	0.90 maximum gallons per rack (3.4 L) (High-Temperature)	0.98 maximum gallons per rack (3.7 L) (Chemical)
Combination Ovens	Consume no more than 10 gallons per hour (38 L/h) in the full operational mode.	
Commercial Pre-rinse Spray Valves (manufactured on or after January 1, 2006)	Function at equal to or less than 1.6 gallons per minute (0.10 L/s) at 60 psi (414 kPa) and • Be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate. • Be equipped with an integral automatic shutoff. • Operate at static pressure of at least 30 psi (207 kPa) when designed for a flow rate of 1.3 gallons per minute (0.08 L/s) or less.	

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Section A5.303.3. See the California Plumbing Code for definitions of each appliance/fixture type.

Acronyms:
L = liter
L/h = liters per hour
L/s = liters per second
psi = pounds per square inch (unit of pressure)
kPa = kilopascal (unit of pressure)

Step 3: Project CAP Conformance Evaluation

1. **Would the proposed project implement the General Plan's City of Villages strategy in an identified Transit Priority Area (TPA) that will result in an increase in the capacity for transit-supportive residential and/or employment densities?** Considerations for this question:
    - Does the proposed land use and zoning designation associated with the project provide capacity for transit-supportive residential densities within the TPA?
    - Is the project site suitable to accommodate mixed-use village development, as defined in the General Plan, within the TPA?
    - Does the land use and zoning associated with the project increase the capacity for transit-supportive employment intensities within the TPA?

RESPONSE:

The project requires approval of a Community Plan Amendment (CPA), Rezone, Public Right-of-Way and Easement Vacations, Vesting Tentative Map, and Site Development Permit for the subdivision of one 14.6-acre parcel into two for the future development of up to 45,000 square feet of commercial uses (Lot 1) and the future development of up to 270 multi-family residential units and a park (Lot 2). The City of Villages Strategy of the City's General Plan aims to direct compact growth in ~~limited~~ areas that are served by transit. The project would implement the City of Villages strategy by increasing residential density and constructing a mixed-use development within a TPA. Specifically, the CPA would redesignate a portion of the project site from Community Commercial – Residential Prohibited to Residential – Medium Density. ~~residential development permits a~~ Allowable density would increase from 0 dwelling units to ~~of~~ 15 to 29 units per acre within the proposed RM-2-5 zone. ~~increasing the density on the project site by~~ This would allow residential constructio n~~g~~ between 139 and ~~a~~ 270 ~~-~~units. The project would be permitted for a 171 multi-family residential apartment complex. ~~Higher~~ Adding density ~~development on this~~to the project site would be supportive of ~~the~~ existing and planned transit ~~access~~ service to the project site. Additionally, the commercial component of the project would provide employment opportunities and ~~would serve~~provide commercial services to the future residential use as well as the existing residential uses ~~in the vicinity of~~near the project site. The project would implement the City of Villages strategy in an identified TPA ~~and would result in an~~by providing housing in a mixed-use setting near a transit stop and ~~increase in the capacity~~ allow for ~~transit-supportive visitor~~community-serving ~~and employment densities~~commercial uses.

2. **Would the proposed project implement the General Plan's Mobility Element in Transit Priority Areas to increase the use of transit?** Considerations for this question:
    - Does the proposed project support/incorporate identified transit routes and stops/stations?
    - Does the project include transit priority measures?

RESPONSE:

The project would add density directly adjacent to an existing bus route and a park-and-ride lot. Route 905 Iris Transit Center – Otay Mesa is an existing bus route that provides service along State Route 905 (SR-905) and Otay Mesa Road between the Iris Transit Center and the Otay Mesa Port of Entry. Route 905 provides 15- to 30-minute frequencies on weekdays and 60-minute frequencies on weekends. There are two bus stops adjacent to and near the project site—one at SR-905 and Caliente Avenue near the southwest corner of the project site and another at Otay Mesa Road and Corporate Center Drive approximately 0.35-mile east of the project site. Additionally, the project site is located 0.15-mile east of Caltrans Park and Ride Lot 80. Park and ride lots are for ride share commuter (vanpool/carpool) use. The project would install new accessible sidewalks along the project frontage along Otay Mesa Road. Internal paths would connect to sidewalks to provide pedestrian connectivity to adjacent transit.

As detailed in the Transportation Impact Analysis (LOS Engineering, July 2018), the project would include a Transportation Demand Management (TDM) plan to foster use of alternative forms of transportation other than single occupancy vehicles. The TDM would include information on the following: provide information about SANDAG’s iCommute program (www.icommutesd.com); encourage carpooling, encourage bike and transit usage; display maps, routes, and schedules for public transit near the retail buildings, and provide a bike rack.

3. **Would the proposed project implement pedestrian improvements in Transit Priority Areas to increase walking opportunities?** Considerations for this question:
    - Does the proposed project circulation system provide multiple and direct pedestrian connections and accessibility to local activity centers (such as transit stations, schools, shopping centers, and libraries)?
    - Does the proposed project urban design include features for walkability to promote a transit supportive environment?

RESPONSE:

The project would be designed to provide access by connecting to existing and proposed transit lines. As discussed, there are two Route 905 bus stops and a park-and-ride lot located within a quarter mile of the project site. The project would install new accessible sidewalks along the project frontage along Otay Mesa Road. Internal paths would connect to sidewalks to provide pedestrian connectivity to adjacent transit. Thus, with the proposed internal private pedestrian connections to the improved public sidewalks, the project incorporates features for walkability, providing direct access to the transit stop and to local commercial amenities.

4. **Would the proposed project implement the City of San Diego’s Bicycle Master Plan to increase bicycling opportunities?** Considerations for this question:
    - Does the proposed project circulation system include bicycle improvements consistent with the Bicycle Master Plan?
    - Does the overall project circulation system provide a balanced, multimodal, “complete streets” approach to accommodate mobility needs of all users?

RESPONSE:

Otay Mesa Road is currently a Class III bicycle route, and Ocean View Hills Parkway has a Class II bicycle lane. The City of San Diego Bicycle Master Plan identifies Otay Mesa Road as well as a planned Class II bicycle facility. Additionally, the Bicycle Master Plan identifies a planned Class I bicycle path south of the project site that would parallel SR-905 from Beyer Boulevard to the project site, and would then travel south of the project site connecting to Airway Road and continue along Airway Road to the eastern City boundary. The project would provide adequate frontage along Otay Mesa Road to allow for implementation of these priority bicycle improvements. The project would provide frontage improvements including the roadway widths required to implement planned bicycle improvements but would not install bike lane striping since this would need to be coordinated and implemented along the length of the roadway, which is beyond the control of the project applicant. The project would not alter the surrounding circulation system, but would provide roadway improvements consistent with City standards. The project would maximize pedestrian connectivity from the project site connecting to the surrounding area. Overall, proposed roadway improvements would promote a balanced, multimodal, “complete streets” approach to accommodate mobility needs of all users.

Additionally, the site plan provides bicycle parking in excess of the minimum requirement of 103 spaces. Each residential unit provides private bicycle parking within the garage (171 spaces minimum), and the park will provide bike racks including 12 spaces for visitors. Approximately 183 bicycle parking spaces will be provided, an excess of 80 spaces.

5. **Would the proposed project incorporate implementation mechanisms that support Transit Oriented Development?** Considerations for this question:
   - Does the proposed project include new or expanded urban public spaces such as plazas, pocket parks, or urban greens in the TPA?
   - Does the land use and zoning associated with the proposed project increase the potential for jobs within the TPA?
   - Do the zoning/implementing regulations associated with the proposed project support the efficient use of parking through mechanisms such as: shared parking, parking districts, unbundled parking, reduced parking, paid or time-limited parking, etc.?

RESPONSE:

The project would include the construction of a 0.19-acre park to provide recreational opportunities for future residents. The commercial portion of the project would construct up to 45,000 square feet of commercial uses that would provide additional employment opportunities. The project would enhance the surrounding right-of-way by providing improved pedestrian pathways adjacent to and within the project site. The project would also include landscaping improvements within the project site and along the project site frontage that would enhance the roadway corridor and the pedestrian realm.

The project would meet the City’s parking requirements for both the residential and commercial project components. The project site’s location in proximity to an existing bus route, park and ride facility, and Class I, II, and III bicycle routes would encourage alternative transportation uses.

6. **Would the proposed project implement the Urban Forest Management Plan to increase urban tree canopy coverage?** Considerations for this question:
    - Does the proposed project provide at least three different species for the primary, secondary and accent trees in order to accommodate varying parkway widths?
    - Does the proposed project include policies or strategies for preserving existing trees?
    - Does the proposed project incorporate tree planting that will contribute to the City’s 20% urban canopy tree coverage goal?

RESPONSE:

The project landscape plan provides for a number of tree options (seven different species) to accommodate the varying needs throughout the project site and frontage. There are no existing trees on the site.

Attachment to the CAP Checklist

2016 Nonresidential Compliance Manual for the 2016 Building Efficiency Standards

Table 3-2: Prescriptive Criteria for Roofing Products for Nonresidential Buildings

liquid coatings must be tested to meet performance and durability requirements as specified in Table 110.8-C of the Energy Standards or the minimum performance requirements of ASTM C836, D3468, D6083, or D6694, whichever are appropriate to the coating material.

~~3.2.2.2~~3.2.2.1 **Prescriptive Measures**

C. Thermal Emittance and Solar Reflectance

§140.3(a)1A, TABLES 140.3-B,C,D

The prescriptive requirements call for roofing products to meet the solar reflectance and thermal emittance in both low-sloped and steep-sloped roof applications for nonresidential buildings. A qualifying roofing product under the prescriptive approach for a nonresidential building must have an aged solar reflectance and thermal emittance greater than or equal to that the values indicated in Table 3-2 below. Table 3-3 is for high-rise residential buildings and hotel/motel guest rooms, and Table 3-4 is for relocatable public school buildings where the manufacturer certifies use in all climate zones.

Table 3-2: Prescriptive Criteria for Roofing Products for Nonresidential Buildings

			Climate Zones															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Roofing Products	Low-sloped	Aged Reflectance	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
		Emittance	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
		SRI	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
	Steep-Sloped	Aged Reflectance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
		Emittance	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
		SRI	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

Energy Standards Table 140.3-B

Table 3-3: Prescriptive Criteria for Roofing Products for High-Rise Residential Buildings and Guest Rooms of Hotel/Motel Buildings

			Climate Zones															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Roofing Products	Low-sloped	Aged Reflectance	NR	NR	NR	NR	NR	NR	NR	NR	0.55	0.55	0.55	NR	0.55	0.55	0.55	NR
		Emittance	NR	NR	NR	NR	NR	NR	NR	NR	0.75	0.75	0.75	NR	0.75	0.75	0.75	NR
		SRI	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
	Steep-Sloped	Aged Reflectance	NR	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	NR
		Emittance	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
		SRI	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

Energy Standards Table 140.3-C

CalEEMod Output –
CAP Buildout Scenario and Project

	Annual Emissions MT CO2E	
	192,000 SF Retail	**Project**
Vehicles	9,568	4,564
Energy	594	452
Area	0	3
Water	73	98
Waste	76	64
TOTAL	**10,311**	**5,182**

CAP Buildout Scenario
14.66 acre site
0.3 FAR
~ 192,000 square feet

Project
14.66 acre site
267 multi-family units
0.19 acre park
45,000 square feet commercial

4135.1 PA 61 Constraints - All Retail

San Diego County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Strip Mall	192.00	1000sqft	14.66	192,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	519.91	**CH4 Intensity (lb/MWhr)**	0.021	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - RPS - SDG&E currently at 35.2%
CalEEMod accounts for 10.2%
Additional reduction applied
(519.91, 0.021, 0.004)

Land Use - Retail - 14.66 acres - Assuming 0.3 FAR - 192,000 sf

Construction Phase - Default

Architectural Coating - SDAPCD Rule 67.0.1

Vehicle Trips - SANDAG Trip Rates
Retail (Neighborhood) - 120 trips/ksf
5.8 mile trip length

Woodstoves - No woodstoves, only natural gas fireplaces

Area Coating - SDAPCD Rule 67.0.1

Energy Use -

Water And Wastewater - CalGreen - 20% decrease in indoor water use
Retail - 11,377,539.30

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Residential_Exterior	250	150
tblAreaCoating	Area_EF_Residential_Interior	250	100
tblLandUse	LotAcreage	4.41	14.66
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.021
tblProjectCharacteristics	CO2IntensityFactor	720.49	519.91
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	WD_TR	44.32	120.00
tblWater	IndoorWaterUseRate	14,221,924.12	11,377,539.30

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.4437	4.1998	2.9386	5.6500e-003	0.3004	0.2221	0.5225	0.1254	0.2078	0.3332	0.0000	511.8035	511.8035	0.1057	0.0000	514.4457
2019	1.1279	1.1652	0.9627	1.8800e-003	0.0296	0.0617	0.0913	8.0600e-003	0.0579	0.0660	0.0000	168.4828	168.4828	0.0326	0.0000	169.2971
Maximum	**1.1279**	**4.1998**	**2.9386**	**5.6500e-003**	**0.3004**	**0.2221**	**0.5225**	**0.1254**	**0.2078**	**0.3332**	**0.0000**	**511.8035**	**511.8035**	**0.1057**	**0.0000**	**514.4457**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.4437	4.1998	2.9386	5.6500e-003	0.3004	0.2221	0.5225	0.1254	0.2078	0.3331	0.0000	511.8030	511.8030	0.1057	0.0000	514.4452
2019	1.1279	1.1652	0.9627	1.8800e-003	0.0296	0.0617	0.0913	8.0600e-003	0.0579	0.0660	0.0000	168.4827	168.4827	0.0326	0.0000	169.2970
Maximum	**1.1279**	**4.1998**	**2.9386**	**5.6500e-003**	**0.3004**	**0.2221**	**0.5225**	**0.1254**	**0.2078**	**0.3331**	**0.0000**	**511.8030**	**511.8030**	**0.1057**	**0.0000**	**514.4452**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2018**	**3-31-2018**	1.5948	1.5948
2	**4-1-2018**	**6-30-2018**	0.9997	0.9997
3	**7-1-2018**	**9-30-2018**	1.0107	1.0107
4	**10-1-2018**	**12-31-2018**	1.0130	1.0130
5	**1-1-2019**	**3-31-2019**	0.8966	0.8966
6	**4-1-2019**	**6-30-2019**	1.3798	1.3798
		Highest	1.5948	1.5948

2.2 Overall Operational

<u>Unmitigated Operational</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8501	2.0000e-005	1.7800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4300e-003	3.4300e-003	1.0000e-005	0.0000	3.6600e-003
Energy	2.3100e-003	0.0210	0.0176	1.3000e-004		1.6000e-003	1.6000e-003		1.6000e-003	1.6000e-003	0.0000	591.5503	591.5503	0.0234	4.7900e-003	593.5642
Mobile	4.4675	16.9543	39.3814	0.1037	7.9894	0.1092	8.0986	2.1397	0.1023	2.2420	0.0000	9,552.5348	9,552.5348	0.6190	0.0000	9,568.0085
Waste						0.0000	0.0000		0.0000	0.0000	40.9230	0.0000	40.9230	2.4185	0.0000	101.3850
Water						0.0000	0.0000		0.0000	0.0000	3.6096	57.7751	61.3847	0.3731	9.2000e-003	73.4526
Total	**5.3200**	**16.9753**	**39.4008**	**0.1038**	**7.9894**	**0.1108**	**8.1002**	**2.1397**	**0.1039**	**2.2436**	**44.5326**	**10,201.8636**	**10,246.3961**	**3.4339**	**0.0140**	**10,336.4139**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8501	2.0000e-005	1.7800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4300e-003	3.4300e-003	1.0000e-005	0.0000	3.6600e-003
Energy	2.3100e-003	0.0210	0.0176	1.3000e-004		1.6000e-003	1.6000e-003		1.6000e-003	1.6000e-003	0.0000	591.5503	591.5503	0.0234	4.7900e-003	593.5642
Mobile	4.4675	16.9543	39.3814	0.1037	7.9894	0.1092	8.0986	2.1397	0.1023	2.2420	0.0000	9,552.5348	9,552.5348	0.6190	0.0000	9,568.0085
Waste						0.0000	0.0000		0.0000	0.0000	30.6922	0.0000	30.6922	1.8139	0.0000	76.0387
Water						0.0000	0.0000		0.0000	0.0000	3.6096	57.7751	61.3847	0.3731	9.2000e-003	73.4526
Total	**5.3200**	**16.9753**	**39.4008**	**0.1038**	**7.9894**	**0.1108**	**8.1002**	**2.1397**	**0.1039**	**2.2436**	**34.3018**	**10,201.8636**	**10,236.1654**	**2.8293**	**0.0140**	**10,311.0676**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**22.97**	**0.00**	**0.10**	**17.61**	**0.00**	**0.25**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2018	1/12/2018	5	10	
2	Grading	Grading	1/13/2018	2/23/2018	5	30	
3	Building Construction	Building Construction	2/24/2018	4/19/2019	5	300	
4	Paving	Paving	4/20/2019	5/17/2019	5	20	
5	Architectural Coating	Architectural Coating	5/18/2019	6/14/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 288,000; Non-Residential Outdoor: 96,000; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	61.00	31.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	3.0000e-004	2.9200e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6946	0.6946	2.0000e-005	0.0000	0.6952
Total	**3.8000e-004**	**3.0000e-004**	**2.9200e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6946**	**0.6946**	**2.0000e-005**	**0.0000**	**0.6952**

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	3.0000e-004	2.9200e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6946	0.6946	2.0000e-005	0.0000	0.6952
Total	**3.8000e-004**	**3.0000e-004**	**2.9200e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6946**	**0.6946**	**2.0000e-005**	**0.0000**	**0.6952**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2800e-003	1.0200e-003	9.7400e-003	3.0000e-005	2.4100e-003	2.0000e-005	2.4200e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.3153	2.3153	8.0000e-005	0.0000	2.3173
Total	**1.2800e-003**	**1.0200e-003**	**9.7400e-003**	**3.0000e-005**	**2.4100e-003**	**2.0000e-005**	**2.4200e-003**	**6.4000e-004**	**2.0000e-005**	**6.6000e-004**	**0.0000**	**2.3153**	**2.3153**	**8.0000e-005**	**0.0000**	**2.3173**

3.3 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2800e-003	1.0200e-003	9.7400e-003	3.0000e-005	2.4100e-003	2.0000e-005	2.4200e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.3153	2.3153	8.0000e-005	0.0000	2.3173
Total	**1.2800e-003**	**1.0200e-003**	**9.7400e-003**	**3.0000e-005**	**2.4100e-003**	**2.0000e-005**	**2.4200e-003**	**6.4000e-004**	**2.0000e-005**	**6.6000e-004**	**0.0000**	**2.3153**	**2.3153**	**8.0000e-005**	**0.0000**	**2.3173**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2961	2.5846	1.9426	2.9700e-003		0.1657	0.1657		0.1558	0.1558	0.0000	262.7328	262.7328	0.0644	0.0000	264.3420
Total	**0.2961**	**2.5846**	**1.9426**	**2.9700e-003**		**0.1657**	**0.1657**		**0.1558**	**0.1558**	**0.0000**	**262.7328**	**262.7328**	**0.0644**	**0.0000**	**264.3420**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0180	0.4573	0.1258	9.4000e-004	0.0227	3.5500e-003	0.0263	6.5600e-003	3.4000e-003	9.9600e-003	0.0000	91.6865	91.6865	7.5600e-003	0.0000	91.8754
Worker	0.0288	0.0228	0.2188	5.8000e-004	0.0541	4.0000e-004	0.0545	0.0144	3.7000e-004	0.0147	0.0000	52.0215	52.0215	1.8000e-003	0.0000	52.0664
Total	**0.0468**	**0.4801**	**0.3446**	**1.5200e-003**	**0.0768**	**3.9500e-003**	**0.0807**	**0.0209**	**3.7700e-003**	**0.0247**	**0.0000**	**143.7080**	**143.7080**	**9.3600e-003**	**0.0000**	**143.9418**

3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2961	2.5846	1.9426	2.9700e-003		0.1657	0.1657		0.1558	0.1558	0.0000	262.7325	262.7325	0.0644	0.0000	264.3417
Total	**0.2961**	**2.5846**	**1.9426**	**2.9700e-003**		**0.1657**	**0.1657**		**0.1558**	**0.1558**	**0.0000**	**262.7325**	**262.7325**	**0.0644**	**0.0000**	**264.3417**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0180	0.4573	0.1258	9.4000e-004	0.0227	3.5500e-003	0.0263	6.5600e-003	3.4000e-003	9.9600e-003	0.0000	91.6865	91.6865	7.5600e-003	0.0000	91.8754
Worker	0.0288	0.0228	0.2188	5.8000e-004	0.0541	4.0000e-004	0.0545	0.0144	3.7000e-004	0.0147	0.0000	52.0215	52.0215	1.8000e-003	0.0000	52.0664
Total	**0.0468**	**0.4801**	**0.3446**	**1.5200e-003**	**0.0768**	**3.9500e-003**	**0.0807**	**0.0209**	**3.7700e-003**	**0.0247**	**0.0000**	**143.7080**	**143.7080**	**9.3600e-003**	**0.0000**	**143.9418**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0933	0.8326	0.6780	1.0600e-003		0.0510	0.0510		0.0479	0.0479	0.0000	92.8662	92.8662	0.0226	0.0000	93.4317
Total	**0.0933**	**0.8326**	**0.6780**	**1.0600e-003**		**0.0510**	**0.0510**		**0.0479**	**0.0479**	**0.0000**	**92.8662**	**92.8662**	**0.0226**	**0.0000**	**93.4317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.7400e-003	0.1537	0.0413	3.3000e-004	8.1300e-003	1.0600e-003	9.1900e-003	2.3500e-003	1.0200e-003	3.3600e-003	0.0000	32.5323	32.5323	2.6100e-003	0.0000	32.5975
Worker	9.5000e-003	7.2900e-003	0.0705	2.0000e-004	0.0193	1.4000e-004	0.0195	5.1300e-003	1.3000e-004	5.2600e-003	0.0000	18.0350	18.0350	5.8000e-004	0.0000	18.0495
Total	**0.0152**	**0.1610**	**0.1118**	**5.3000e-004**	**0.0275**	**1.2000e-003**	**0.0287**	**7.4800e-003**	**1.1500e-003**	**8.6200e-003**	**0.0000**	**50.5673**	**50.5673**	**3.1900e-003**	**0.0000**	**50.6471**

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0933	0.8326	0.6780	1.0600e-003		0.0510	0.0510		0.0479	0.0479	0.0000	92.8661	92.8661	0.0226	0.0000	93.4316
Total	**0.0933**	**0.8326**	**0.6780**	**1.0600e-003**		**0.0510**	**0.0510**		**0.0479**	**0.0479**	**0.0000**	**92.8661**	**92.8661**	**0.0226**	**0.0000**	**93.4316**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.7400e-003	0.1537	0.0413	3.3000e-004	8.1300e-003	1.0600e-003	9.1900e-003	2.3500e-003	1.0200e-003	3.3600e-003	0.0000	32.5323	32.5323	2.6100e-003	0.0000	32.5975
Worker	9.5000e-003	7.2900e-003	0.0705	2.0000e-004	0.0193	1.4000e-004	0.0195	5.1300e-003	1.3000e-004	5.2600e-003	0.0000	18.0350	18.0350	5.8000e-004	0.0000	18.0495
Total	**0.0152**	**0.1610**	**0.1118**	**5.3000e-004**	**0.0275**	**1.2000e-003**	**0.0287**	**7.4800e-003**	**1.1500e-003**	**8.6200e-003**	**0.0000**	**50.5673**	**50.5673**	**3.1900e-003**	**0.0000**	**50.6471**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.5000e-004	4.3900e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.1227	1.1227	4.0000e-005	0.0000	1.1237
Total	**5.9000e-004**	**4.5000e-004**	**4.3900e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.1227**	**1.1227**	**4.0000e-005**	**0.0000**	**1.1237**

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.5000e-004	4.3900e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.1227	1.1227	4.0000e-005	0.0000	1.1237
Total	**5.9000e-004**	**4.5000e-004**	**4.3900e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.1227**	**1.1227**	**4.0000e-005**	**0.0000**	**1.1237**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0012					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6600e-003	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5587
Total	**1.0038**	**0.0184**	**0.0184**	**3.0000e-005**		**1.2900e-003**	**1.2900e-003**		**1.2900e-003**	**1.2900e-003**	**0.0000**	**2.5533**	**2.5533**	**2.2000e-004**	**0.0000**	**2.5587**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.6000e-004	3.5100e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.8982	0.8982	3.0000e-005	0.0000	0.8989
Total	**4.7000e-004**	**3.6000e-004**	**3.5100e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.8982**	**0.8982**	**3.0000e-005**	**0.0000**	**0.8989**

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0012					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6600e-003	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5586
Total	**1.0038**	**0.0184**	**0.0184**	**3.0000e-005**		**1.2900e-003**	**1.2900e-003**		**1.2900e-003**	**1.2900e-003**	**0.0000**	**2.5533**	**2.5533**	**2.2000e-004**	**0.0000**	**2.5586**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.6000e-004	3.5100e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.8982	0.8982	3.0000e-005	0.0000	0.8989
Total	**4.7000e-004**	**3.6000e-004**	**3.5100e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**1.0000e-005**	**2.6000e-004**	**0.0000**	**0.8982**	**0.8982**	**3.0000e-005**	**0.0000**	**0.8989**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.4675	16.9543	39.3814	0.1037	7.9894	0.1092	8.0986	2.1397	0.1023	2.2420	0.0000	9,552.5348	9,552.5348	0.6190	0.0000	9,568.0085
Unmitigated	4.4675	16.9543	39.3814	0.1037	7.9894	0.1092	8.0986	2.1397	0.1023	2.2420	0.0000	9,552.5348	9,552.5348	0.6190	0.0000	9,568.0085

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Strip Mall	23,040.00	8,071.68	3922.56	21,198,192	21,198,192
Total	23,040.00	8,071.68	3,922.56	21,198,192	21,198,192

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Strip Mall	5.80	5.80	5.80	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Strip Mall	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	568.7020	568.7020	0.0230	4.3800e-003	570.5802
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	568.7020	568.7020	0.0230	4.3800e-003	570.5802
NaturalGas Mitigated	2.3100e-003	0.0210	0.0176	1.3000e-004		1.6000e-003	1.6000e-003		1.6000e-003	1.6000e-003	0.0000	22.8483	22.8483	4.4000e-004	4.2000e-004	22.9840
NaturalGas Unmitigated	2.3100e-003	0.0210	0.0176	1.3000e-004		1.6000e-003	1.6000e-003		1.6000e-003	1.6000e-003	0.0000	22.8483	22.8483	4.4000e-004	4.2000e-004	22.9840

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Strip Mall	428160	2.3100e-003	0.0210	0.0176	1.3000e-004		1.6000e-003	1.6000e-003		1.6000e-003	1.6000e-003	0.0000	22.8483	22.8483	4.4000e-004	4.2000e-004	22.9840
Total		**2.3100e-003**	**0.0210**	**0.0176**	**1.3000e-004**		**1.6000e-003**	**1.6000e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**22.8483**	**22.8483**	**4.4000e-004**	**4.2000e-004**	**22.9840**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Strip Mall	428160	2.3100e-003	0.0210	0.0176	1.3000e-004		1.6000e-003	1.6000e-003		1.6000e-003	1.6000e-003	0.0000	22.8483	22.8483	4.4000e-004	4.2000e-004	22.9840
Total		**2.3100e-003**	**0.0210**	**0.0176**	**1.3000e-004**		**1.6000e-003**	**1.6000e-003**		**1.6000e-003**	**1.6000e-003**	**0.0000**	**22.8483**	**22.8483**	**4.4000e-004**	**4.2000e-004**	**22.9840**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Strip Mall	2.41152e+006	568.7020	0.0230	4.3800e-003	570.5802
Total		**568.7020**	**0.0230**	**4.3800e-003**	**570.5802**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Strip Mall	2.41152e+006	568.7020	0.0230	4.3800e-003	570.5802
Total		**568.7020**	**0.0230**	**4.3800e-003**	**570.5802**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8501	2.0000e-005	1.7800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4300e-003	3.4300e-003	1.0000e-005	0.0000	3.6600e-003
Unmitigated	0.8501	2.0000e-005	1.7800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4300e-003	3.4300e-003	1.0000e-005	0.0000	3.6600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1001					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7499					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.7800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4300e-003	3.4300e-003	1.0000e-005	0.0000	3.6600e-003
Total	**0.8502**	**2.0000e-005**	**1.7800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.4300e-003**	**3.4300e-003**	**1.0000e-005**	**0.0000**	**3.6600e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1001					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7499					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.7800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.4300e-003	3.4300e-003	1.0000e-005	0.0000	3.6600e-003
Total	**0.8502**	**2.0000e-005**	**1.7800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.4300e-003**	**3.4300e-003**	**1.0000e-005**	**0.0000**	**3.6600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	61.3847	0.3731	9.2000e-003	73.4526
Unmitigated	61.3847	0.3731	9.2000e-003	73.4526

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Strip Mall	11.3775 / 8.71666	61.3847	0.3731	9.2000e-003	73.4526
Total		**61.3847**	**0.3731**	**9.2000e-003**	**73.4526**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Strip Mall	11.3775 / 8.71666	61.3847	0.3731	9.2000e-003	73.4526
Total		**61.3847**	**0.3731**	**9.2000e-003**	**73.4526**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	30.6922	1.8139	0.0000	76.0387
Unmitigated	40.9230	2.4185	0.0000	101.3850

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Strip Mall	201.6	40.9230	2.4185	0.0000	101.3850
Total		**40.9230**	**2.4185**	**0.0000**	**101.3850**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Strip Mall	151.2	30.6922	1.8139	0.0000	76.0387
Total		**30.6922**	**1.8139**	**0.0000**	**76.0387**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

4135.1 PA 61

San Diego County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.19	Acre	0.19	8,276.40	0
Apartments Mid Rise	267.00	Dwelling Unit	9.84	267,000.00	764
Strip Mall	45.00	1000sqft	4.63	45,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	457.25	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Energy intensity factors updated based on SDG&E renewable procurement
(457.25, 0.018, 0.004)

Land Use - Residential - 267 units
Commercial - 45,000 sf, 4.63 acres
Park - 0.19 acres
Total Site 14.66 acres

Construction Phase - Arch coatings simultaneous with building construction

Off-road Equipment - Paving defaults

Trips and VMT -

On-road Fugitive Dust -

Architectural Coating - SDAPCD Rule 67.0.1

Vehicle Trips - Residential - 8 trips/unit weekday
Commercial - 120 trips/ksf weekday
Park - internal use, no trips
5.8 mile trip length

Woodstoves - No woodstoves or fireplaces

Area Coating - SDAPCD Rule 67.0.1

Energy Use -

Water And Wastewater - CalGreen - 20% decrease in indoor water use
Residential - 13,916,899.87
Retail - 2,666,610.78

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Residential_Exterior	250	150

tblAreaCoating	Area_EF_Residential_Interior	250	100
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	150
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	100
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	250	150
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	250	100
tblConstructionPhase	NumDays	20.00	200.00
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberGas	146.85	0.00
tblFireplaces	NumberNoFireplace	26.70	267.00
tblFireplaces	NumberWood	93.45	0.00
tblLandUse	LotAcreage	7.03	9.84
tblLandUse	LotAcreage	1.03	4.63
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	457.25
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TL	7.30	5.80
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TL	7.30	5.80
tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TL	9.50	5.80
tblVehicleTrips	HO_TL	7.50	5.80
tblVehicleTrips	HS_TL	7.30	5.80
tblVehicleTrips	HW_TL	10.80	5.80

tblVehicleTrips	ST_TR	6.39	8.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	42.04	120.00
tblVehicleTrips	SU_TR	5.86	8.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	20.43	120.00
tblVehicleTrips	WD_TR	6.65	8.00
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	44.32	120.00
tblWater	IndoorWaterUseRate	17,396,124.84	13,916,899.87
tblWater	IndoorWaterUseRate	3,333,263.47	2,666,610.78
tblWoodstoves	NumberCatalytic	13.35	0.00
tblWoodstoves	NumberNoncatalytic	13.35	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	1.7711	4.0782	3.5216	7.5600e-003	0.4572	0.2031	0.6603	0.1671	0.1905	0.3576	0.0000	680.1231	680.1231	0.1114	0.0000	682.9091
2020	0.9848	1.1592	1.1990	2.6100e-003	0.0907	0.0574	0.1482	0.0243	0.0541	0.0784	0.0000	233.4043	233.4043	0.0347	0.0000	234.2726
Maximum	**1.7711**	**4.0782**	**3.5216**	**7.5600e-003**	**0.4572**	**0.2031**	**0.6603**	**0.1671**	**0.1905**	**0.3576**	**0.0000**	**680.1231**	**680.1231**	**0.1114**	**0.0000**	**682.9091**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	1.7711	4.0782	3.5216	7.5600e-003	0.4572	0.2031	0.6603	0.1671	0.1905	0.3576	0.0000	680.1227	680.1227	0.1114	0.0000	682.9087
2020	0.9848	1.1592	1.1990	2.6100e-003	0.0907	0.0574	0.1482	0.0243	0.0541	0.0784	0.0000	233.4041	233.4041	0.0347	0.0000	234.2725
Maximum	**1.7711**	**4.0782**	**3.5216**	**7.5600e-003**	**0.4572**	**0.2031**	**0.6603**	**0.1671**	**0.1905**	**0.3576**	**0.0000**	**680.1227**	**680.1227**	**0.1114**	**0.0000**	**682.9087**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2019**	**3-31-2019**	1.5031	1.5031
2	**4-1-2019**	**6-30-2019**	0.9619	0.9619
3	**7-1-2019**	**9-30-2019**	1.6194	1.6194
4	**10-1-2019**	**12-31-2019**	1.7528	1.7528
5	**1-1-2020**	**3-31-2020**	1.6391	1.6391
6	**4-1-2020**	**6-30-2020**	0.5139	0.5139
		Highest	1.7528	1.7528

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4906	0.0230	1.9895	1.0000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	3.2392	3.2392	3.1600e-003	0.0000	3.3182
Energy	0.0112	0.0963	0.0430	6.1000e-004		7.7600e-003	7.7600e-003		7.7600e-003	7.7600e-003	0.0000	450.2078	450.2078	0.0155	5.0000e-003	452.0860
Mobile	1.9281	7.5216	17.9482	0.0495	3.8836	0.0516	3.9351	1.0401	0.0483	1.0884	0.0000	4,557.2959	4,557.2959	0.2842	0.0000	4,564.4007
Waste						0.0000	0.0000		0.0000	0.0000	34.5267	0.0000	34.5267	2.0405	0.0000	85.5385
Water						0.0000	0.0000		0.0000	0.0000	5.2612	75.2862	80.5474	0.5433	0.0134	98.1294
Total	**3.4300**	**7.6409**	**19.9807**	**0.0502**	**3.8836**	**0.0703**	**3.9538**	**1.0401**	**0.0670**	**1.1071**	**39.7879**	**5,086.0291**	**5,125.8170**	**2.8866**	**0.0184**	**5,203.4728**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4906	0.0230	1.9895	1.0000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	3.2392	3.2392	3.1600e-003	0.0000	3.3182
Energy	0.0112	0.0963	0.0430	6.1000e-004		7.7600e-003	7.7600e-003		7.7600e-003	7.7600e-003	0.0000	450.2078	450.2078	0.0155	5.0000e-003	452.0860
Mobile	1.9281	7.5216	17.9482	0.0495	3.8836	0.0516	3.9351	1.0401	0.0483	1.0884	0.0000	4,557.2959	4,557.2959	0.2842	0.0000	4,564.4007
Waste						0.0000	0.0000		0.0000	0.0000	25.8951	0.0000	25.8951	1.5304	0.0000	64.1539
Water						0.0000	0.0000		0.0000	0.0000	5.2612	75.2862	80.5474	0.5433	0.0134	98.1294
Total	**3.4300**	**7.6409**	**19.9807**	**0.0502**	**3.8836**	**0.0703**	**3.9538**	**1.0401**	**0.0670**	**1.1071**	**31.1562**	**5,086.0291**	**5,117.1853**	**2.3765**	**0.0184**	**5,182.0882**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**21.69**	**0.00**	**0.17**	**17.67**	**0.00**	**0.41**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2019	1/14/2019	5	10	
2	Grading	Grading	1/15/2019	2/25/2019	5	30	
3	Building Construction	Building Construction	2/26/2019	4/20/2020	5	300	
4	Architectural Coating	Architectural Coating	7/16/2019	4/20/2020	5	200	
5	Paving	Paving	4/21/2020	5/18/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 540,675; Residential Outdoor: 180,225; Non-Residential Indoor: 67,500; Non-Residential Outdoor: 22,500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	210.00	37.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	42.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						tons/yr								MT/yr		
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						tons/yr								MT/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.7000e-004	2.6300e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6737	0.6737	2.0000e-005	0.0000	0.6742
Total	**3.5000e-004**	**2.7000e-004**	**2.6300e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6737**	**0.6737**	**2.0000e-005**	**0.0000**	**0.6742**

3.2 Site Preparation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.7000e-004	2.6300e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6737	0.6737	2.0000e-005	0.0000	0.6742
Total	**3.5000e-004**	**2.7000e-004**	**2.6300e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6737**	**0.6737**	**2.0000e-005**	**0.0000**	**0.6742**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5520	83.5520	0.0264	0.0000	84.2129
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.1301**	**0.0357**	**0.1658**	**0.0540**	**0.0329**	**0.0868**	**0.0000**	**83.5520**	**83.5520**	**0.0264**	**0.0000**	**84.2129**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1800e-003	9.1000e-004	8.7800e-003	2.0000e-005	2.4100e-003	2.0000e-005	2.4200e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.2455	2.2455	7.0000e-005	0.0000	2.2473
Total	**1.1800e-003**	**9.1000e-004**	**8.7800e-003**	**2.0000e-005**	**2.4100e-003**	**2.0000e-005**	**2.4200e-003**	**6.4000e-004**	**2.0000e-005**	**6.6000e-004**	**0.0000**	**2.2455**	**2.2455**	**7.0000e-005**	**0.0000**	**2.2473**

3.3 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5519	83.5519	0.0264	0.0000	84.2128
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.1301**	**0.0357**	**0.1658**	**0.0540**	**0.0329**	**0.0868**	**0.0000**	**83.5519**	**83.5519**	**0.0264**	**0.0000**	**84.2128**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1800e-003	9.1000e-004	8.7800e-003	2.0000e-005	2.4100e-003	2.0000e-005	2.4200e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.2455	2.2455	7.0000e-005	0.0000	2.2473
Total	**1.1800e-003**	**9.1000e-004**	**8.7800e-003**	**2.0000e-005**	**2.4100e-003**	**2.0000e-005**	**2.4200e-003**	**6.4000e-004**	**2.0000e-005**	**6.6000e-004**	**0.0000**	**2.2455**	**2.2455**	**7.0000e-005**	**0.0000**	**2.2473**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2609	2.3292	1.8966	2.9700e-003		0.1425	0.1425		0.1340	0.1340	0.0000	259.7901	259.7901	0.0633	0.0000	261.3723
Total	**0.2609**	**2.3292**	**1.8966**	**2.9700e-003**		**0.1425**	**0.1425**		**0.1340**	**0.1340**	**0.0000**	**259.7901**	**259.7901**	**0.0633**	**0.0000**	**261.3723**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0192	0.5132	0.1379	1.1200e-003	0.0271	3.5500e-003	0.0307	7.8300e-003	3.4000e-003	0.0112	0.0000	108.6224	108.6224	8.7200e-003	0.0000	108.8404
Worker	0.0915	0.0702	0.6790	1.9200e-003	0.1861	1.3600e-003	0.1874	0.0495	1.2500e-003	0.0507	0.0000	173.6886	173.6886	5.5800e-003	0.0000	173.8282
Total	**0.1106**	**0.5834**	**0.8168**	**3.0400e-003**	**0.2132**	**4.9100e-003**	**0.2181**	**0.0573**	**4.6500e-003**	**0.0619**	**0.0000**	**282.3111**	**282.3111**	**0.0143**	**0.0000**	**282.6686**

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2609	2.3292	1.8966	2.9700e-003		0.1425	0.1425		0.1340	0.1340	0.0000	259.7898	259.7898	0.0633	0.0000	261.3720
Total	**0.2609**	**2.3292**	**1.8966**	**2.9700e-003**		**0.1425**	**0.1425**		**0.1340**	**0.1340**	**0.0000**	**259.7898**	**259.7898**	**0.0633**	**0.0000**	**261.3720**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0192	0.5132	0.1379	1.1200e-003	0.0271	3.5500e-003	0.0307	7.8300e-003	3.4000e-003	0.0112	0.0000	108.6224	108.6224	8.7200e-003	0.0000	108.8404
Worker	0.0915	0.0702	0.6790	1.9200e-003	0.1861	1.3600e-003	0.1874	0.0495	1.2500e-003	0.0507	0.0000	173.6886	173.6886	5.5800e-003	0.0000	173.8282
Total	**0.1106**	**0.5834**	**0.8168**	**3.0400e-003**	**0.2132**	**4.9100e-003**	**0.2181**	**0.0573**	**4.6500e-003**	**0.0619**	**0.0000**	**282.3111**	**282.3111**	**0.0143**	**0.0000**	**282.6686**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0837	0.7579	0.6655	1.0600e-003		0.0441	0.0441		0.0415	0.0415	0.0000	91.4859	91.4859	0.0223	0.0000	92.0439
Total	**0.0837**	**0.7579**	**0.6655**	**1.0600e-003**		**0.0441**	**0.0441**		**0.0415**	**0.0415**	**0.0000**	**91.4859**	**91.4859**	**0.0223**	**0.0000**	**92.0439**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5700e-003	0.1666	0.0443	4.0000e-004	9.7000e-003	8.1000e-004	0.0105	2.8000e-003	7.8000e-004	3.5800e-003	0.0000	38.5634	38.5634	2.9600e-003	0.0000	38.6373
Worker	0.0306	0.0226	0.2220	6.7000e-004	0.0665	4.8000e-004	0.0670	0.0177	4.4000e-004	0.0181	0.0000	60.1284	60.1284	1.8100e-003	0.0000	60.1736
Total	**0.0362**	**0.1892**	**0.2662**	**1.0700e-003**	**0.0762**	**1.2900e-003**	**0.0775**	**0.0205**	**1.2200e-003**	**0.0217**	**0.0000**	**98.6918**	**98.6918**	**4.7700e-003**	**0.0000**	**98.8108**

3.4 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0837	0.7579	0.6655	1.0600e-003		0.0441	0.0441		0.0415	0.0415	0.0000	91.4858	91.4858	0.0223	0.0000	92.0438
Total	**0.0837**	**0.7579**	**0.6655**	**1.0600e-003**		**0.0441**	**0.0441**		**0.0415**	**0.0415**	**0.0000**	**91.4858**	**91.4858**	**0.0223**	**0.0000**	**92.0438**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5700e-003	0.1666	0.0443	4.0000e-004	9.7000e-003	8.1000e-004	0.0105	2.8000e-003	7.8000e-004	3.5800e-003	0.0000	38.5634	38.5634	2.9600e-003	0.0000	38.6373
Worker	0.0306	0.0226	0.2220	6.7000e-004	0.0665	4.8000e-004	0.0670	0.0177	4.4000e-004	0.0181	0.0000	60.1284	60.1284	1.8100e-003	0.0000	60.1736
Total	**0.0362**	**0.1892**	**0.2662**	**1.0700e-003**	**0.0762**	**1.2900e-003**	**0.0775**	**0.0205**	**1.2200e-003**	**0.0217**	**0.0000**	**98.6918**	**98.6918**	**4.7700e-003**	**0.0000**	**98.8108**

3.5 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.2791					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0161	0.1110	0.1114	1.8000e-004		7.7900e-003	7.7900e-003		7.7900e-003	7.7900e-003	0.0000	15.4472	15.4472	1.3000e-003	0.0000	15.4798
Total	**1.2952**	**0.1110**	**0.1114**	**1.8000e-004**		**7.7900e-003**	**7.7900e-003**		**7.7900e-003**	**7.7900e-003**	**0.0000**	**15.4472**	**15.4472**	**1.3000e-003**	**0.0000**	**15.4798**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0100	7.6900e-003	0.0744	2.1000e-004	0.0204	1.5000e-004	0.0205	5.4100e-003	1.4000e-004	5.5500e-003	0.0000	19.0193	19.0193	6.1000e-004	0.0000	19.0346
Total	**0.0100**	**7.6900e-003**	**0.0744**	**2.1000e-004**	**0.0204**	**1.5000e-004**	**0.0205**	**5.4100e-003**	**1.4000e-004**	**5.5500e-003**	**0.0000**	**19.0193**	**19.0193**	**6.1000e-004**	**0.0000**	**19.0346**

3.5 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.2791					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0161	0.1110	0.1114	1.8000e-004		7.7900e-003	7.7900e-003		7.7900e-003	7.7900e-003	0.0000	15.4472	15.4472	1.3000e-003	0.0000	15.4798
Total	**1.2952**	**0.1110**	**0.1114**	**1.8000e-004**		**7.7900e-003**	**7.7900e-003**		**7.7900e-003**	**7.7900e-003**	**0.0000**	**15.4472**	**15.4472**	**1.3000e-003**	**0.0000**	**15.4798**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0100	7.6900e-003	0.0744	2.1000e-004	0.0204	1.5000e-004	0.0205	5.4100e-003	1.4000e-004	5.5500e-003	0.0000	19.0193	19.0193	6.1000e-004	0.0000	19.0346
Total	**0.0100**	**7.6900e-003**	**0.0744**	**2.1000e-004**	**0.0204**	**1.5000e-004**	**0.0205**	**5.4100e-003**	**1.4000e-004**	**5.5500e-003**	**0.0000**	**19.0193**	**19.0193**	**6.1000e-004**	**0.0000**	**19.0346**

3.5 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8351					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5700e-003	0.0665	0.0723	1.2000e-004		4.3800e-003	4.3800e-003		4.3800e-003	4.3800e-003	0.0000	10.0854	10.0854	7.8000e-004	0.0000	10.1049
Total	**0.8447**	**0.0665**	**0.0723**	**1.2000e-004**		**4.3800e-003**	**4.3800e-003**		**4.3800e-003**	**4.3800e-003**	**0.0000**	**10.0854**	**10.0854**	**7.8000e-004**	**0.0000**	**10.1049**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1200e-003	4.5300e-003	0.0444	1.3000e-004	0.0133	1.0000e-004	0.0134	3.5400e-003	9.0000e-005	3.6200e-003	0.0000	12.0257	12.0257	3.6000e-004	0.0000	12.0347
Total	**6.1200e-003**	**4.5300e-003**	**0.0444**	**1.3000e-004**	**0.0133**	**1.0000e-004**	**0.0134**	**3.5400e-003**	**9.0000e-005**	**3.6200e-003**	**0.0000**	**12.0257**	**12.0257**	**3.6000e-004**	**0.0000**	**12.0347**

3.5 Architectural Coating - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8351					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5700e-003	0.0665	0.0723	1.2000e-004		4.3800e-003	4.3800e-003		4.3800e-003	4.3800e-003	0.0000	10.0853	10.0853	7.8000e-004	0.0000	10.1049
Total	**0.8447**	**0.0665**	**0.0723**	**1.2000e-004**		**4.3800e-003**	**4.3800e-003**		**4.3800e-003**	**4.3800e-003**	**0.0000**	**10.0853**	**10.0853**	**7.8000e-004**	**0.0000**	**10.1049**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1200e-003	4.5300e-003	0.0444	1.3000e-004	0.0133	1.0000e-004	0.0134	3.5400e-003	9.0000e-005	3.6200e-003	0.0000	12.0257	12.0257	3.6000e-004	0.0000	12.0347
Total	**6.1200e-003**	**4.5300e-003**	**0.0444**	**1.3000e-004**	**0.0133**	**1.0000e-004**	**0.0134**	**3.5400e-003**	**9.0000e-005**	**3.6200e-003**	**0.0000**	**12.0257**	**12.0257**	**3.6000e-004**	**0.0000**	**12.0347**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0136**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1902**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	4.1000e-004	4.0100e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0873	1.0873	3.0000e-005	0.0000	1.0881
Total	**5.5000e-004**	**4.1000e-004**	**4.0100e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0873**	**1.0873**	**3.0000e-005**	**0.0000**	**1.0881**

3.6 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0136**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1901**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	4.1000e-004	4.0100e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0873	1.0873	3.0000e-005	0.0000	1.0881
Total	**5.5000e-004**	**4.1000e-004**	**4.0100e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0873**	**1.0873**	**3.0000e-005**	**0.0000**	**1.0881**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.9281	7.5216	17.9482	0.0495	3.8836	0.0516	3.9351	1.0401	0.0483	1.0884	0.0000	4,557.2959	4,557.2959	0.2842	0.0000	4,564.4007
Unmitigated	1.9281	7.5216	17.9482	0.0495	3.8836	0.0516	3.9351	1.0401	0.0483	1.0884	0.0000	4,557.2959	4,557.2959	0.2842	0.0000	4,564.4007

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,136.00	2,136.00	2136.00	4,004,534	4,004,534
City Park	0.00	0.00	0.00		
Strip Mall	5,400.00	5,400.00	5400.00	6,299,748	6,299,748
Total	7,536.00	7,536.00	7,536.00	10,304,282	10,304,282

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	5.80	5.80	5.80	41.60	18.80	39.60	86	11	3
City Park	0.00	0.00	0.00	33.00	48.00	19.00	66	28	6
Strip Mall	5.80	5.80	5.80	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271
City Park	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271
Strip Mall	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	339.0070	339.0070	0.0134	2.9700e-003	340.2244
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	339.0070	339.0070	0.0134	2.9700e-003	340.2244
NaturalGas Mitigated	0.0112	0.0963	0.0430	6.1000e-004		7.7600e-003	7.7600e-003		7.7600e-003	7.7600e-003	0.0000	111.2008	111.2008	2.1300e-003	2.0400e-003	111.8616
NaturalGas Unmitigated	0.0112	0.0963	0.0430	6.1000e-004		7.7600e-003	7.7600e-003		7.7600e-003	7.7600e-003	0.0000	111.2008	111.2008	2.1300e-003	2.0400e-003	111.8616

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.98347e+006	0.0107	0.0914	0.0389	5.8000e-004		7.3900e-003	7.3900e-003		7.3900e-003	7.3900e-003	0.0000	105.8457	105.8457	2.0300e-003	1.9400e-003	106.4747
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	100350	5.4000e-004	4.9200e-003	4.1300e-003	3.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	5.3551	5.3551	1.0000e-004	1.0000e-004	5.3869
Total		**0.0112**	**0.0963**	**0.0430**	**6.1000e-004**		**7.7600e-003**	**7.7600e-003**		**7.7600e-003**	**7.7600e-003**	**0.0000**	**111.2008**	**111.2008**	**2.1300e-003**	**2.0400e-003**	**111.8616**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.98347e+006	0.0107	0.0914	0.0389	5.8000e-004		7.3900e-003	7.3900e-003		7.3900e-003	7.3900e-003	0.0000	105.8457	105.8457	2.0300e-003	1.9400e-003	106.4747
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	100350	5.4000e-004	4.9200e-003	4.1300e-003	3.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	5.3551	5.3551	1.0000e-004	1.0000e-004	5.3869
Total		**0.0112**	**0.0963**	**0.0430**	**6.1000e-004**		**7.7600e-003**	**7.7600e-003**		**7.7600e-003**	**7.7600e-003**	**0.0000**	**111.2008**	**111.2008**	**2.1300e-003**	**2.0400e-003**	**111.8616**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.06932e +006	221.7817	8.7300e-003	1.9400e-003	222.5781
City Park	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	565200	117.2254	4.6100e-003	1.0300e-003	117.6463
Total		**339.0070**	**0.0133**	**2.9700e-003**	**340.2244**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.06932e +006	221.7817	8.7300e-003	1.9400e-003	222.5781
City Park	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	565200	117.2254	4.6100e-003	1.0300e-003	117.6463
Total		**339.0070**	**0.0133**	**2.9700e-003**	**340.2244**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4906	0.0230	1.9895	1.0000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	3.2392	3.2392	3.1600e-003	0.0000	3.3182
Unmitigated	1.4906	0.0230	1.9895	1.0000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	3.2392	3.2392	3.1600e-003	0.0000	3.3182

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2114					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0606	0.0230	1.9895	1.0000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	3.2392	3.2392	3.1600e-003	0.0000	3.3182
Total	**1.4906**	**0.0230**	**1.9895**	**1.0000e-004**		**0.0109**	**0.0109**		**0.0109**	**0.0109**	**0.0000**	**3.2392**	**3.2392**	**3.1600e-003**	**0.0000**	**3.3182**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2114					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0606	0.0230	1.9895	1.0000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	3.2392	3.2392	3.1600e-003	0.0000	3.3182
Total	**1.4906**	**0.0230**	**1.9895**	**1.0000e-004**		**0.0109**	**0.0109**		**0.0109**	**0.0109**	**0.0000**	**3.2392**	**3.2392**	**3.1600e-003**	**0.0000**	**3.3182**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	80.5474	0.5433	0.0134	98.1294
Unmitigated	80.5474	0.5433	0.0134	98.1294

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	13.9169 / 10.9671	67.2707	0.4560	0.0113	82.0244
City Park	0 / 0.226381	0.5216	2.0000e-005	0.0000	0.5235
Strip Mall	2.66661 / 2.04297	12.7551	0.0874	2.1600e-003	15.5815
Total		**80.5474**	**0.5433**	**0.0134**	**98.1294**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	13.9169 / 10.9671	67.2707	0.4560	0.0113	82.0244
City Park	0 / 0.226381	0.5216	2.0000e-005	0.0000	0.5235
Strip Mall	2.66661 / 2.04297	12.7551	0.0874	2.1600e-003	15.5815
Total		**80.5474**	**0.5433**	**0.0134**	**98.1294**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.8951	1.5304	0.0000	64.1539
Unmitigated	34.5267	2.0405	0.0000	85.5385

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	122.82	24.9314	1.4734	0.0000	61.7664
City Park	0.02	4.0600e-003	2.4000e-004	0.0000	0.0101
Strip Mall	47.25	9.5913	0.5668	0.0000	23.7621
Total		**34.5267**	**2.0405**	**0.0000**	**85.5385**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	92.115	18.6985	1.1051	0.0000	46.3248
City Park	0.015	3.0400e-003	1.8000e-004	0.0000	7.5400e-003
Strip Mall	35.4375	7.1935	0.4251	0.0000	17.8216
Total		**25.8950**	**1.5304**	**0.0000**	**64.1539**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

PRELIMINARY DRAINAGE REPORT
FOR
CALIFORNIA TERRACES – PA61

October 30, 2018

Wayne W. Chang, MS, PE 46548

ChangConsultants

Civil Engineering ◦ Hydrology ◦ Hydraulics ◦ Sedimentation

P.O. Box 9496
Rancho Santa Fe, CA 92067
(858) 692-0760

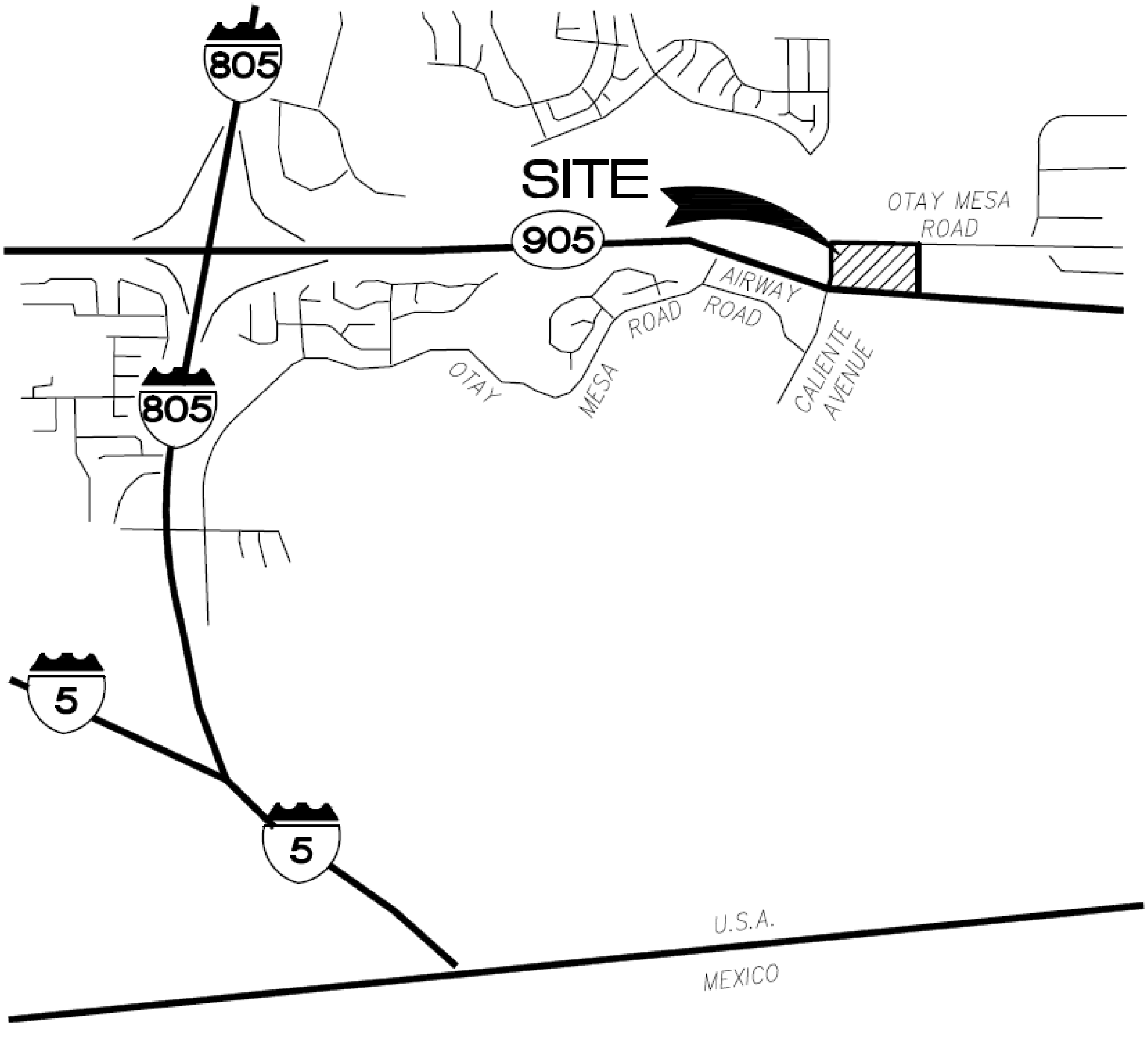
FOR REVIEW ONLY

-TABLE OF CONTENTS -

APPENDIX

INTRODUCTION

Pardee Homes is proposing to develop a 14.50-acre site located southeast of the intersection of Otay Mesa Road and Caliente Avenue in the city of San Diego (see the Vicinity Map). The site is currently undeveloped and supports low lying vegetation consisting of brush and grasses. The project proposes 171 multi-family units including 18 affordable and a private recreation park on the easterly two-thirds of the site (Lot 2). The residential development regulations permit up to 270 multi-family residential units on Lot 2, so the proposed density is lower than allowed. For this residential development area, there are two proposed public streets off of Otay Mesa Road that provide access to the east (Street B) and west (Street A) ends of the project, as well as private on-site driveways, alleys, and parking. The westerly third of the site (Lot 1) will be mass-graded and developed with up to 45,000 square feet of commercial uses in the future under a separate Planned Development Permit and Site Development Permit. The project's preliminary plans are being designed by Civil Sense, Inc.



Vicinity Map

Under existing, pre-project conditions, storm runoff from the site sheet flows over the gently sloping, natural ground surface. The majority of the sheet flow is directed to the east and onto the adjacent parcel. The on- and off-site runoff continues easterly as sheet flow towards a small watercourse approximately 1,400 feet east of the site. There is a historic pond that was graded within the northeast corner of the site that captures precipitation within its footprint. The remaining site runoff is directed towards the northwest corner of the site (towards the intersection of Otay Mesa Road and Caliente Avenue) and into an existing storm drain system. There are no other existing on-site drainage facilities and there is minimal off-site run-on.

Under proposed, post-project conditions, storm runoff will be conveyed by the private alleys and driveways to on-site storm drain systems. The majority of the runoff will be conveyed towards the northeast corner of the site where the proposed on-site storm drain will connect to an existing storm drain in Otay Mesa Road about 500 feet east of the site. The existing storm drain outlets into a natural watercourse within Dennery Canyon on the north site of Otay Mesa Road. The watercourse continues north to the Otay River, which flows into San Diego Bay. Storm runoff from the multi-family development area will be private and conveyed in private drainage facilities. Storm runoff from the easterly proposed public street and cul-de-sac will be conveyed in public drainage facilities. The private and public runoff will not commingle until leaving the site.

Post-project storm runoff from the northwest corner of project will be from the westerly proposed public street and cul-de-sac. This runoff will be conveyed by the proposed street and public storm drain system to an existing storm drain system at the intersection of Caliente Avenue and Otay Mesa Road. Storm runoff from the westerly mass-graded pad will also enter this storm drain system. The existing storm drain system crosses Otay Mesa Road and continues north along Ocean View Hills Parkway (Ocean View Hills Parkway is named Caliente Avenue south of Otay Mesa Road) before outletting into a natural watercourse within Dennery Canyon. As mentioned above, this watercourse continues to the Otay River, which flows into San Diego Bay.

This preliminary drainage report has been prepared in support of Civil Sense, Inc's entitlement plans and calculates tentative-map level runoff from the site. In addition, normal depth analyses have been prepared for the proposed public storm drains that convey storm runoff from the site.

HYDROLOGIC RESULTS

The overall site covers 16.37 acres so the City of San Diego's 2017, *Drainage Design Manual's* (Manual) rational method procedure was the basis for the existing and proposed condition hydrologic analyses. The Manual states that "the combination of storm drain system capacity and overflow" shall be able to carry the 100-year, while "the underground storm drain system shall be based upon a 50-year frequency storm." Both 50- and 100-year are provided. During final engineering when the storm drain system has been fully designed, detailed 50-year hydraulic modeling for the public storm drains will be performed. At the current entitlement stage normal depth analyses have been performed to determine preliminary storm drain sizing.

The public storm drain facilities include the curb inlets in Street A and in Street B (two in each street) and downstream facilities. The curb inlets will be integrated into Modular Wetland System Linear BMPs. The internal storm drains upstream of the curb inlets will be private.

The rational method input parameters are summarized below, and the supporting data is included in Appendix A:

- Intensity-Duration-Frequency: The City's 50- and 100-year Intensity-Duration-Frequency curve from the *Drainage Design Manual* was used.

- Drainage area: The drainage areas are shown on the Existing and Proposed Condition Rational Method Work Maps in Appendix A. The overall existing and proposed condition drainage areas were set equal to allow a comparison of results.

- Hydrologic soil groups: The soil group within the site is entirely 'D' according to the City criteria.

- Runoff coefficients: Under existing conditions, the study area is pervious except for Otay Mesa Road. The roughness coefficient (C=0.45) was based on the rural land use category. Under proposed conditions, the condominium development was assigned a multi-unit land use (C=0.70) while the mass-graded pad was assigned the rural land use.

The existing and proposed condition rational method analyses are contained in Appendix A and summarized in Table 1. The results indicate the project will increase the 100-year flow rates. The flows to the east will be conveyed in existing (PDC determined that the existing receiving storm drain crossing Otay Mesa Road has capacity for 44 cfs) and proposed storm drain facilities with capacity for the tributary flow rate. These facilities will outlet directly into the Dennery Canyon watercourse, which flows to the Otay River and then San Diego Bay. Since the easterly flows can adequately be conveyed by the receiving drainage facilities and the outflow is then conveyed to San Diego Bay by natural watercourses, detention is not required for the easterly flows. On the other hand, the easterly flows will be detained by proposed underground flow-control vaults along Street A, as needed.

Drainage Basin	**Drainage Area, ac**		**100-Year Flow, cfs**	
	Existing	Proposed	Existing	Proposed
Easterly	11.66	9.42	12	21
Westerly	3.19	5.43	4.3	8.4

Table 1. Comparison of Rational Method Results

An August 7, 1987 Notice from the City of San Diego provides drainage requirements for Otay Mesa development projects within the watershed that drains into Mexico (see attachment after this report text). The associated watershed was defined by an April 2007, *Drainage Study for the Otay Mesa Community Plan Update*, by Kimley-Horn and Associates, Inc. The 2007 study shows the site within the watershed tributary to Mexico. However, the watershed has been altered by the construction of Interstate 905 and no longer encompasses the site. The Notice specifies that detention facilities shall be designed for the 5-, 10-, 25-, and 50-year storms. As indicated in this drainage report, all of the PA-61 project runoff flows north into Dennery Canyon, the Otay River, and then San Diego Bay. Therefore, the Notice and associated detention requirements are not applicable to the project.

HYDRAULIC RESULTS

Normal depth analyses have been prepared for preliminary sizing of the proposed public storm drain facilities that convey runoff away from the site. The easterly storm drain system consists of two public laterals between rational method nodes 20 and 22 as well as nodes 20 and 24. The 50-year flow rate at each lateral is the same and is 0.4 cfs, while the 100-year flow rate is 0.5 cfs. The normal depth results are included in Appendix B and show that an 18-inch RCP at a 1 percent slope can convey the 100-year flows at a 0.22 foot depth. The laterals connect to the storm drain serving the project site, and the combined flow is conveyed in a public storm drain system that continues east along Otay Mesa Road. The 50-year flow rate in the Otay Mesa Road storm drain is 19 cfs and 100-year flow rate is 20.6 cfs. Civil Sense, Inc. determined that the pipe will be at a 0.7 percent slope. The normal depth results based on the 100-year flow rate and slope shows that a 24-inch RCP can convey the 50-year flow rate at a depth of 1.65 feet. This flow rate enters an existing storm drain with capacity for the existing 100-year flow rate of 20 cfs plus the project's contribution of 20.6 cfs (40.6 cfs total), so the existing and proposed public storm drains serving the project have adequate capacity for the 50- and 100-year flow rates. The Storm Drain Flows Exhibit in Appendix B provides a summary of flow rates and system capacities. Dennery Canyon, the Otay River, and San Diego Bay are below the storm drain systems. These natural conveyances can convey the project runoff.

The westerly storm drain system consists of two public laterals between rational method nodes 32 and 34 as well as nodes 34 and 24. The 50-year flow rate at each lateral is the same and is 0.4 cfs, while the 100-year flow rate is also 0.4 cfs (rounded to the tenths place – hydrology is not accurate to the hundredths place, so the tenths place is used). The normal depth results are included in Appendix B and show that an 18-inch RCP at a 1 percent slope can convey the flows at a 0.20 foot depth. The laterals connect to a public storm drain system that continues west along Otay Mesa Road. The 50-year and 100-year flow rates in the Otay Mesa Road storm drain are 0.8 cfs (rounded to the tenths place). Civil Sense, Inc. determined that the pipe will be at a 0.7 percent slope. The normal depth results based on this flow rate and slope shows that an 18-inch RCP can convey the 50-year flow rate at a depth of 0.31 feet. Detention will be provided at the future commercial site so that the easterly flows do not increase. Therefore, the existing storm drain capacity will not be impacted.

CONCLUSION

The analyses in this drainage report show that the project will increase the 100-year flow rate, which is anticipated since the undeveloped site will be partially developed with condominiums. Detention is not required for the easterly flows because the existing and proposed downstream drainage facilities have adequate capacity. Detention will be designed for the westerly flows as needed, during final engineering. The detention will prevent impacts to the existing westerly drainage facilities.

Hydraulic analyses show that the proposed public storm drain pipes needed to convey the project runoff will range from 18- to 24-inch. In addition, the Storm Drain Flows exhibit shows the existing systems can convey the project flows.

The project is just north of Interstate 905. Storm runoff from the site is generally directed to the north. Therefore, the project's runoff will not enter the Caltrans right-of-way and will not impact Caltrans' adjacent drainage facilities.

There are no waters of the US at or in the immediate vicinity of the site. Therefore, neither a Federal Clean Water Act Section 401 (Regional Water Quality Control Board) nor 404 permit (US Army Corps of Engineers) are required. The project will cause no negative impacts to developability of adjacent properties since the outflow will be into storm drain facilities or natural watercourses.

Reproduction of 1987 NOTICE from Engineering and Development Department

NOTICE

Date: August 7, 1987

To: All Private Engineers

From: Subdivision Engineer

Subject: Drainage requirements for development in Otay Mesa

In order to minimize the effects of increased storm water runoff in Mexico, due to development of property in Otay Mesa, all property in Otay Mesa that is within the water shed that drains into Mexico, shall be developed with the following requirements:

Project does not drain to Mexico. It drains to San Diego Bay.

1. Each property owner shall provide storm water detention facilities so that there will be no increase in the rate of runoff due to development of the property.

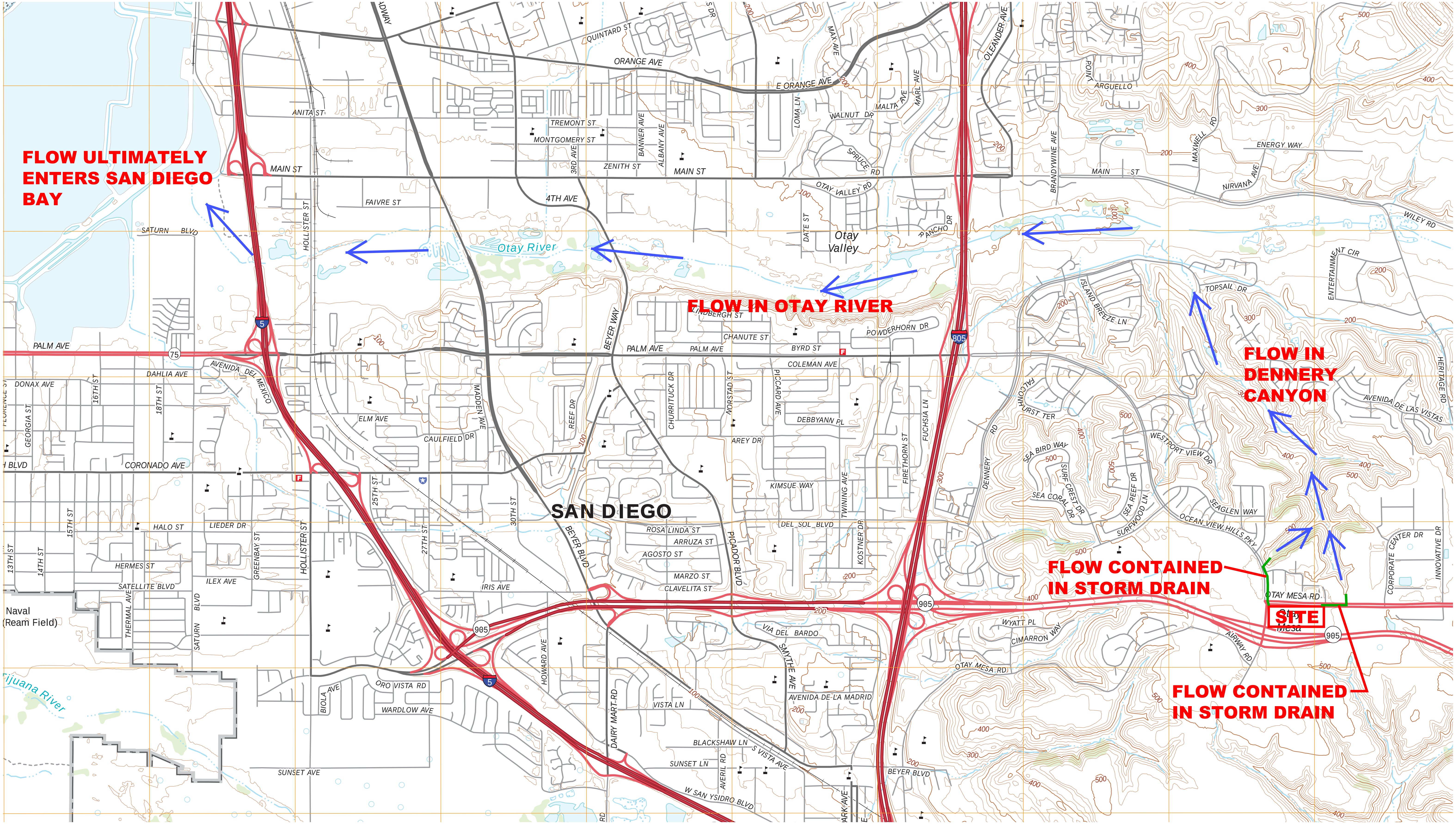
2. The detention facilities shall be designed so that the rate of runoff from the property will not be greater after development than it was before development for a 5 year, 10 year, 25 year and 50 year storm.

3. All drainage facilities crossing four-lane major or higher classification streets shall be designed for a Q100 (existing). Other facilities, except the major channel referred to in paragraph 5, may be designed for Q50 (existing).

4. The Drainage Design Manual shall be used as guidelines for design of drainage facilities and computing design discharges.

5. The City Engineer's Office, Flood Control Section, is preparing a preliminary plan for the main north-south channel from Otay Mesa Road near La Media to the Mexican Border. The preliminary design will include the design "Q" (Q100 existing), the invert grade, and the water surface elevation at the major road crossings.

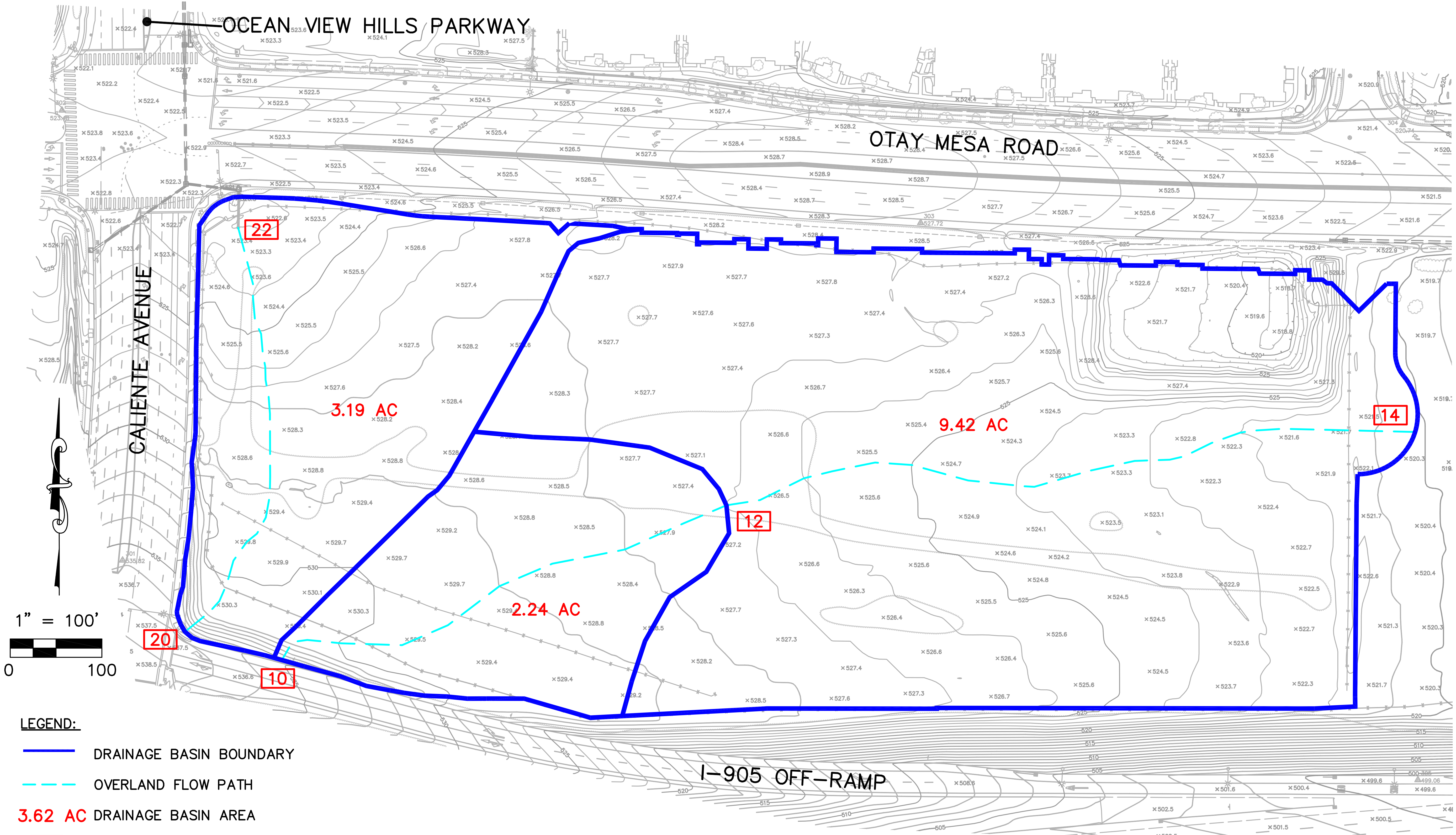
C.R. Lockhead
Subdivision Engineer



FLOW PATHS FROM PA-61 TO SAN DIEGO BAY

APPENDIX A

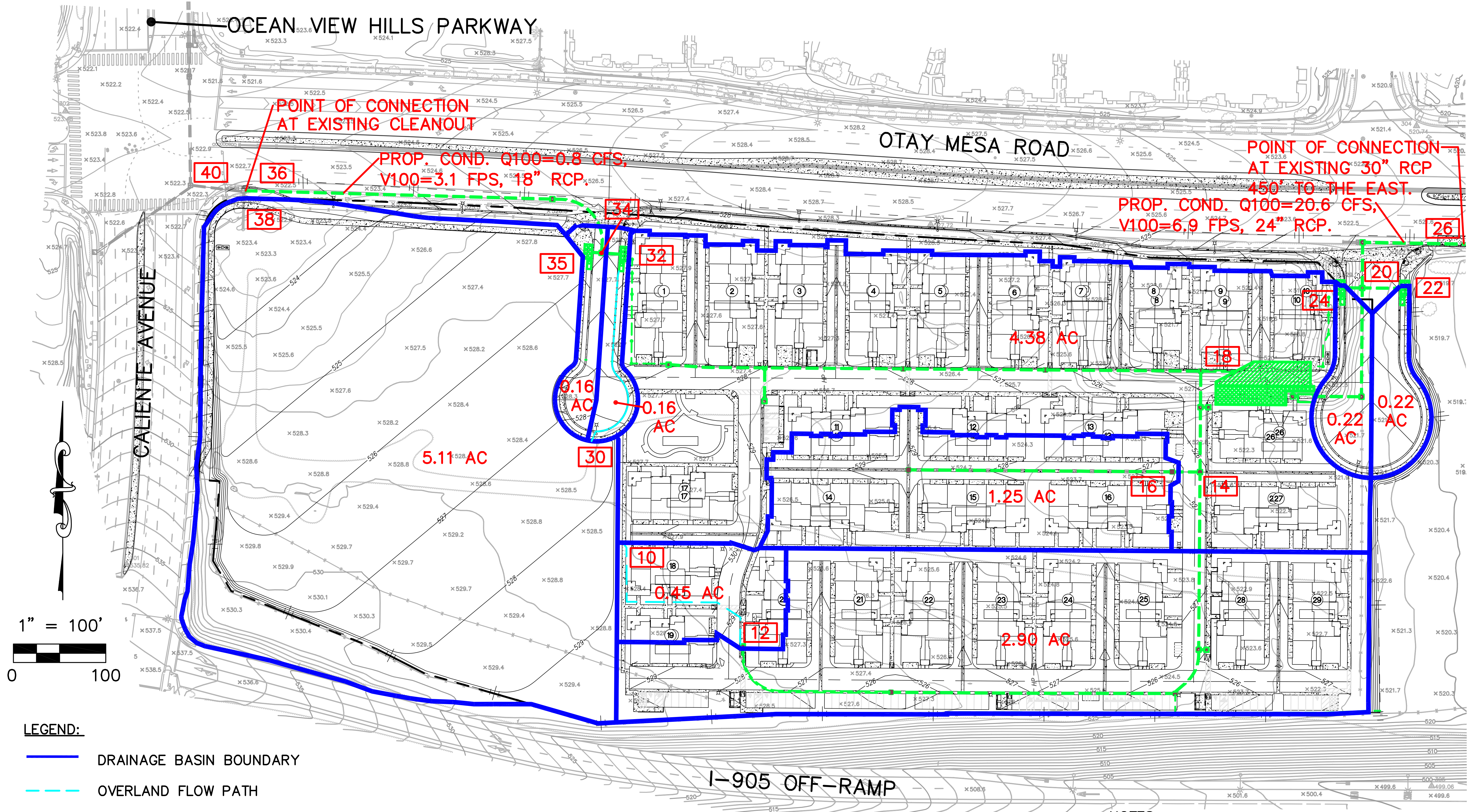
RATIONAL METHOD ANALYSES AND BACKUP DATA



LEGEND:

▬	DRAINAGE BASIN BOUNDARY
– – –	OVERLAND FLOW PATH
3.62 AC	DRAINAGE BASIN AREA
10	RATIONAL METHOD NODE NUMBER

EXISTING CONDITION
RATIONAL METHOD WORK MAP



LEGEND:	
—	DRAINAGE BASIN BOUNDARY
– –	OVERLAND FLOW PATH
—	PROPOSED DRAINAGE FACILITY
3.62 AC	DRAINAGE BASIN AREA
10	RATIONAL METHOD NODE NUMBER

PROPOSED CONDITION
RATIONAL METHOD WORK MAP

NOTES:
THE PROPOSED CURB INLETS (MODULAR WETLAND CURB INLETS) AT NODES 22, 24, 32, AND 35 AS WELL AS THE DOWNSTREAM DRAINAGE FACILITIES WILL BE PUBLIC. THE REMAINING ON–SITE FACILITIES WILL BE PRIVATE.

Table A-1. Runoff Coefficients for Rational Method

Land Use	Runoff Coefficient (C)
	Soil Type (1)
Residential:	
Single Family	0.55
Multi-Units	0.70
Mobile Homes	0.65
Rural (lots greater than ½ acre)	0.45
Commercial (2)	
80% Impervious	0.85
Industrial (2)	
90% Impervious	0.95

Note:

(1) Type D soil to be used for all areas.

(2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness = 50%
Tabulated imperviousness = 80%
Revised C = (50/80) x 0.85 = 0.53

The values in Table A–1 are typical for urban areas. However, if the basin contains rural or agricultural land use, parks, golf courses, or other types of nonurban land use that are expected to be permanent, the appropriate value should be selected based upon the soil and cover and approved by the City.

A.1.3. Rainfall Intensity

The rainfall intensity (I) is the rainfall in inches per hour (in/hr.) for a duration equal to the T_C for a selected storm frequency. Once a particular storm frequency has been selected for design and a T_C calculated for the drainage area, the rainfall intensity can be determined from the Intensity-Duration-Frequency Design Chart (Figure A-1).

RAINFALL

INTENSITY - DURATION - FREQUENCY
CURVES

FOR

COUNTY OF SAN DIEGO

ELEV.	FACTOR
0-1500	1.00
1500-3000	1.25
3000-4000	1.42
4000-5000	1.60
5000-6000	1.7
DESERT	1.25

TO OBTAIN CORRECT INTENSITY, MULTIPLY INTENSITY ON CHART BY FACTOR FOR DESIGN ELEVATION.

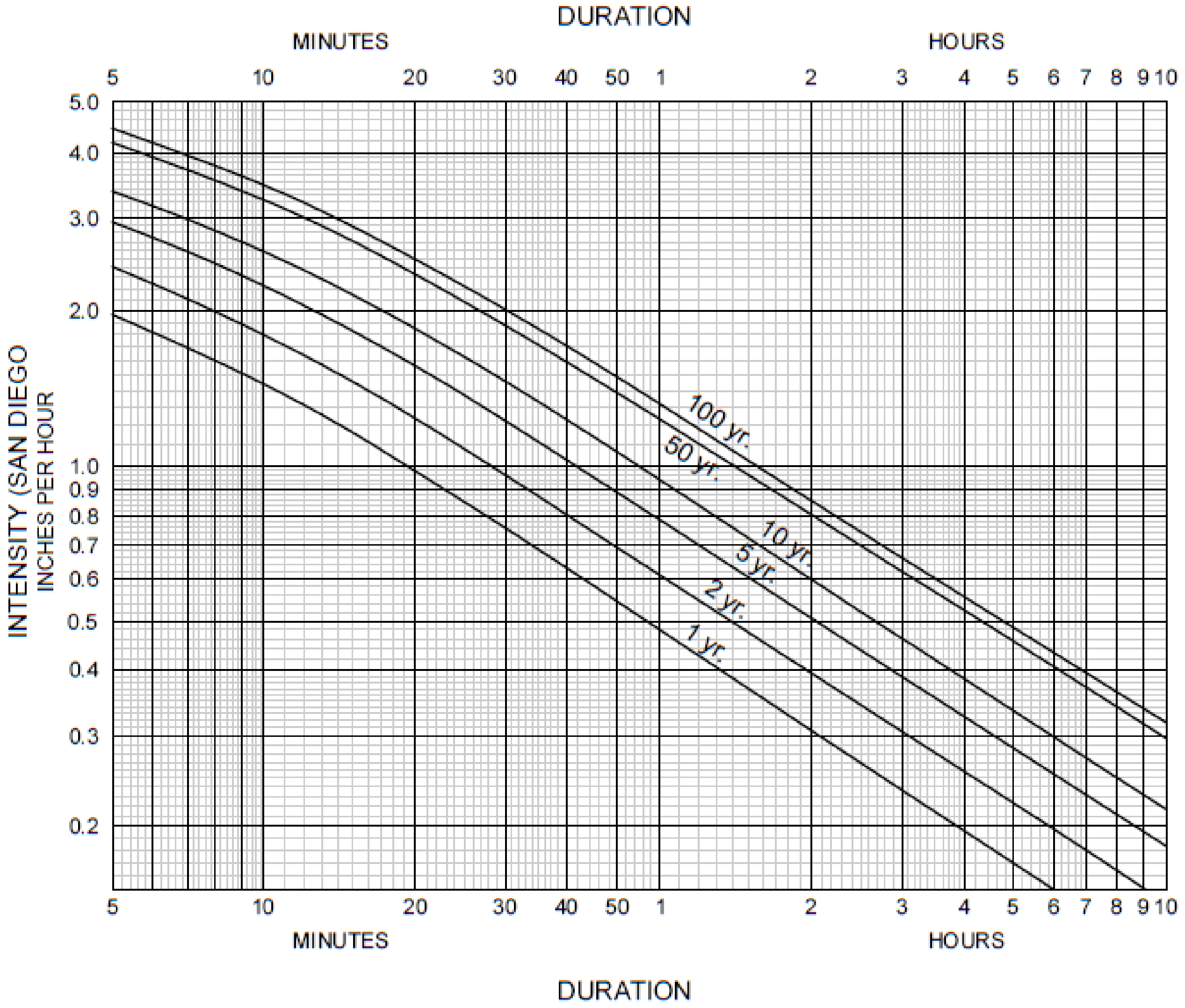
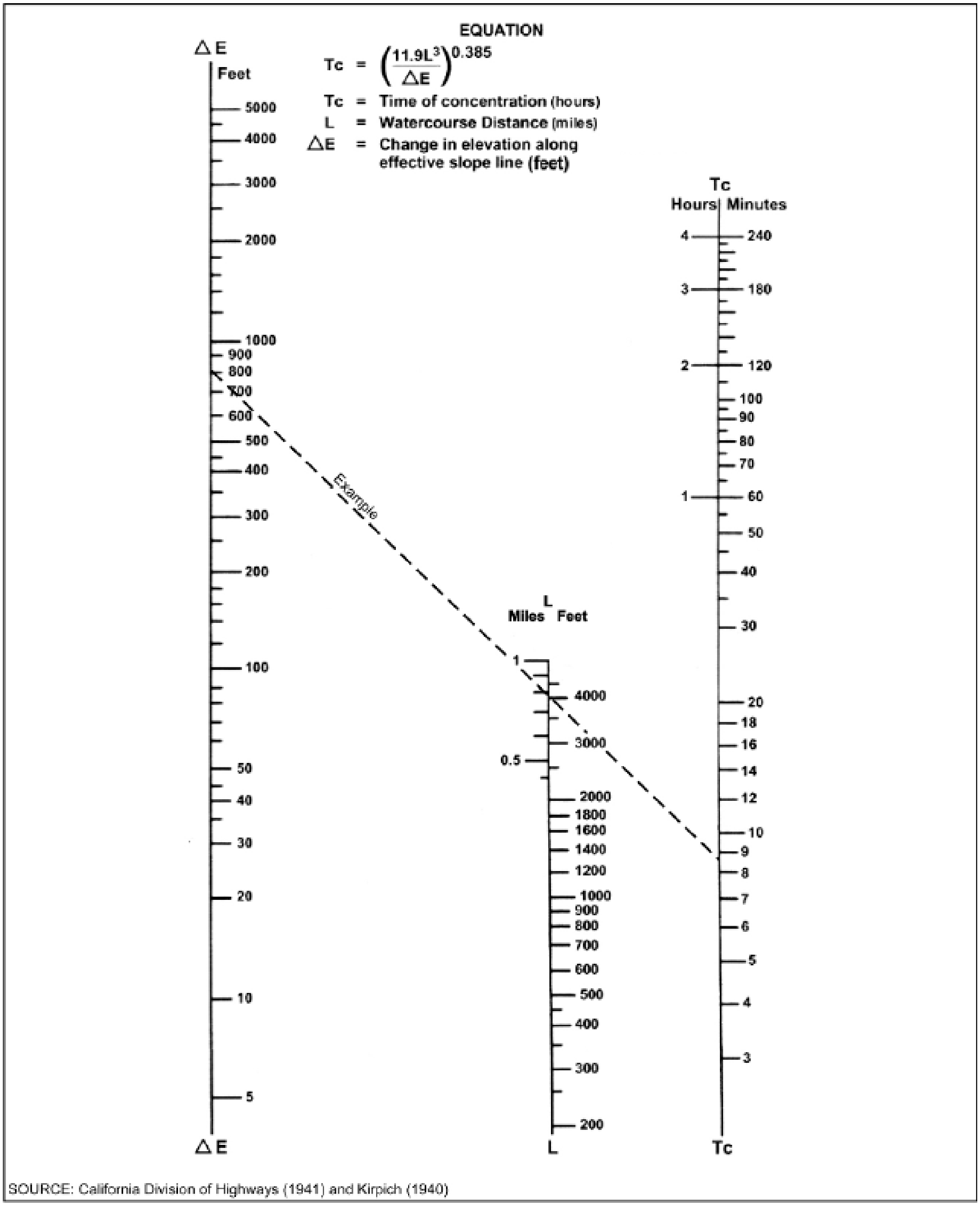


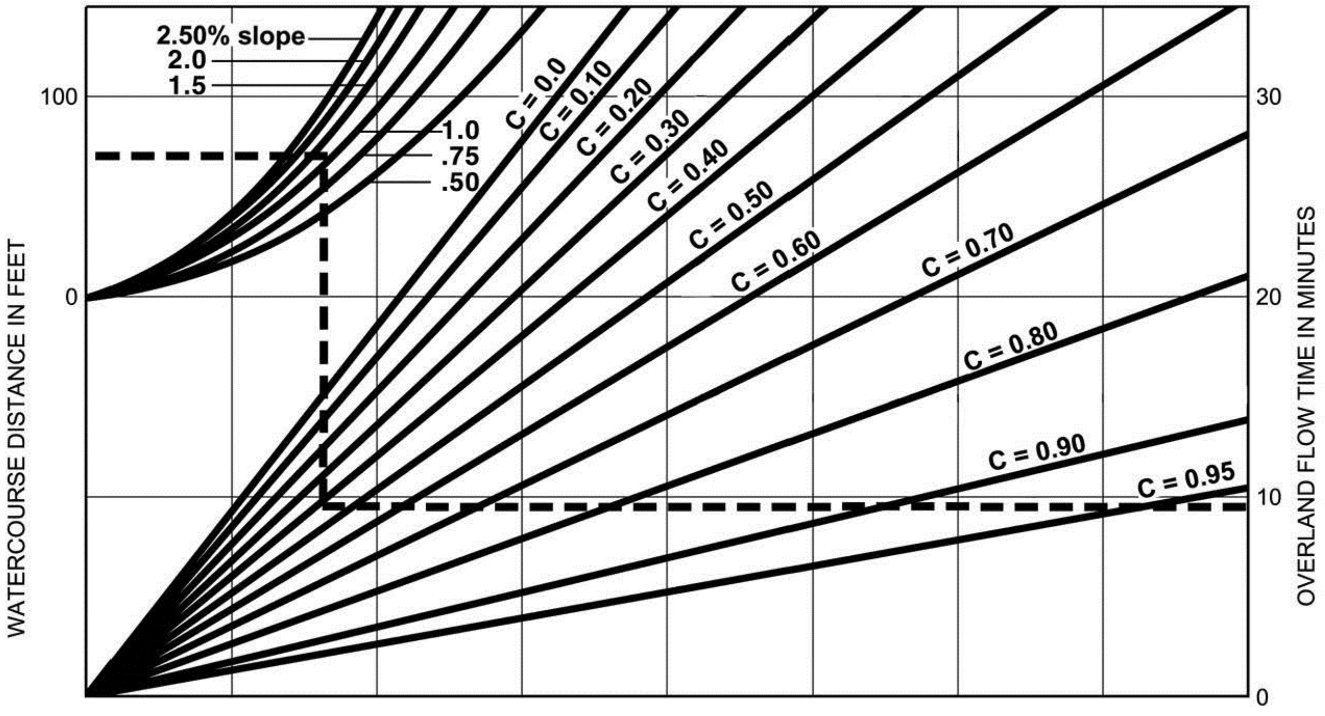
Figure A-1. Intensity-Duration-Frequency Design Chart



SOURCE: California Division of Highways (1941) and Kirpich (1940)

Figure A-2. Nomograph for Determination of T_c for Natural Watersheds

Note: Add ten minutes to the computed time of concentration from Figure A-2.



EXAMPLE:

Given: Watercourse Distance (D) = 70 Feet
Slope (s) = 1.3%
Runoff Coefficient (C) = 0.41
Overland Flow Time (T) = 9.5 Minutes

$$T = \frac{1.8\ (1.1\text{-}C)\ \sqrt{D}}{\sqrt[3]{s}}$$

SOURCE: Airport Drainage, Federal Aviation Administration, 1965

Figure A-4. Rational Formula – Overland Time of Flow Nomograph

Note: Use formula for watercourse distances in excess of 100 feet.

```
           San Diego County Rational Hydrology Program

     CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2005 Version 6.4

Rational method hydrology  program based on
San Diego County Flood Control Division 1985 hydrology manual
Rational Hydrology Study        Date: 07/12/18
------------------------------------------------------------------------
California Terraces - PA61
Preliminary Hydrology
Existing Conditions
50-Year Storm Event
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------



Program License Serial Number 4028

------------------------------------------------------------------------
Rational hydrology study storm event year is    50.0
English (in-lb) input data Units used
English (in) rainfall data used

Standard intensity of Appendix I-B used for year and
Elevation 0 - 1500 feet
Factor (to multiply * intensity)  =  1.000
Only used if inside City of San Diego
San Diego hydrology manual 'C' values used
Runoff coefficients by rational method


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       12.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[RURAL(greater than 0.5 Ac, 0.2 ha) area type]
Time of concentration computed by the
natural watersheds nomograph (App X-A)
TC = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr) + 10 min.
Initial subarea flow distance  =  532.000(Ft.)
Highest elevation =  535.000(Ft.)
Lowest elevation =  527.000(Ft.)
Elevation difference =    8.000(Ft.)
TC=[(11.9*0.1008^3)/(  8.00)]^.385=  4.94 + 10 min. =    14.94 min.
Rainfall intensity (I) =      2.712(In/Hr) for a    50.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.450
```

```
Subarea runoff =      2.733(CFS)
Total initial stream area =       2.240(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =   527.000(Ft.)
Downstream point elevation =   520.200(Ft.)
Channel length thru subarea  =   772.000(Ft.)
Channel base width=   20.000(Ft.)
Slope or 'Z' of left channel bank =  50.000
Slope or 'Z' of right channel bank =  50.000
Estimated mean flow rate at midpoint of channel =      8.481(CFS)
Manning's 'N'    = 0.040
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      8.481(CFS)
Depth of flow =   0.242(Ft.), Average velocity =   1.093(Ft/s)
Channel flow top width =   44.175(Ft.)
Flow Velocity =    1.09(Ft/s)
Travel time  =   11.77 min.
Time of concentration =   26.70 min.
Critical depth =      0.154(Ft.)
 Adding area flow to channel
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[RURAL(greater than 0.5 Ac, 0.2 ha) area type]
Rainfall intensity =      2.061(In/Hr) for a    50.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.450
Subarea runoff =      8.735(CFS) for    9.420(Ac.)
Total runoff =     11.468(CFS)Total area =       11.66(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.000 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[RURAL(greater than 0.5 Ac, 0.2 ha) area type]
Time of concentration computed by the
natural watersheds nomograph (App X-A)
TC = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr) + 10 min.
Initial subarea flow distance  =  478.000(Ft.)
Highest elevation =  537.200(Ft.)
Lowest elevation =  523.000(Ft.)
Elevation difference =   14.200(Ft.)
```

```
TC=[(11.9*0.0905^3)/( 14.20)]^.385=  3.50 + 10 min. =    13.50 min.
Rainfall intensity (I) =      2.828(In/Hr) for a    50.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.450
Subarea runoff =      4.059(CFS)
Total initial stream area =        3.190(Ac.)
End of computations, total study area =          14.850 (Ac.)
```

```
           San Diego County Rational Hydrology Program

     CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2005 Version 6.4

Rational method hydrology  program based on
San Diego County Flood Control Division 1985 hydrology manual
Rational Hydrology Study        Date: 07/12/18
------------------------------------------------------------------------
California Terraces - PA61
Preliminary Hydrology
Existing Conditions
100-Year Storm Event
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------



Program License Serial Number 4028

------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used
English (in) rainfall data used

Standard intensity of Appendix I-B used for year and
Elevation 0 - 1500 feet
Factor (to multiply * intensity)  =  1.000
Only used if inside City of San Diego
San Diego hydrology manual 'C' values used
Runoff coefficients by rational method


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       12.000
**** INITIAL AREA EVALUATION ****

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[RURAL(greater than 0.5 Ac, 0.2 ha) area type]
Time of concentration computed by the
natural watersheds nomograph (App X-A)
TC = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr) + 10 min.
Initial subarea flow distance  =  532.000(Ft.)
Highest elevation =  535.000(Ft.)
Lowest elevation =  527.000(Ft.)
Elevation difference =    8.000(Ft.)
TC=[(11.9*0.1008^3)/(  8.00)]^.385=  4.94 + 10 min. =    14.94 min.
Rainfall intensity (I) =      2.910(In/Hr) for a   100.0 year storm
```

```
Effective runoff coefficient used for area (Q=KCIA) is C = 0.450
Subarea runoff =      2.933(CFS)
Total initial stream area =        2.240(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________
Upstream point elevation =   527.000(Ft.)
Downstream point elevation =   520.200(Ft.)
Channel length thru subarea  =   772.000(Ft.)
Channel base width=   20.000(Ft.)
Slope or 'Z' of left channel bank =  50.000
Slope or 'Z' of right channel bank =  50.000
Estimated mean flow rate at midpoint of channel =      9.100(CFS)
Manning's 'N'    = 0.040
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      9.100(CFS)
Depth of flow =   0.251(Ft.), Average velocity =   1.116(Ft/s)
Channel flow top width =   45.073(Ft.)
Flow Velocity =    1.12(Ft/s)
Travel time  =   11.53 min.
Time of concentration =   26.47 min.
Critical depth =      0.162(Ft.)
 Adding area flow to channel
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[RURAL(greater than 0.5 Ac, 0.2 ha) area type]
Rainfall intensity =      2.252(In/Hr) for a   100.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.450
Subarea runoff =      9.545(CFS) for    9.420(Ac.)
Total runoff =     12.479(CFS)Total area =       11.66(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.000 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[RURAL(greater than 0.5 Ac, 0.2 ha) area type]
Time of concentration computed by the
natural watersheds nomograph (App X-A)
TC = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr) + 10 min.
Initial subarea flow distance  =  478.000(Ft.)
Highest elevation =  537.200(Ft.)
Lowest elevation =  523.000(Ft.)
```

```
Elevation difference =   14.200(Ft.)
TC=[(11.9*0.0905^3)/( 14.20)]^.385=  3.50 + 10 min. =    13.50 min.
Rainfall intensity (I) =      3.024(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.450
Subarea runoff =      4.341(CFS)
Total initial stream area =        3.190(Ac.)
End of computations, total study area =          14.850 (Ac.)
```

```
               San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2005 Version 6.4

Rational method hydrology  program based on
San Diego County Flood Control Division 1985 hydrology manual
Rational Hydrology Study        Date: 09/19/18
-------------------------------------------------------------------------
California Terraces - PA61
Preliminary Hydrology
Proposed Conditions
50-Year Storm Event
-------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

-------------------------------------------------------------------------


Program License Serial Number 4028

-------------------------------------------------------------------------
Rational hydrology study storm event year is    50.0
English (in-lb) input data Units used
English (in) rainfall data used

Standard intensity of Appendix I-B used for year and
Elevation 0 - 1500 feet
Factor (to multiply * intensity)  =  1.000
Only used if inside City of San Diego
San Diego hydrology manual 'C' values used
Runoff coefficients by rational method


+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       12.000
**** INITIAL AREA EVALUATION ****
_______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Initial subarea flow distance  =  222.000(Ft.)
Highest elevation =  531.000(Ft.)
Lowest elevation =  528.500(Ft.)
Elevation difference =    2.500(Ft.)
Time of concentration calculated by the urban
areas overland flow method (App X-C) =    10.31 min.
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.7000)*( 222.000^.5)/( 1.126^(1/3)]=  10.31
Rainfall intensity (I) =      3.151(In/Hr) for a    50.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.700
Subarea runoff =      0.993(CFS)
Total initial stream area =        0.450(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    10.31 min.
Rainfall intensity =      3.151(In/Hr) for a    50.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      6.397(CFS) for    2.900(Ac.)
Total runoff =      7.390(CFS)Total area =        3.35(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   528.500(Ft.)
Downstream point/station elevation =   526.300(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.390(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     7.390(CFS)
Normal flow depth in pipe =   15.02(In.)
Flow top width inside pipe =   18.95(In.)
Critical Depth =   12.08(In.)
Pipe flow velocity =      4.01(Ft/s)
Travel time through pipe =    3.11 min.
Time of concentration (TC) =    13.43 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       14.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    13.43 min.
Rainfall intensity =      2.834(In/Hr) for a    50.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      2.479(CFS) for    1.250(Ac.)
Total runoff =      9.870(CFS)Total area =        4.60(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       18.000
```

```
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   526.300(Ft.)
Downstream point/station elevation =   524.900(Ft.)
Pipe length  =   143.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.870(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     9.870(CFS)
Normal flow depth in pipe =   13.99(In.)
Flow top width inside pipe =   14.98(In.)
Critical Depth =   14.54(In.)
Pipe flow velocity =      6.69(Ft/s)
Travel time through pipe =    0.36 min.
Time of concentration (TC) =    13.78 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       18.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    13.78 min.
Rainfall intensity =      2.803(In/Hr) for a    50.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      8.595(CFS) for    4.380(Ac.)
Total runoff =     18.465(CFS)Total area =       8.98(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       20.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   524.900(Ft.)
Downstream point/station elevation =   521.500(Ft.)
Pipe length  =   167.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    18.465(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    18.465(CFS)
Normal flow depth in pipe =   14.44(In.)
Flow top width inside pipe =   19.47(In.)
Critical Depth =   18.69(In.)
Pipe flow velocity =     10.48(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =    14.05 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.000 to Point/Station       20.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    14.05 min.
Rainfall intensity =      2.782(In/Hr) for a    50.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      0.428(CFS) for    0.220(Ac.)
Total runoff =     18.893(CFS)Total area =       9.20(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       24.000 to Point/Station       20.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    14.05 min.
Rainfall intensity =      2.782(In/Hr) for a    50.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      0.428(CFS) for    0.220(Ac.)
Total runoff =     19.322(CFS)Total area =       9.42(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.000 to Point/Station       26.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   521.500(Ft.)
Downstream point/station elevation =   518.290(Ft.)
Pipe length  =   458.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.322(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    19.322(CFS)
Normal flow depth in pipe =   20.16(In.)
Flow top width inside pipe =   17.60(In.)
Critical Depth =   18.96(In.)
Pipe flow velocity =      6.86(Ft/s)
Travel time through pipe =    1.11 min.
Time of concentration (TC) =    15.16 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       30.000 to Point/Station       32.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
```

```
[MULTI - UNITS area type                     ]
Initial subarea flow distance  =  210.000(Ft.)
Highest elevation =  529.000(Ft.)
Lowest elevation =  524.800(Ft.)
Elevation difference =    4.200(Ft.)
Time of concentration calculated by the urban
areas overland flow method (App X-C) =     8.28 min.
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.7000)*( 210.000^.5)/( 2.000^(1/3)]=   8.28
Rainfall intensity (I) =      3.442(In/Hr) for a    50.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.700
Subarea runoff =      0.386(CFS)
Total initial stream area =       0.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       32.000 to Point/Station       34.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   524.800(Ft.)
Downstream point/station elevation =   524.600(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.386(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.386(CFS)
Normal flow depth in pipe =    3.53(In.)
Flow top width inside pipe =    5.91(In.)
Critical Depth =    3.79(In.)
Pipe flow velocity =      3.21(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     8.37 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       35.000 to Point/Station       34.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =     8.37 min.
Rainfall intensity =      3.427(In/Hr) for a    50.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      0.384(CFS) for    0.160(Ac.)
Total runoff =      0.769(CFS)Total area =       0.32(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       34.000 to Point/Station       36.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   524.500(Ft.)
```

```
Downstream point/station elevation =   521.540(Ft.)
Pipe length  =   423.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.769(CFS)
Nearest computed pipe diameter  =     9.00(In.)
Calculated individual pipe flow  =     0.769(CFS)
Normal flow depth in pipe =    4.79(In.)
Flow top width inside pipe =    8.98(In.)
Critical Depth =    4.80(In.)
Pipe flow velocity =      3.21(Ft/s)
Travel time through pipe =    2.19 min.
Time of concentration (TC) =    10.57 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       38.000 to Point/Station       36.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[RURAL(greater than 0.5 Ac, 0.2 ha) area type]
Time of concentration =    10.57 min.
Rainfall intensity =      3.121(In/Hr) for a    50.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.450
Subarea runoff =      7.176(CFS) for    5.110(Ac.)
Total runoff =      7.945(CFS)Total area =       5.43(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       36.000 to Point/Station       40.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   522.400(Ft.)
Downstream point/station elevation =   522.100(Ft.)
Pipe length  =    53.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.945(CFS)
Nearest computed pipe diameter  =    18.00(In.)
Calculated individual pipe flow  =     7.945(CFS)
Normal flow depth in pipe =   14.84(In.)
Flow top width inside pipe =   13.70(In.)
Critical Depth =   13.11(In.)
Pipe flow velocity =      5.10(Ft/s)
Travel time through pipe =    0.17 min.
Time of concentration (TC) =    10.74 min.
End of computations, total study area =         14.850 (Ac.)
```

```
               San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2005 Version 6.4

Rational method hydrology  program based on
San Diego County Flood Control Division 1985 hydrology manual
Rational Hydrology Study        Date: 09/19/18
------------------------------------------------------------------------
California Terraces - PA61
Preliminary Hydrology
Proposed Conditions
100-Year Storm Event
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------


Program License Serial Number 4028

------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used
English (in) rainfall data used

Standard intensity of Appendix I-B used for year and
Elevation 0 - 1500 feet
Factor (to multiply * intensity)  =  1.000
Only used if inside City of San Diego
San Diego hydrology manual 'C' values used
Runoff coefficients by rational method


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       12.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Initial subarea flow distance  =  222.000(Ft.)
Highest elevation =  531.000(Ft.)
Lowest elevation =  528.500(Ft.)
Elevation difference =    2.500(Ft.)
Time of concentration calculated by the urban
areas overland flow method (App X-C) =    10.31 min.
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.7000)*( 222.000^.5)/( 1.126^(1/3)]=  10.31
Rainfall intensity (I) =      3.337(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.700
Subarea runoff =      1.051(CFS)
Total initial stream area =        0.450(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    10.31 min.
Rainfall intensity =      3.337(In/Hr) for a   100.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      6.774(CFS) for    2.900(Ac.)
Total runoff =      7.825(CFS)Total area =        3.35(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       14.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   528.500(Ft.)
Downstream point/station elevation =   526.300(Ft.)
Pipe length  =   750.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.825(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     7.825(CFS)
Normal flow depth in pipe =   15.75(In.)
Flow top width inside pipe =   18.19(In.)
Critical Depth =   12.45(In.)
Pipe flow velocity =      4.04(Ft/s)
Travel time through pipe =    3.09 min.
Time of concentration (TC) =    13.40 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       14.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    13.40 min.
Rainfall intensity =      3.032(In/Hr) for a   100.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      2.653(CFS) for    1.250(Ac.)
Total runoff =     10.478(CFS)Total area =        4.60(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       18.000
```

```
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   526.300(Ft.)
Downstream point/station elevation =   524.900(Ft.)
Pipe length  =   143.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.478(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    10.478(CFS)
Normal flow depth in pipe =   14.91(In.)
Flow top width inside pipe =   13.58(In.)
Critical Depth =   14.92(In.)
Pipe flow velocity =      6.70(Ft/s)
Travel time through pipe =    0.36 min.
Time of concentration (TC) =    13.76 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       18.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    13.76 min.
Rainfall intensity =      3.002(In/Hr) for a   100.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      9.205(CFS) for    4.380(Ac.)
Total runoff =     19.683(CFS)Total area =        8.98(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       20.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   524.900(Ft.)
Downstream point/station elevation =   521.500(Ft.)
Pipe length  =   167.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    19.683(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    19.683(CFS)
Normal flow depth in pipe =   15.16(In.)
Flow top width inside pipe =   18.81(In.)
Critical Depth =   19.08(In.)
Pipe flow velocity =     10.59(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =    14.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.000 to Point/Station       20.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    14.02 min.
Rainfall intensity =      2.981(In/Hr) for a   100.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      0.459(CFS) for    0.220(Ac.)
Total runoff =     20.142(CFS)Total area =       9.20(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       24.000 to Point/Station       20.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =    14.02 min.
Rainfall intensity =      2.981(In/Hr) for a   100.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      0.459(CFS) for    0.220(Ac.)
Total runoff =     20.601(CFS)Total area =       9.42(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.000 to Point/Station       26.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   521.500(Ft.)
Downstream point/station elevation =   518.290(Ft.)
Pipe length  =   458.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.601(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    20.601(CFS)
Normal flow depth in pipe =   18.19(In.)
Flow top width inside pipe =   25.32(In.)
Critical Depth =   19.05(In.)
Pipe flow velocity =      7.24(Ft/s)
Travel time through pipe =    1.05 min.
Time of concentration (TC) =    15.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       30.000 to Point/Station       32.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
```

```
[MULTI - UNITS area type                     ]
Initial subarea flow distance  =  210.000(Ft.)
Highest elevation =  529.000(Ft.)
Lowest elevation =  524.800(Ft.)
Elevation difference =    4.200(Ft.)
Time of concentration calculated by the urban
areas overland flow method (App X-C) =     8.28 min.
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.7000)*( 210.000^.5)/( 2.000^(1/3)]=   8.28
Rainfall intensity (I) =      3.613(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.700
Subarea runoff =      0.405(CFS)
Total initial stream area =       0.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       32.000 to Point/Station       34.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   524.800(Ft.)
Downstream point/station elevation =   524.600(Ft.)
Pipe length  =    18.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.405(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.405(CFS)
Normal flow depth in pipe =    3.64(In.)
Flow top width inside pipe =    5.86(In.)
Critical Depth =    3.89(In.)
Pipe flow velocity =      3.24(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     8.37 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       35.000 to Point/Station       34.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[MULTI - UNITS area type                     ]
Time of concentration =     8.37 min.
Rainfall intensity =      3.599(In/Hr) for a   100.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.700
Subarea runoff =      0.403(CFS) for    0.160(Ac.)
Total runoff =      0.808(CFS)Total area =        0.32(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       34.000 to Point/Station       36.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   524.500(Ft.)
```

```
Downstream point/station elevation =   521.540(Ft.)
Pipe length  =   423.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.808(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.808(CFS)
Normal flow depth in pipe =    4.94(In.)
Flow top width inside pipe =    8.96(In.)
Critical Depth =    4.93(In.)
Pipe flow velocity =      3.25(Ft/s)
Travel time through pipe =    2.17 min.
Time of concentration (TC) =    10.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       38.000 to Point/Station       36.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[RURAL(greater than 0.5 Ac, 0.2 ha) area type]
Time of concentration =    10.54 min.
Rainfall intensity =      3.310(In/Hr) for a   100.0 year storm
Runoff coefficient used for sub-area, Rational method,Q=KCIA, C = 0.450
Subarea runoff =      7.612(CFS) for    5.110(Ac.)
Total runoff =      8.420(CFS)Total area =       5.43(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       36.000 to Point/Station       40.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________
Upstream point/station elevation =   522.400(Ft.)
Downstream point/station elevation =   522.100(Ft.)
Pipe length  =    53.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.420(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     8.420(CFS)
Normal flow depth in pipe =   16.20(In.)
Flow top width inside pipe =   10.80(In.)
Critical Depth =   13.49(In.)
Pipe flow velocity =      5.03(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    10.72 min.
End of computations, total study area =         14.850 (Ac.)
```

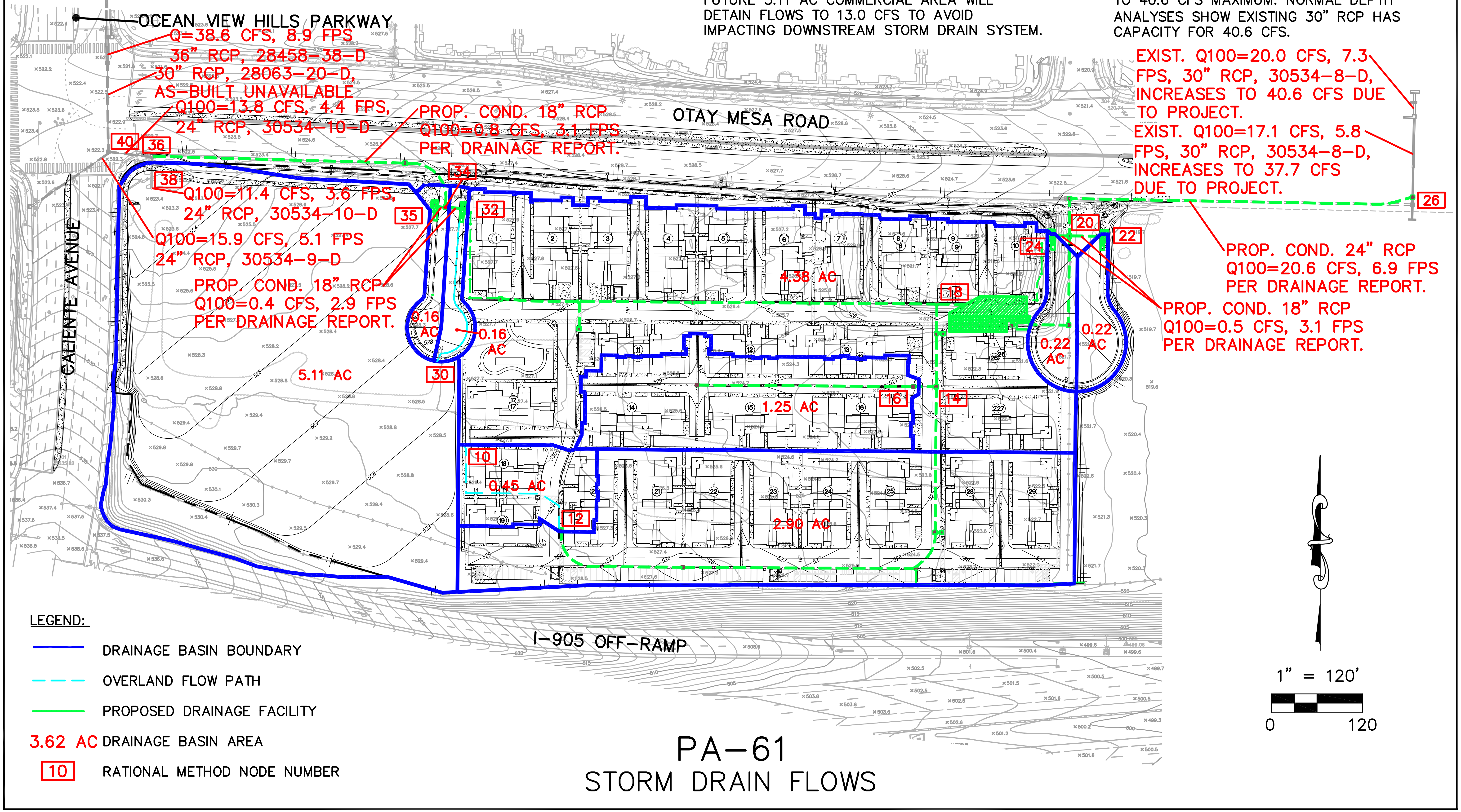
APPENDIX B

NORMAL DEPTH ANALYSES

NOTES:

THE POINT OF CONNECTION FOR THE WESTERLY DRAINAGE AREA IS AT NODE 36. THE EXISTING PIPE SEGMENT FROM NODE 36 TO 40 WAS DESIGNED FOR Q100=13.8 CFS. THE PROJECT WILL CONVEY 0.8 CFS TO THE POC. THE FUTURE 5.11 AC COMMERCIAL AREA WILL DETAIN FLOWS TO 13.0 CFS TO AVOID IMPACTING DOWNSTREAM STORM DRAIN SYSTEM.

THE POINT OF CONNECTION FOR THE EASTERLY DRAINAGE AREA IS AT NODE 26. Q100 FOR THE EXISTING PIPES BELOW THE POC ARE FROM 17.1 TO 20.0 CFS. THE PROJECT WILL INCREASE THE FLOW RATE BY 20.6 CFS, OR TO 40.6 CFS MAXIMUM. NORMAL DEPTH ANALYSES SHOW EXISTING 30" RCP HAS CAPACITY FOR 40.6 CFS.



PA-61
STORM DRAIN FLOWS

Worksheet for Circular Pipe - Node 20 to 22

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	1.50	ft
Discharge	0.50	ft³/s

Results

Normal Depth	0.22	ft
Flow Area	0.16	ft²
Wetted Perimeter	1.19	ft
Hydraulic Radius	0.14	ft
Top Width	1.07	ft
Critical Depth	0.26	ft
Percent Full	14.8	%
Critical Slope	0.00515	ft/ft
Velocity	3.05	ft/s
Velocity Head	0.14	ft
Specific Energy	0.37	ft
Froude Number	1.37	
Maximum Discharge	11.30	ft³/s
Discharge Full	10.50	ft³/s
Slope Full	0.00002	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	14.85	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - Node 20 to 24

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	1.50	ft
Discharge	0.50	ft³/s

Results

Normal Depth	0.22	ft
Flow Area	0.16	ft²
Wetted Perimeter	1.19	ft
Hydraulic Radius	0.14	ft
Top Width	1.07	ft
Critical Depth	0.26	ft
Percent Full	14.8	%
Critical Slope	0.00515	ft/ft
Velocity	3.05	ft/s
Velocity Head	0.14	ft
Specific Energy	0.37	ft
Froude Number	1.37	
Maximum Discharge	11.30	ft³/s
Discharge Full	10.50	ft³/s
Slope Full	0.00002	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	14.85	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - Node 20 to 26

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00700	ft/ft
Diameter	2.00	ft
Discharge	20.60	ft³/s

Results

Normal Depth	1.65	ft
Flow Area	2.77	ft²
Wetted Perimeter	4.55	ft
Hydraulic Radius	0.61	ft
Top Width	1.53	ft
Critical Depth	1.57	ft
Percent Full	82.3	%
Critical Slope	0.00769	ft/ft
Velocity	6.87	ft/s
Velocity Head	0.73	ft
Specific Energy	2.38	ft
Froude Number	0.90	
Maximum Discharge	20.36	ft³/s
Discharge Full	18.93	ft³/s
Slope Full	0.00705	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	82.32	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - Node 32 to 34

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	1.50	ft
Discharge	0.40	ft³/s

Results

Normal Depth	0.20	ft
Flow Area	0.14	ft²
Wetted Perimeter	1.12	ft
Hydraulic Radius	0.12	ft
Top Width	1.02	ft
Critical Depth	0.23	ft
Percent Full	13.3	%
Critical Slope	0.00527	ft/ft
Velocity	2.86	ft/s
Velocity Head	0.13	ft
Specific Energy	0.33	ft
Froude Number	1.36	
Maximum Discharge	11.30	ft³/s
Discharge Full	10.50	ft³/s
Slope Full	0.00001	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	13.33	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - Node 34 to 35

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	1.50	ft
Discharge	0.40	ft³/s

Results

Normal Depth	0.20	ft
Flow Area	0.14	ft²
Wetted Perimeter	1.12	ft
Hydraulic Radius	0.12	ft
Top Width	1.02	ft
Critical Depth	0.23	ft
Percent Full	13.3	%
Critical Slope	0.00527	ft/ft
Velocity	2.86	ft/s
Velocity Head	0.13	ft
Specific Energy	0.33	ft
Froude Number	1.36	
Maximum Discharge	11.30	ft³/s
Discharge Full	10.50	ft³/s
Slope Full	0.00001	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	13.33	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - Node 34 to 36

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00700	ft/ft
Diameter	1.50	ft
Discharge	0.80	ft^3/s

Results

Normal Depth	0.31	ft
Flow Area	0.26	ft^2
Wetted Perimeter	1.41	ft
Hydraulic Radius	0.18	ft
Top Width	1.21	ft
Critical Depth	0.33	ft
Percent Full	20.4	%
Critical Slope	0.00498	ft/ft
Velocity	3.09	ft/s
Velocity Head	0.15	ft
Specific Energy	0.45	ft
Froude Number	1.18	
Maximum Discharge	9.45	ft^3/s
Discharge Full	8.79	ft^3/s
Slope Full	0.00006	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	20.39	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - Below Node 36

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01150	ft/ft
Diameter	2.50	ft
Discharge	40.60	ft³/s

Results

Normal Depth	1.90	ft
Flow Area	3.99	ft²
Wetted Perimeter	5.28	ft
Hydraulic Radius	0.76	ft
Top Width	2.14	ft
Critical Depth	2.14	ft
Percent Full	75.8	%
Critical Slope	0.00912	ft/ft
Velocity	10.17	ft/s
Velocity Head	1.61	ft
Specific Energy	3.50	ft
Froude Number	1.31	
Maximum Discharge	47.31	ft³/s
Discharge Full	43.98	ft³/s
Slope Full	0.00980	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.80	%
Downstream Velocity	Infinity	ft/s

This is the existing 30" RCP downstream of proposed condition Node 26. The analysis is based on the greatest 100-year flow rate in the pipe and flatest slope, so is conservative.

City of San Diego
Planning Department

Development and Environmental
Planning Division
236-6460

Environmental Impact Report

DEP No. 86-1032
SCH No. 85022015

SUBJECT: California Terraces. PRECISE PLAN (PP), MASTER REZONE (RZ), VESTING TENTATIVE MAPS (VTMs) [DEP No.s 86-1032 and 90-0574], HILLSIDE REVIEW PERMIT (HR), RESOURCE PROTECTION ORDINANCE PERMIT (RPO) , PLANNED RESIDENTIAL DEVELOPMENT (PRD), SMALL LOT OVERLAY ZONE (SLOZ), COMMUNITY PLAN IMPLEMENTATION OVERLAY ZONE (CPIOZ "A"), and COMMUNITY PLAN AMENDMENT (CPA) to develop 664.8 acre site in the western portion of Otay Mesa with 5,375 residential dwelling units, 24.4 acres of commercial uses, 153.4 acres of open space, 4 school sites totalling ~~54.7~~ 53.6 acres, 3 parks totalling ~~25.7~~ 26.2 acres, and other public facilities. The project site consists of a large, flat mesa top dissected by steep canyons that are generally north and southwest treading. Located in the Otay Mesa Community Plan area, the Precise Plan area is roughly bounded on the south by SR-905, on the west by I-805, on the north by Otay Valley Road, and lies approximately 4,000 feet west of Brown Field Airport.
Applicant: Pardee Construction Company

REVISED UPDATE:

Project Redesign

Subsequent to distribution of the Final EIR, the applicant revised the California Terraces VTM in response to input from the Planning Commission to preserve the majority of an unnamed canyon which bisects the northwestern portion of the project site. The redesign would preserve approximately 15 acres of the canyon which contains coastal sage scrub and maritime succulent scrub habitats and supports several sensitive plant and animal species. The revised VTM and vegetation impacts table are attached. Approximately one million cubic yards of fill previously proposed for this canyon would be placed in Planning Areas 10-13, raising the manufactured slope heights along SR 905 between one and 30 feet. The total number of dwelling units would not be changed; 100 dwelling units (57 single-family and 43 multi-family) would be redistributed to five planning areas. The redistribution of dwelling units does not require a change to the proposed rezoning.

Traffic

The project redesign does not change the conclusions of the traffic report included in the Final EIR. However, subsequent to distribution of the Final EIR, Table 15 (Transportation Improvement Phasing) and Figure 39 (Precise Plan Proposed Street System and Buildout ADT) were modified by the Engineering and Development Department. The revised table and figure are attached.

Natural Communities Conservation Program/Multiple Species Conservation Plan (NCCP/MSCP)

The California gnatcatcher was listed as a threatened species on March 25, 1993 under the Federal Endangered Species Act (ESA) by the U.S. Secretary of the Interior. Subsequent to distribution of the Final EIR, the final Section 4(d) rule of the ESA became effective (December 10, 1993). The 4(d) rule allows the incidental take of the California gnatcatcher by allowing the City to approve the loss of up to 5% of existing coastal sage scrub habitat (through issuance of an Interim Habitat Loss Permit at the time of grading approval) while the MSCP is being completed. This approval must comply with the State NCCP guidelines which require findings relative to effect on regional preserve planning and mitigation. The applicant has chosen not to pursue an Interim Habitat Loss Permit from the City pursuant to Section 4 (d) of the EAS. Due to the lack of a mitigation proposal for impacts to California gnatcatcher habitat, the City would be unable to make the findings necessary to issue the interim permit. It would be the applicant's responsibility to obtain a permit from the U.S. Fish and Wildlife Service through Section 7 or 10 (a) of the ESA or some other vehicle, prior to the issuance of grading permits from the City.

Approval of the proposed project, as revised, would result in a direct loss of approximately 227 acres of coastal sage/maritime succulent scrub habitat. Up to 22 California gnatcatchers were observed on the project site at the time of the 1992 biological survey. The loss of this habitat is generally not consistent with the "Biological Standards and Guidelines for Multiple Species Preserve Design", an appendix to the Draft MSCP.

CONCLUSIONS:

The proposed California Terraces Precise Plan encompasses approximately 665-acres of vacant land located within the Otay Mesa Community Plan area. The California Terraces VTM (DEP No. 86-1032) consists of 543.5 acres, while the South Palm Vista VTM (DEP No. 90-0574) consists of 27.3 acres. The Precise Plan provides for development of 5,375 residential units over a total of 333.3 acres. The Precise Plan additionally includes five commercial sites totaling 24.4 acres, 153.4 acres of open space, four school sites totalling 54.7 acres, three parks totalling 25.7 acres, and other public facilities, all of which would be located within the associated California Terraces VTM.

The project has been redesigned in an effort to resolve planning, engineering, and environmental issues and to provide for a contiguous, regional open space system within Dennery Canyon. However, implementation of the proposed project would still result in **significant unmitigated land use, landform alteration/visual quality, biological resources, public services, and cumulative impacts.**

Land Use

Significant unmitigated impacts would occur due to the project's inconsistency with provisions of the RPO relative to development of biologically sensitive lands within the South Palm Vista VTM. Neither the California Terraces Precise Plan nor either associated VTMs, as proposed, are consistent with the environmental goals of the Otay Mesa Community Plan and development guidelines for the HR Overlay Zone. Feasible mitigation for the loss of sensitive resources is not provided by the proposed project.

Landform Alteration/Visual Quality

The proposed project would require approximately ~~12.83~~ 6.7 million cubic yards of earthwork (~~13,200~~ 10,080 cubic yards of earthwork per graded acre). The grading impact is considered significant due to the creation of 15 manufactured slopes in excess of 60 feet in height with the tallest manufactured slope at 120 feet. The proposed grading would reduce the height of the mesa top by approximately 30 feet in the northwest corner and by zero to ten feet over most of the project site, changing the elevation of the mesa from 500 feet above mean sea level (MSL) to approximately 470 feet MSL. Grading techniques have been incorporated into the project which would partially reduce impacts to landform alteration and visual quality, but not to below a level of significance.

Noise attenuation barriers represent a potential significant impact to visual quality. As currently proposed several large noise attenuation barriers are proposed along the major roadways including: Palm Avenue, Del Sol Boulevard, and SR-905. In a number of places, these barriers as currently proposed would reach heights of 7 to 10 feet for approximately 1400 feet, thus creating a walled affect. The use of landscaped berms or combination landscaped berms and walls could reduce this impact to below a level of significance.

Biology

Approximately 187 acres (70 percent) of high-quality, undisturbed Diegan coastal sage scrub and 34 acres (67 percent) of maritime succulent scrub habitat would be lost. Additionally, all of the disturbed Diegan coastal sage scrub (15 acres) would be impacted. Approximately 241 acres (99 percent) of non-native grassland would be lost. Twenty-five (78 percent) of the 32 vernal pools within the Precise Plan area and the sensitive plant species found in them, including all of the San Diego button celery would be lost. Additional sensitive plant species which would be lost include coastal barrel cactus, San Diego sunflower, cliff spurge, San Diego bur-sage, Otay Mesa mint, ashy spikemoss, as well as the only specimen of the state-endangered small-leaved rose.

The substantial loss of such sensitive habitats and plant species represents a significant impact to numerous sensitive wildlife species. The California gnatcatcher, which is proposed for listing under the Endangered Species Act, utilizes coastal sage scrub habitat and would be significantly impacted. Seven federal Category 2 candidates would also be impacted by the loss of habitat: the San Diego horned lizard, the Orange-throated whiptail, the California horned lark, the Bell's sage sparrow, Southern California rufous-crowned sparrow, San Diego cactus wren, and the San Diego black-tailed jackrabbit. Additionally, loss of non-native grassland would impact foraging habitat for several sensitive raptor species, all of which are protected by the State of California.

One hundred thirty two acres of the Precise Plan area are proposed as natural open space. Although appearing substantial, the majority of the open space would be fragmented, with the exception of 36 acres within Dennery Canyon, thus offering remote chance of long term viability for resident wildlife and their habitat. Dennery Canyon offers the best possibility for long term wildlife viability.

Complete mitigation for biological impacts could be accomplished by off-site acquisition, or redesign of the project to significantly expand areas of natural open space. Alternatives to the proposed project are discussed below and in detail in Chapter 6 of the EIR.

Public Services

Schools

Existing schools in the area surrounding the Precise Plan are currently operating at or above capacity. The Precise Plan proposes three elementary school sites and one junior high school site. Prior to construction of these school sites the students generated by the proposed project would attend existing schools. The overcrowding of existing schools would be exasperated and a short term significant impact would result. Ultimately the proposed schools would alleviate the overcrowding caused by the proposed development.

Before any of the proposed schools could be constructed the sites must be approved by the appropriate school districts, as well as the State of California because the school sites fall within a two mile radius of Brown Field.

Cumulative Impacts

Schools

Developer fees are insufficient to provide permanent high school facilities to accommodate the students generated from the proposed project. As a result, the Sweetwater Union High School District is expected to be adversely affected causing a significant cumulative impact to school and educational services for students. This cumulative impact could be mitigated by the establishment of a Mello-Roos District.

Air Quality

Considered with other new developments in the air basin, implementation of the California Terraces Precise Plan would contribute to nonattainment of clean air standards. The project would result in increased emissions due primarily to an increase in emissions from mobile sources. The nonattainment of clean air is considered a significant cumulative impact of the project.

RECOMMENDED ALTERNATIVES FOR SIGNIFICANT UNMITIGATED IMPACTS:

The EIR identifies several environmentally superior alternatives to the proposed project. These alternatives include:

1) The **Reduced Grading Alternative** would substantially reduce impacts associated with the proposed project. The Reduced Grading Alternative would reduce landform alteration impacts to below a level of significance and would reduce visual impacts associated with excessive grading by avoiding steep slopes and keeping all manufactured slopes below 60 feet in height. This alternative would increase the proposed open space and reduce impacts to biology.

   Adoption of this alternative would reduce the number of residential units to 2,360. Additionally, portions of the project site would have to be redesigned so as to accommodated proposed commercial, park, and school sites.

2) The **Alternative Grading/Product Type Alternative** would substantially reduce impacts to land use, landform alteration, visual quality, and biology. Construction techniques such as "stepping down" or terrace designed developments would follow the existing grade more closely than the currently proposed flat pad design. Residential units could be clustered to create views from the road system between groups of units, protecting visually significant portions of the existing landform. This could be accomplished without a loss in the number of units. This alternative would reduce impacts to biologically sensitive resources, increase open space, and conform with the environmental goals of the Otay Mesa Community Plan and utilize the Hillside Review Guidelines.

   Adoption of this alternative would increase the costs of construction. A portion of the increased construction costs resulting from this more sensitive approach would be offset by the reduction in the costs for grading and quantity of landscaping required.

3) The **Increased Open Space Alternative** would substantially reduce biological and landform alteration/visual quality impacts. This is the environmentally preferred alternative because it would reduce grading into steep slopes, preserve environmentally valuable canyon's, as well as lessen the direct and indirect impacts to numerous sensitive species and their habitat on-site.

   Implementation of this alternative would reduce the number of proposed dwelling units by approximately 1,885. Portions of the project site would have to be redesigned, such as road alignments, to accommodate the increased open space. The applicant has rejected this alternative because it does not achieve an equivalent number of units as the proposed project.

Unless mitigation measures or project alternatives are adopted, project approval will require the decision maker to make Findings, substantiated in the record, which state that: a) individual mitigation measures or project alternatives are infeasible, and b) the overall project is acceptable despite significant impacts because of specific overriding considerations.

MITIGATION, MONITORING AND REPORTING PROGRAM INCORPORATED INTO THE PROJECT: (See the attached EIR for specific details regarding mitigation.)

Landform Alteration

The requirement of contour grading, horizontal and vertical undulation, variable slope ratios, and rounding of tops and toes of slopes shall be depicted on the project grading plans and shall be included as environmental mitigation notes. The plans shall be reviewed and approved by the Principal Planner of the Environmental Analysis Section (EAS) prior to the issuance of any grading or pre-grading permits or recordation of final maps for the project.

Prior to the issuance of building permits, the field inspectors and EAS shall determine upon final review of the graded site that slopes have been blended into the natural terrain to the maximum extent feasible, that landscaping has been properly installed, and that variable slope gradients have been created on all slopes in accordance with the approval plans.

The foregoing measures shall be implemented through conditions of approval for the proposed Precise Plan and VTMs.

Geology/Soils/Paleontology

The Precise Plan and VTMs shall implement mitigation measures relative to excavation, compaction, building foundations, and surface drainage that would reduce the potential for impacts from present geotechnical constraints on the property. The final grading plan shall be subject to approval by the Engineering and Development Department (E&DD) and shall be submitted prior to issuance of any grading permits. All specifications established by the geotechnical report shall be incorporated into final grading plans and specifically noted as mitigation. Prior to the issuance of grading permits, EAS and E&DD shall review the plans to ensure implementation of these measures.

Approval of the proposed project shall contain a paleontological mitigation monitoring program in the areas of fossil-bearing geologic formations to mitigate potentially significant impacts to paleontological resources. The vesting tentative maps shall included measures for a paleontologist to monitor earth movement during grading. This would allow salvaging any exposed fossil remains.

A summary report, even if negative, shall be prepared and submitted to EAS to confirm that a paleontological study has been conducted for the project prior to the issuance of building permits.

Traffic

The proposed project at its ultimate build out would generate a 50,859 ADT volume. This increase would have a significant impact on the regional traffic circulation system in the Otay Mesa planning area. In particular the increased in ADTs would contribute 19,628 ADT to SR-905, 10,600 ADT to Otay Mesa Road, 22,980 ADT to Palm Avenue, as well as impacts to on and off ramps to I-805 and SR-905. Mitigation outlined in Section G (Traffic Circulation) of the EIR would reduce these impacts to a level less than significant.

Noise

The potential for significant noise impacts exists. Noise generated along major roadways including Palm Avenue, Del Sol Boulevard, SR-905, and Street "A" could exceed City standards for residential, commercial, school, and park uses. Mitigation in the form of noise attenuation barriers have been proposed, however, the walls would only be effective on attenuating noise at ground floor levels. Mitigation for second story interior noise levels and outdoor balconies would have to be addressed in future noise studies. Implementation of all proposed noise mitigation shall be completed prior to issuance of occupancy permits. All sound attenuation barriers would have to be implemented prior to issuance of any CPIOZ permits. Mitigation outlined in Section F (Noise) would reduce impacts to below a level of significance.

Biology

Partial mitigation for impacts to vernal pool habitat would consist of implementing the on and off-site vernal pool preservation plan partially within the California Terraces VTM and on the adjacent Otay Corporate Center property. This plan is included in Appendix C of the EIR.

Partial mitigation for impacts to biological resources for the South Palm Vista VTM (DEP No. 90-0574) has been accomplished by realignment of Del Sol Boulevard to the south, into the South Palm Precise Plan area.

Partial mitigation for impacts to biological resources caused by implementation of brush management requirements would consists of contracting a qualified biologist during clearing of vegetation during maintenance periods. This would ensure minimal removal of native vegetation in accordance with the Landscape Technical Manual and brush management plan, thus reducing impacts to wildlife habitat.

The foregoing measures shall be implemented through conditions of approval for the proposed Precise Plan and VTMs. These measures shall be noted on the grading plans for the VTMs. Prior to issuance of the grading permit, EAS shall review the plans to ensure implementation of these measures.

Cultural Resources

Implementation of the California Terraces Precise Plan would completely or partially impact 16 of the 19 archaeological sites located within the project boundaries. The three sites not to be impacted, which were found not to be significant, would be placed in open space. Three of the 16 sites which would be impacted were found to be significant. A data recovery and analysis program are on-going which would reduce the impacts to these cultural resources to below a level of significance. Cultural Resources mitigation is addressed in detail in Section E (Cultural Resources) of the EIR.

Public Services and Facilities

Schools

Development of the California Terraces Precise Plan and associated VTMs would cause potentially significant short-term impacts to existing over-crowded facilities. Significant impacts could occur if the school sites are not developed as proposed. The mitigation measures outlined in Section I (Public Services and Utilities) of the EIR would reduce the longterm impacts to a level less than significant.

Water Supply and Facilities

Significant water and sewer service impacts could be mitigated by implementing those measures outlined in Section I (Public Services and Utilities) of the EIR. All off-site improvements would be completed prior to the final map. All on-site improvements must be completed prior to issuance to any building permits. All improvements shall be completed to the satisfaction of the Director of Water Utilities. All mitigation shall be noted as mitigation on the grading plan for the VTMs. Prior to the issuance of grading permits and building permits, EAS shall review the plans to ensure implementation of these measures.

Erosion/Water Quality

Drainage plans shall be submitted to the City Engineer for review and approval prior to issuance of grading permits and shall incorporate facilities such as storm drains, retention basins, sediment basins, and energy dissipators to provide for control of long-term erosion, sedimentation, and pollutants in project runoff. The mitigation measures outlined in Section C (Geology/Soils and Erosion/Water Quality) of the EIR would reduce impacts to a level less than significant.

The above mitigation monitoring and reporting program will require additional fees and/or deposits to be collected prior to the issuance of building permits, certificates of occupancy, and/or final maps to ensure the successful completion of the monitoring program.

Mary Ladiana
for Ann B. Hix, Principal Planner
City Planning Department

December 14, 1992
Date of Draft Report

November 16, 1993
Date of Final Report

March 24, 1994
Date of Revised Final Report

Analyst: O'Boyle

PUBLIC REVIEW:

The following individuals, organizations, and agencies received a copy or notice of the draft EIR and were invited to comment on its accuracy and sufficiency:

- Federal Government
    - U.S. Army Corps of Engineers
    - Fish and Wildlife Service
    - Environmental Protection Agency (EPA)
    - Department of Agriculture, Soil Conservation Service
    - International Boundary and Water Conservation
    - Federal Aviation Administration (FAA)
    - Department of Transportation
        - Division of Aeronautics
    - U.S. Department of Justice
        - Immigration & Naturalization Service (INS)
    - Border Patrol
- State of California
    - CALTRANS, District 11
    - CALTRANS, Division of Aeronautics
    - California Department of Fish and Game
    - California Department of Transportation
        - Division of Aeronautics
    - Regional Water Quality Control Board, Region 9
    - Air Resources Board

  - Native American Heritage Commission
  - Office of Planning and Research
  - Resources Agency
  - State Clearinghouse
- County of San Diego
  - Department of Parks and Recreation
  - Water Authority
  - Air Pollution Control District
  - Department of Planning and Land Use
- City of San Diego
  - Councilmember Filner, District 8
  - Tim O'Connell, Mayor's Office
  - Engineering and Development Department
    - Lisa Adams
    - City Geologist, Rob Hawk
  - Building Inspection Department
    - Noise Abatement Division
    - City Geologist, Werner Landry
  - Transportation and Traffic Engineering
  - Planning Department
    - Development and Environmental Planning
    - Landscape Planning Section
    - Community Planning
  - Park and Recreation Department, Nancy Acevedo
  - Police Department
  - Fire Department
  - Water Utilities
  - General Services Airport Division
    - Brown Field, Michael Tussey
  - Metropolitan Transit Development Board
- City of Chula Vista
  - Planning Department, Lance Fry
- City of Imperial Beach
  - Planning Department
- Local
  - San Diego Association of Governments (SANDAG)
  - San Ysidro School District
  - Chula Vista School District
  - Sweetwater Union High School District
  - Sierra Club, San Diego Chapter
  - San Diego Natural History Museum
  - San Diego Audubon Society
  - Airport Relocation Committee
  - California Native Plant Society
  - San Diego Museum of Man
  - San Diego County Archaeological Society, Inc.

South Coastal Information Center, San Diego State University
Kumeyaay Cultural Historic Committee
Citizens Coordinate for Century III
Otay Mesa Community Planning Group
Otay Mesa/Nestor Community Planning Group
Otay Mesa Development Council
Otay Chamber of Commerce
Otay Mesa Branch Library
San Diego Gas and Electric Company
Janay Kruger
Michael A. Vogt
Pardee Construction Company, Owner
Keith Keeter, PDC, Agent

Copies of the draft EIR, the Mitigation Monitoring and Reporting Program and any technical appendices may be reviewed in the office of the Development and Environmental Planning Division, or purchased for the cost of reproduction.

RESULTS OF PUBLIC REVIEW:

( ) No comments were received during the public input period.

( ) Comments were received but the comments do not address the accuracy or completeness of the environmental report. No response is necessary and the letters are attached at the end of the EIR.

(X) Comments addressing the accuracy or completeness of the EIR were received during the public input period. The letters and responses follow.

CALIFORNIA TERRACES
REVISED PRECISE PLAN VEGETATION IMPACTS

Habitat Type	Existing Acreage	Impacted Acreage*	Percent Remaining
Maritime succulent scrub	65.7	37~~40~~.0	44~~39~~
Diegan coastal sage scrub	286.0	190~~202~~.0	34~~30~~
Nonnative grassland	244.0	224.5	8
Southern mixed chaparral	1.8	0.0	100

*Including brush management impacts from Zones 2 and 3.

TABLE 15 (1-19-94)
TRANSPORTATION IMPROVEMENT PHASING
SOURCE: CALIFORNIA TERRACES FINAL DEIR

Improvement	Threshold	
	Dwelling Units	Commercial Acres
Construct Palm Avenue as four lanes, two lanes each direction plus median, to primary arterial standards between I-805 and west subdivision boundary.	500*	
Construct Palm Avenue as four lanes to major street standards between first intersection and Dennery Canyon Road.	500*	
Improve Palm Avenue/I-805 interchange as recommended in a project report. Improvements to be in place and operational.	1,513	5.5
Construct Palm Avenue as a four-lane major street between Dennery Canyon Road and Del Sol Boulevard.	1,513	5.5
Construct Palm Avenue as a minimum two-lane facility between Del Sol Boulevard and "A" Street to the satisfaction of the City Engineer.	1,513	5.5
Construct "A" Street, an ultimate four-lane major street, as a minimum two-lane facility between Palm Avenue and Otay Mesa Road to the satisfaction of the City Engineer.	1,513	5.5
Construct Del Sol Boulevard, north half, as two lanes, one half of a four-lane collector street along subdivision map frontage.	N/A (subdivision map requirement)	
Construct Del Sol Boulevard, south half, as two lanes of a four-lane collector street along subdivision map frontage.	N/A (subdivision map/school/park requirement)	
Complete the construction of Palm Avenue as a six-lane major street between Del Sol Boulevard and "A" Street.	3,934	8.4
Construct easterly partial improvements of "A" Street as a four-lane major street between Palm Avenue and Otay Mesa Road.	3,934	8.4
Construct Palm Avenue as a six-lane major street between "A" Street and Otay Mesa Road to the satisfaction of the City Engineer.	5,138	24.4

TABLE 15
TRANSPORTATION IMPROVEMENT PHASING
(continued)

Improvement	Threshold	
	Dwelling Units	Commercial Acres
Improve Otay Mesa Road as a six-lane major street between California Terraces "A" Street and Palm Avenue.	5,138	24.4
Improve Otay Mesa Road to six-lane major street standards between "A" Street and SR-905 ramps.	5,138	24.4
Complete the construction of Palm Avenue as a six-lane primary arterial (with a separate westbound right turn lane onto the northbound I-805 ramp) between I-805 and west subdivision boundary.	5,138	24.4
Construct Otay Mesa Road (extension of "A" Street) south of SR-905 as one half of a four-lane collector street to Parcel 26 access. Reserve four-lane collector right-of-way to southerly subdivision boundary.	N/A (subdivision map requirement)	
Construct Otay Mesa Road as one half of a four-lane collector street adjacent to Parcel 24 of California Terraces.	N/A (subdivision map requirement)	
Complete improvements of Otay Mesa Road to six-lane major street standards between east subdivision boundary and Palm Avenue.	5,375	24.4
If SR-905 freeway is constructed prior to development of the south phase and CalTrans is unwilling to construct the future "A" Street bridge over SR-905 utilizing state funds, then construction of "A" Street will be a threshold condition of Parcels 24, 25 & 26 development.	(Only applies if SR-905 is completed before California Terraces build-out and CalTrans does not fund the bridge)	

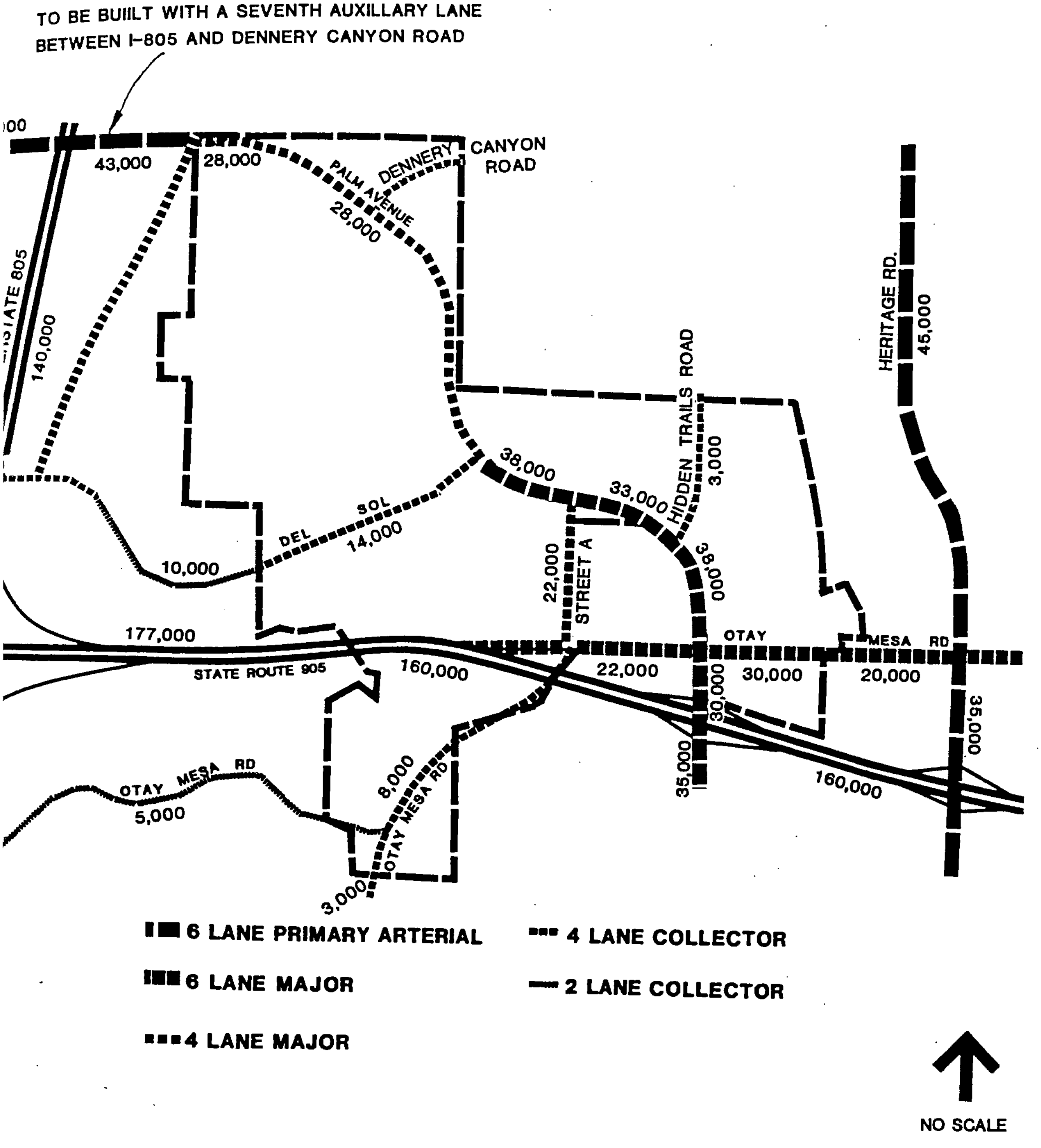
NOTES: Improvements to be assured to the satisfaction of the City Engineer before final maps for the listed thresholds can be approved.

"Threshold" indicates maximum amount of development allowed within California Terraces with assurance of the listed improvement.

Assured improvements to be completed, under contract, bonded, scheduled in the city Capital Improvements Program or Otay Mesa Financing Plan, to the satisfaction of the City Engineer.

This plan is intended to serve as a guideline for sequential development of street improvements. Because the geographic order of development is not certain, it may be necessary for the City Engineer to regularly review and revise this phasing plan in order to reflect current land development proposals and actual trip generation rates and trip distribution.

*Only if development has direct access.



SOURCE: PDC. 1990

REVISED PRECISE PLAN PROPOSED STREET SYSTEM
BUILDOUT ADT

LETTERS OF COMMENT AND RESPONSES

Letters of comment to the draft EIR were received from the following agencies, groups, and individuals. The letters of comment and responses follow.

In response to the various comments received during the public review period, pages 24, 59, 64, 70, 94, 107, 111, 116, 130, 142, 171, 172, 172a, 173, 179, 181, and 182 have been revised. Figures 20, 37, 38, 39, and Table 15 have also been revised in response to the letters of comments. The changes to the text are indicated by strike-out (deleted) and underline (inserted) markings.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
CARLSBAD FIELD OFFICE
2730 Loker Avenue West
Carlsbad, California 92008

January 27, 1993

RECEIVED
FEB 0 1 1993
PLANNING DEPT

Ms. Ann B. Hix, Principle Planner
City Planning Department
City of San Diego
202 C Street, Mail Station 4c
San Diego, CA 92101

Re: Draft Environmental Impact Report for California Terraces, San Diego, California DEP No.s 86-1032 and 90-0574

Dear Ms. Hix:

The Fish and Wildlife Service (Service) has reviewed the Draft Environmental Impact Report (Report) for California Terraces, San Diego, California. As requested, the Service is providing the City of San Diego with technical assistance. The following comments and recommendations on the biological impact of the project are based on our knowledge of sensitive and declining habitat types and species in San Diego County.

1 The California Terraces precise plan proposes to develop 512 of the 665-acre site with residential units, including commercial, school, and park sites. Open space is proposed for 153 acres of the subject property. The project, as designed, will impact 40.0 acres of maritime succulent scrub, 202.0 acres of Diegan coastal sage scrub, and 224.5 acres of nonnative grassland. Approximately 25 of the 32 vernal pools on-site would be lost as a result of the project. Species likely to be impacted by the proposed project include: California gnatcatcher (Polioptila californica californica), San Diego cactus wren (Campylorhynchus brunneicapillus couesi), San Diego horned lizard (Phrynosoma coronatum blainvillii), orange-throated whiptail (Cnemidophorus hyperthyrus beldingi), California horned lark (Eremophila alpestris actia), Southern California rufous-crowned sparrow (Aimophila ruficeps canescens), Bell's sage sparrow (Amphispiza belli belli), San Diego black-tailed jackrabbit (Lepus californicus bennettii), coast barrel cactus (Ferocactus viridescens), Otay tarplant (Hemizonia conjugens), San Diego bur sage (Ambrosia chenopodifolia), San Diego button celery (Eryngium aristulatum), and small-leaved rose (Rosa minutifolia).

The Service has the legal responsibility for the welfare of all migratory birds, anadramous fish, and endangered animals and plants occurring in the United States. The Service has responsibilities under the Clean Water Act and the Endangered Species Act of 1973, as amended (Act). Our mandates require that we provide comments on any public notice issued for a Federal permit or license affecting the Nation's waters, in particular, Army Corps

RESPONSES

1. The comment is noted. It accurately summarizes the biological impacts associated with implementation of the California Terraces project as discussed in the EIR.

of Engineers (Corps) permits pursuant to section 404 of the Clean Water Act and section 10 of the River and Harbor Act of 1899. The Service is responsible for the administration and enforcement of the Endangered Species Act, including listing and recovery of endangered species, 10(a) permit issuance and consultation with Federal agencies for actions which may affect federally listed endangered species. Section 9 of the Act additionally prohibits the "take" (e.g. harm, harassment, pursue, injure, kill) of federally listed fish and wildlife species. "Harm" is further defined as an act which may result in significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns including breeding, feeding or sheltering (50 CFR 17.3). "Take" can only be permitted pursuant to the pertinent language and provisions in section 7 and section 10(a). The take provisions apply upon the effective date of listing in the Final Rule published in the Federal Register.

The Service is greatly concerned with project impacts to the California gnatcatcher and cactus wren. As you know, the California gnatcatcher has been proposed as a federally listed endangered species. Additionally, the Service has been petitioned to list the cactus wren as endangered. The take provisions of section 7 and section 10(a) of the Act would apply upon the effective date of listing of these species, as stated in the Final Rule which is published in the Federal Register, regardless of the stage in the issuance of City, County or state development permits. Section 10(a) permits require the submittal of a conservation plan assuring that the survival and recovery of the species will not be appreciably reduced.
2 Given the magnitude of the impact and the lack of proposed mitigation, it is unlikely that the project as proposed would meet the section 7 or section 10(a) standards in the event that the California gnatcatcher and/or cactus wren become federally listed as threatened or endangered species.

3 The subject property occurs within an area that is a core population for the California gnatcatcher and cactus wren. The Service believes that the subject project could be in conflict with the ongoing efforts to prepare multiple species conservation plans. As you know, the State of California is in the process of preparing a coastal sage scrub protection plan referred to as Natural Community Conservation Planning (NCCP). The Service has entered into a Memorandum of Understanding (MOU) with the State on this program. It is the Service's understanding that the City of San Diego has enrolled in this program. Moreover, the City of San Diego is in the process of preparing a Multiple Species Conservation Program (MSCP). The Service believes that the project site is an important component of both these planning efforts. We recommend that the City closely coordinate project planning with the NCCP and the MSCP. We further recommend that a condition of approval for the subject project include a requirement that the project adhere to the criteria and preserve design with results for the MSCP and NCCP. In the absence of this condition the Service believes it is premature to approve a proposed project in this location, given the ongoing planning efforts. We recommend that the certification of the EIR and approval of the project be deferred until these planning processes are completed in December of 1993.

RESPONSES

2. Comment acknowledged. The draft EIR concludes that implementation of the proposed project would directly impact 187 acres of high-quality Diegan coastal sage scrub and 34 acres of maritime succulent scrub habitat. The project, however, would be required to comply with all provisions of the Endangered Species Act.

3. The ongoing Multiple Species Conservation Program (MSCP) preliminary vegetation mapping efforts and the Natural Community Conservation Plan (NCCP) are acknowledged. Both the City and the project applicant have enrolled in the NCCP process. Presently, the City of San Diego cannot use the MSCP for determining local land use decisions because of the program's preliminary nature. However, a condition will be placed on the project stating that no grading permits will be issued without the applicant's first obtaining a Section 10(a) or Section 7 permit or a letter stating that a permit is not required from the USFWS. Any redesign required in obtaining the permit will require reconsideration by the City decision-making body.

4 The Service is particularly concerned with the unmitigated loss of 40.0 acres of maritime succulent scrub. Within the boundaries of the City of San Diego there are less than 2,000 acres of maritime succulent sage scrub habitat remaining. The Service strongly recommends that remaining maritime succulent sage scrub be preserved and that a no net loss policy for this habitat be incorporated into the subject project and all future projects.

5 The loss of vernal pools on the subject property, and the species dependant on vernal pool habitat, is of concern to the Service. San Diego button celery (Eryngium aristulatum var. parishii), a species to be impacted by the project, is proposed as a federally listed species. Vernal pool habitat is one of California's most endangered plant communities. This unique ecosystem has been reduced by 97%. Due to the level of destruction of vernal pool habitat the Service has found it necessary to prepare a listing package for one vernal pool invertebrate species (Streptocephalus woottoni) and three vernal pool plant species: Loma Alta mesa mint (Pogogyne nudiuscula), California orcutt grass (Orcuttia californica), and San Diego button celery. All of these species occur in pools on Otay Mesa. Based on the high value and rarity of the vernal pool habitat and the species it harbors, the Service recommends that every effort be made to avoid impacts to this valuable biological resource.

6 The Service has reviewed the proposed mitigation for vernal pools and we believe it is inadequate to offset impacts. Proposed vernal pool mitigation consists of the re-creation of vernal pool habitat. Re-creation of vernal pool habitat is extremely difficult and, in our opinion, rarely successful. Therefore, we believe it should only be attempted on a very small scale and only when impacts are unavoidable.

7 No mention of fairy shrimp was made in the Report's discussions on vernal pools. The Service is aware that the Riverside fairy shrimp, a species proposed as federally endangered, has been found in vernal pools on Otay Mesa. We strongly recommend that samples be taken from pools on the subject property to determine the presence of the Riverside fairy shrimp. As is discussed above in regard to the California gnatcatcher and cactus wren, the take provisions of the Act would apply to this species upon the effective date of listing of the Riverside fairy shrimp. In addition, the Service has been petitioned to list the San Diego fairy shrimp (Brachinecta sandiegense) as endangered, and pools on the subject site should also be sampled for this species.

Within southern California, intense development pressures have resulted in threats to many of the diverse habitat types present. Numerous plant and animal species in San Diego County are candidates for Federal listing. Candidate species represent those species for which the Service has substantial information to support listing as threatened or endangered (Category 1), or taxa which may warrant listing, but for which substantial information to support a proposed rule is lacking (Category 2). These high numbers of candidate species in the region reflect the rapid downward trend in regional biodiversity and emphasize the urgency of protecting the habitat that remains.

RESPONSES

4. Approximately 65.7 acres of maritime succulent scrub are located in several areas, primarily in the western portion of the precise plan. The proposed precise plan would preserve portions of some of these areas in open space along the western border that are contiguous with off-site maritime succulent scrub habitat. The largest area of maritime succulent scrub habitat located south of Otay Mesa Road would also be preserved as open space. It is recognized that approval of the project would result in significant unmitigated impacts to this habitat type. The adoption of Findings and a Statement of Overriding Considerations would be required by the City of San Diego.

5. Comment noted. The draft EIR acknowledges and identifies the loss of vernal pool habitat as being environmentally significant. The applicant has proposed, and the City has approved, the creation of a vernal pool preserve to partially mitigate for impacts created by the applicant on California Terraces and Otay Corporate Center North and South. The goal of the vernal pool plan is to preserve and restore viable vernal pool habitat on the applicant's ownerships in western Otay Mesa. Furthermore, of the vernal pool species proposed to be listed, only *Eryngium aristulatum* var. *parishii* occurs on the project area in disturbed habitat. The majority of the vernal pools and habitat have been and continue to be disturbed. The vernal pool plan will reintroduce these referenced species into undisturbed habitat in order to reestablish these species in western Otay Mesa.

6. Nearly all of the vernal pool habitat on California Terraces and Otay Corporate Center has been highly disturbed historically by farming and, more recently, by off-road vehicle use. The vernal pool plan would not create new habitat but instead emphasizes preservation and restoration of historic pools in locations which offer an opportunity for long-term success for the habitat. Ultimately, the design of the proposed vernal pool preserve and the extent of vernal pool impacts on the California Terraces property would be determined through the processing of the U.S. Army Corps of Engineers 404 permit for which the USFWS would be consulted.

7. The fairy shrimp sampling studies from vernal pools on California Terraces have been included as part of the final EIR. The results of the sampling do not affect the Conclusions of the EIR that impacts to biological resources are significant and unmitigated.

The primary goal of identifying Federal candidate species is to notify agencies of the documented decline of certain species and to alert these agencies to the possible designation of these species as threatened or endangered. The candidate species list provides an "early alert" which can allow for the consideration of these species in planning and protection efforts. Allowing species to decline to levels that warrant Federal listing as endangered may complicate or interrupt planned projects. We urge the City of San Diego to give great weight to the protection of candidate plant and animal species.

8 In addition to the California gnatcatcher and cactus wren, six federal category 2 animal species were found during surveys of the subject property: San Diego horned lizard; orange-throated whiptail; California horned lark; rufous-crowned sparrow; Bell's sage sparrow; and black-tailed jackrabbit. None of these six species were discussed in the biological impacts section of the Report, even though it is certain that the project would impact habitat for these species. The impact and mitigation analyses for this project should address habitat loss for these species.

9 The Report states that Otay tarplant was found on the subject property, and Figure 30 of the Report indicates that this species occurs within an area to be impacted by the proposed project. The impact analysis in the report does not mention this species. Otay tarplant, as you know, is listed by the State as endangered and is a category 2 candidate for Federal listing. This species is restricted to extreme southwestern California and northern Baja California, Mexico, and is seriously threatened by development and/or cattle grazing throughout its range. An impact assessment of Otay tarplant should be included in the Report, as well as measures to minimize or mitigate such impacts. Since this species experiences extreme population fluctuations from year to year, an adequate impact assessment can not be made without looking at the amount of appropriate habitat for this species on the subject property, and discussing the subject population in a regional context. The Service recommends that the project applicant minimize and mitigate impacts to Otay tarplant, and manage to maintain this species within the open space on the subject property.

10 The project as proposed would result in the loss of the only known population of small-leaved rose existing in the United States. The Service is aware that the project applicant is currently coordinating with California Department of Fish and Game (CDFG) to avoid impacts to this species. We concur with CDFG that impacts should be avoided, and support their efforts.

The Service strongly encourages project redesign to minimize impacts to biological resources. The increased open space alternative, presented in chapter 6 of the Report, would avoid the loss of small-leaved rose and appreciably reduce direct impacts to cactus wrens and California gnatcatchers. This alternative would avoid the loss of several areas indicated as having "high concentrations of species" on the sensitive biological resources map, and is preferred by the Service over the proposed alternative. However, even the increased open space alternative would

RESPONSES

8. The referenced species are described in Attachment A of the biological technical report which was an appendix to the draft EIR, as well as in the biological section of the final EIR. All those referenced sensitive species on-site are potentially impacted by the proposed development and are considered significant. The Conclusions of the EIR are consistent with this analysis.

9. As with the species referenced above (see comment 8), a discussion of the impacts associated with the Otay tarplant has been included in the final EIR. Impacts to this species are considered significant.

10. Comment noted.

11 recommends eliminating development of the lots in the northern portion of
the property, on either side of Palm Avenue, to provide increased
connectivity between the large patch of open space on-site and Otay River
12 Valley. The open space designs of Dennery Ranch and Hidden Trails, two
proposed projects which lie between California Terraces and Otay River
Valley, provide connectivity between the northern border of California
Terraces, Dennery Canyon, and the Otay River Valley. The effectiveness of
the open space designs of these two projects is partly dependant on the
open space design of California Terraces.

13 In summary, the Service believes that adequate measures have not been presented to avoid, minimize, or mitigate impacts to biological resources on the subject property. We recommend that the subject project as proposed be held in abeyance until the ongoing habitat planning programs are prepared. We further recommend that the City preserve core populations of the California gnatcatcher and the cactus wren and that no additional losses of viable maritime succulent scrub and vernal pools be allowed. Fairy shrimp sampling should be performed on-site and, if present, impacts to Riverside and San Diego fairy shrimp should be avoided. Otay tarplant impacts and mitigation should also be addressed in the Report. Without resolution of these issues, the project described in the Report would result in significant, unmitigated biological impacts. The Service recommends that the project as presently proposed not be approved.

The Service remains willing to work with the City of San Diego and the project applicant to ensure that project impacts are adequately mitigated. We recommend that avoidance, minimization or mitigation be utilized to reduce all biological impacts to a level below significance. If you have any questions, please contact Ellen Berryman of this office at (619) 431-9440.

Sincerely,

Jeffrey D. Opdycke
Field Supervisor

RESPONSES

11. The currently proposed California Terraces project is designed to be consistent with the proposed regional open space planning efforts which have been developed by the City of San Diego in conjunction with the Otay Valley Regional Park and the Western Otay Mesa Property Owners. The increased open space alternative is an option the City Council may choose to pursue. The recommendation to eliminate development of lots in the northern portions of the property is not possible because to do so would not meet the applicant's goals for the property. Additionally, such an alternative may not be possible if Palm Avenue is built out as a four-lane major roadway as is currently proposed.

12. Comment noted. The open space systems in Dennery Ranch, Hidden Trails, and California Terraces are all interdependent. The City of San Diego and the property owners of western Otay Mesa have tried to create an open space system which can effectively serve as a wildlife preserve while maintaining development rights for property owners.

13. Each subject mentioned in this summary paragraph has been previously addressed in the above responses and no further responses are necessary.

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O BOX 2711
LOS ANGELES, CALIFORNIA 90053-2325

RECEIVED
JAN 4
PLANNING DEPT

December 30, 1992

REPLY TO
ATTENTION OF:

Office of the Chief
Regulatory Branch

Pardee Construction Company
c/o City of San Diego
Planning Department
DEVELOPMENT AND ENVIRONMENTAL PLANNING DIVISION
Attn: Paul O'Boyle
202 "C" Street, Mail Station 4C
San Diego, CA 92101

Gentlemen:

It has come to our attention that you plan to develop a 664.8 acre residential/commercial site known as California Terraces, that will impact vernal pools, located in the Otay Mesa Community Plan area, City and County of San Diego, California.

14 This activity may require a U.S. Army Corps of Engineers permit. A Corps of Engineers permit is required for:

1. Work or structures in or affecting the "navigable waters of the United States", including adjacent wetlands; construction of a pier, wharf, bulkhead or jetty, dredging, dredge disposal, filling and excavation are examples of work or structures affecting navigable waters;

2. The discharge of dredged or fill material into the "waters of the United States", including adjacent wetlands; placing bank protection, temporary or permanent stock-piling of excavated material, grading roads, any grading (including vegetative clearing operations) involving filling low areas or leveling the land, and construction of weirs, diversions, approach fills or other structures involving the placement of fill material are examples of activities involving the discharge of dredged or fill material;

3. The transportation of dredged or fill material for the purpose of dumping it into ocean waters;

4. Any combination of the above.

RESPONSES

14. The EIR states that a 404 permit is required for the project. An application has been submitted and is currently being processed.

Enclosed you will find a permit application form and a pamphlet that describes our regulatory program. If you have any questions, please contact David Zoutendyk of my staff at (619) 455-9414. Please refer to this letter in your reply.

Sincerely,

Michele F. Waltz

Michele F. Waltz
Chief, South Coast Section

Enclosures

United States
Department of
Agriculture

Soil
Conservation
Service

332 S. Juniper, Suite 110
Escondido, CA 92025
619-745-2061

January 11, 1993

RECEIVED
JAN 13 19
PLANNING DEPT

Ann B. Hix
Principal Planner
City of San Diego
Development and Environmental Planning Div.
202 "C" St., MS4C
San Diego, CA 92101

RE: DEP No. 86-1032, 90-0574 California Terraces

Dear Ms. Hix:

The Soil Conservation Service acknowledges receipt of the above Draft EIR and have found all the concerns of the SCS have been addressed except the following:

15 1. There was no discussion regarding impacts to existing agricultural operations within or near the project area. The EIR should discuss the amount of prime, statewide, local or unique farmland being lost to the project, including inducement to development.

The Soil Conservation Service has information and maps on farmland in San Diego County, as well as information on soils, flood control, water quality and other resource conservation information that may be of help. Please feel free to contact our office at the above address.

Sincerely,

Jason N. Jackson

JASON N. JACKSON
District Conservationist

RESPONSES

15. No agricultural operations currently exist on-site. However, it is recognized that the California Terraces project area contains farmlands that have been mapped by the Soil Conservation Service and the State of California. The EIR for the 1981 Otay Mesa Community Plan addressed the existing land uses in the community plan area, including agriculture, and the loss of agricultural lands. This EIR identifies those lands generally east and south of Brown Field as agriculture lands. The proposed community plan proposed an agriculture preserve east of Brown Field containing approximately 245 acres of mostly good agricultural land to be retained in interim agricultural use. The EIR also stated that soil classes ranging from I-IV should be preserved whenever possible and development should be phased to insure continued agricultural use, where feasible.

ALIFORNIA - BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, Governor

RTMENT OF TRANSPORTATION
ION OF AERONAUTICS
K STREET - 4th FLOOR
IL: P. O. BOX 942873
CRAMENTO, CA 94273-0001
(916) 322-3090
TDD (916) 654-4014

January 25, 1993

Ms. Ann B. Hix
Development and Environmental
Planning Division
202 "C" Street, Mail Station 4C
San Diego, CA 92101

Dear Ms. Hix:

The City of San Diego
Draft EIR for California Terraces; SCH# 85022015

The California Department of Transportation, Division of Aeronautics, has reviewed the above-referenced document as required by CEQA. The following comments are offered for your consideration.

16 The proposal provides for the development of 5,375 residential units on 333.3 acres, five commercial sites on 24.4 acres, four school sites on 54.7 acres, three parks on 25.7 acres and 153.4 acres of open space. According to page 130 of the Draft EIR, Brown Field Municipal Airport is located "two miles east" of the project site. Actually, the airport is approximately one mile east of the project site.

17 The Draft EIR has identified surface traffic and aircraft operations as the noise sources impacting the project site. Figure 34 shows the 65 CNEL (Community Noise Equivalent Level) contour for the airport impacting only the northeastern corner of the project site which is designated open space. Figure 35 shows the surface traffic noise contours. Could the cumulative impact of surface traffic and aircraft operations result in significantly greater impacts than those identified in the EIR? 18 In addition, the future airport noise contours depicted in the proposed 1990 Airport Master Plan update differ quite significantly from the contours reflected in the EIR.

19 The EIR states that the aircraft activity associated with Brown Field would not pose a significant noise impact to future residents of the California Terraces Project Precise Plan area since a majority of the site appears to be outside the 65 CNEL contour for the airport. It has been the Division's experience that noise complaints can originate outside the 65 and even the 60 CNEL contour particularly in areas which experience overflights.

RESPONSES

16. The text of the final EIR has been revised to correctly state the distance of the project from Brown Field.

17. In July 1987, the City Council adopted the City Manager's recommendation which limits the 65 CNEL contour from Brown Field to areas east of Dennery Canyon. Although the City has prepared several draft studies since 1987, including the one cited in the State Division of Aeronautics letter, none have ever been completed or approved. In the most recent interim study (1991), the future noise contours for the 65 CNEL are outside of the project's boundary. This study indicates the 60 CNEL could encroach into the northeast corner of the project, potentially affecting five acres which are proposed for residential use. Regardless of the study considered, the cumulative impact of vehicular and aircraft noise would have a negligible effect on the future noise levels for the property.

18. Please refer to response 17.

19. As indicated in the previous response, the projected 65 CNEL contour does not encroach into California Terraces. Future homeowners would be notified of the proximity of the airport and aircraft activity consistent with current City policy. Current City policy does not require that residential areas below the 60 CNEL contour, which are possibly subject to overflight, receive such notification. Areas below the 60 CNEL contour, which experience occasional overflights, are considered to be compatible with residential uses.

20 We suggest that the mitigation measures include the recommendation for notifying future homeowners and tenants of the proximity of the airport and the possibility of overflights. If residential development should occur within areas exposed to cumulative impacts exceeding 65 CNEL, consideration should also be given to the need for avigation easements.

Thank you for the opportunity to review and comment on this proposal. If you have questions regarding our comments, please call me at (916) 324-1833.

Sincerely,

Sandy Hesnard
SANDY HESNARD
Environmental Planner

cc: State Clearinghouse
Brown Field Municipal Airport
San Diego County ALUC c/o SANDAG

20. Please refer to responses 17 and 19.

STATE OF CALIFORNIA PETE WILSON, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082

RECEIVED
JAN 19 19
PLANNING DEPT

January 13, 1993

Ann Hix
City of San Diego
Planning Department
Development and Environmental Planning Division
202 C Street, Mail Station 4C
San Diego, CA 92101

RE: California Terraces

Dear Ms. Hix:

21 After reviewing the above mentioned Draft EIR, the possibility of the discovery of human remains needs to be addressed. According to Section 7050.5 of the Health and Safety Code, in the event of discovery of any human remains in any location other than a dedicated cemetery, work in the area will cease and the County Coroner will be called. If the remains are Native American, the Coroner will contact the Native American Heritage Commission. The Native American will contact the person it believes to be the most likely descendent of the deceased Native American. The Public Resources Code section 5097.98 (a) and (b) states the responsibilities and time frames of a most likely descendent in making recommendations to the owner for the treatment or disposition, with proper dignity, of the remains and grave goods. This section of the Public Resource Code goes on to address issues such as if the Most Likely Descendents do not make recommendations or if the owner does not accept the descendent's recommendations.

The Native American Heritage Commission has prepared a pamphlet for use by lead agencies, planners, developers, and property owners. It provides an easy-to-read breakdown of the California Codes pertaining to Native American human remains and their disposition. I have included a copy of this brochure for your information.

If you have any questions or need any additional information, please contact me.

Sincerely,

Debbie Pilas-Treadway

Debbie Pilas-Treadway
Staff Analyst

cc: State Clearing House

Enclosure

RESPONSES

21. Extensive field surveys and subsurface testing have been conducted on the California Terraces project site by RECON and others since 1983. During this work, no evidence of human remains or burials has been observed. California state law mandates contacting the County Coroner and the Native American Heritage Commission should remains be uncovered. The project applicant will comply with all state laws, including Section 7050.5 of the Health and Safety Code and Section 5097.98(a) and (b) of the Public Resources Code, should human remains be uncovered during development of the project.

CITY OF SAN DIEGO
MEMORANDUM

RECEIVED
JAN 29 1993
URBAN SYSTEMS
ASSOC, INC

FILE NO: OM.8 (California Terraces)

DATE : January 27, 1993

TO : Theresa Wilkinson, Senior Planner, Development and Environmental Planning Division, Planning Department

FROM : Walt Huffman, Senior Traffic Engineer, Transportation Planning Division, Engineering and Development Department

SUBJECT: COMMENTS TO CALIFORNIA TERRACES DRAFT EIR, DEP NO. 86-1032

We have reviewed the draft EIR for California Terraces dated December 14, 1992, and have the following comments:

22 1. The "Traffic Circulation" section of the report should be updated with the information that was provided to EAS and the traffic consultant by Transportation Planning in a memorandum dated December 9, 1991 (see attachment 1).

23 2. The existing traffic volumes shown in figure 37 of the report should be updated as shown in attachment 2 (Existing Street System & Traffic Volumes).

24 3. Figure 38 should be consistent with attachment 3 (Recommended Street Classifications Western Otay Mesa).

25 4. Figure 39 should be consistent with attachments 3 and 4 (Recommended Street Classifications & Future Average Daily Traffic).

26 5. Table 15 should be corrected to be consistent with attachment 5 (Transportation Improvements and Phasing).

Walt Huffman
Senior Traffic Engineer

JF/LJM:hk
b:861032.cs

Attachments

cc: Dave Sorenson
Jeff Strohminger
Craig Tennesen
Labib Qasem

RESPONSES

22. The *traffic circulation section* of the report has been revised to comply with the previously provided information from the Transportation Development Section in their letter of comment dated December 9, 1991.

23. The existing traffic volumes shown in Figure 37 of the draft EIR have been revised as requested.

24. Figure 38 shows the adopted street system from the Otay Mesa Community Plan. The only change to this figure should be the source, which has been revised.

25. Figure 39 has been revised to be consistent with the December 9, 1991 information.

26. Table 15 has been revised to be consistent with the December 9, 1991 information.

[illegible]
1-4-93

City of San Diego
MEMORANDUM

File No:

Date : December 29, 1992

To : Ann B. Hix, Principal Planner, Planning Department

From : Frankie Murphy, Deputy Fire Marshal, San Diego Fire Dept.

Subject: DRAFT EIR FOR CALIFORNIA TERRACES, OTAY MESA

This memo is in response to the draft enviromental impact report for the California Terrace project in Otay Mesa.

27 There will be Facilities Benefit Assessment Fees attached to this project. The closet fire station to this project is Station #6, which is now located in a temporary facility at 693 Twining Avenue, until development in this area necessitates station relocation east of I-805. This facility will be approximately 6500 sq. ft. at a cost of $1,805,00, plus the cost of the land. There is a second fire station, Station #43, planned to be built at Otay Mesa Road and La Media intersection.

Please feel free to contact me at 533-4472 if you have any further questions.

RESPONSES

27. The Otay Mesa Public Facilities Financing Plan, last revised in August 1991, includes funding for a new 8900-square-foot fire station located in the vicinity of Otay Mesa and La Media roads. Relocation of the temporary facility at 693 Twining Avenue to a permanent site east of I-805 would serve several communities and is not included within the Otay Mesa Public Facilities Financing Plan. Should the Fire Department want to relocate this station to Otay Mesa, it would require an amendment to both the Otay Mesa Community Plan and the Otay Mesa Public Facilities Financing Plan.

CITY OF SAN DIEGO

MEMORANDUM

DATE: January 27, 1993

TO: Paul O'Boyle, Associate Planner, Development and Environmental Planning Division, Planning Department

FROM: Associate Engineer Juybari via Senior Civil Engineer Wilson, Engineering Division, Water Utilities Department

SUBJECT: DRAFT ENVIRONMENTAL IMPACT REPORT - CALIFORNIA TERRACES

We have completed our review of the subject draft dated December 1992. The EIR encompasses approximately 665 acres of vacant land located in the western sector of the Otay Mesa Community Plan. Please incorporate the following revisions:

28 1. On Page 171, in the first paragraph under the heading "Water" the third sentence, which begins "The above-average rainfall..." should be deleted.

29 2. On Page 172, under the heading "Water," insert the following paragraphs before the paragraph beginning "Development of the California Terraces project will..."

"The existing water supply system for the Otay Mesa area is adequate only for current conditions and would require facility upgrades prior to future development in the area. New development will not be allowed to occur within the area without the proposed reservoir, or as approved in City-required water studies.

The Water Utilities Department requires projects to submit a site-specific water facilities study in order to identify more detailed plans of on-site and off-site facilities necessary to provide water to the project. The study would need to identify total and incremental water demand, identify the location of specific on-site and off-site facilities, provide fire flow demands and specify funding and implementation/phasing in relation to this project and other associated project's phasing in the area.

The water facilities study must be submitted to the WUD prior to Final Map approval. At that time the DEP would determine if the study would require subsequent environmental review to evaluate the impacts of the recommended

RESPONSES

28. The final EIR has been revised to reflect this comment.

29. The final EIR has been revised to reflect this comment.

facilities and adequacy of water service.

The Engineering and Development Department (E&D) will not approve the Final Map without a water facilities study approved by WUD. In addition, all off-site improvements have to be completed prior to the issuance of residential building permits. The provision of adequate water service to the site cannot be assured without a water facilities study and construction of the improvements, therefore, the impacts are considered to be significant."

30 3. On Page 172, in the second paragraph under the heading "Water" in the sentence beginning "This line is supplied..." change 610 MSL to 590 MSL.

31 4. What is the total sewer demand for this project? This information must be included in the EIR.

32 5. On Page 172, under the heading "Sewer" insert the following paragraphs before the one beginning "The entire project...":

"The Water Utilities Department requires projects to submit a site-specific sewer facilities study in order to identify more detailed plans of on-site facilities. The study would need to identify total and incremental sewer demand, identify the location and sizing of on-site sewage facilities, provide a discussion of demands on the Point Loma Wastewater plant and specify implementation/phasing and funding. The sewer facilities study must be submitted to the Water Utilities Department prior to Final Map approval. At that time the DEP would determine if the study required subsequent environmental review to evaluate the impacts of the recommended facilities and adequacy of sewer service.

Engineering and Development will not approve the Final Map without a sewer study approved by the Water Utilities Department. In addition, all off-site improvements must be completed prior to final map. The provision of adequate sewer service for the site cannot be assured without a sewer facilities study and construction of improvements, therefore, the impacts are considered to be significant."

33 6. On Page 172, the paragraph under the heading "Collection System" should be rewritten as follows:

"The City's wastewater collection system is the Metropolitan Sewerage System. After collection in the Otay International Center Trunk Sewer, which is north of the project site, the effluent flows northward through 42-inch and larger sewers, passes through two major pump

RESPONSES

30. The final EIR has been revised to reflect this comment.

31. The final EIR has been revised to include estimated demand.

32. The final EIR has been revised to reflect this comment.

33. The final EIR has been revised to reflect this comment.

stations and arrives at the Point Loma Wastewater Treatment Plant. Municipal trunk sewers and local sewers all discharge to this metropolitan system."

34 7. On Page 179, under the heading "Impacts a) Water," the fourth paragraph beginning "The initial phases..." should be rewritten as follows:

> "The initial phases of the precise plan development, in accordance with the water supply studies currently under revision and update, would require upgrading the existing facilities and construction of a storage reservoir. With the construction of the improvements as recommended in an approved phasing study, an adequate and reliable water supply would be available for the project site. On-site mains would be sized in accordance with the overall ultimate system plan."

Thank you for this opportunity to review this draft EIR. If you have any questions concerning this matter, please call me at 533-5150.

HOSSEIN JUYBARI

HJ/AV

cc: R. Graff
K. Ghaderi

RESPONSES

34. The final EIR has been revised to reflect this comment.

CITY of SAN DIEGO

MEMORANDUM

FILE NO. : PDME0369.MEM

DATE : January 27, 1993

TO : Planning Director, Attention: Planner O'Boyle

FROM : Park and Recreation Director

SUBJECT : **DRAFT ENVIRONMENTAL IMPACT REPORT, CALIFORNIA TERRACES PP/RZ/VTM'S/HRP/RPO/PRD/SLOZ/CPIOZ"A"/CPA**

---

35 The Park and Recreation Department has reviewed the Draft California Terraces EIR and the following concerns should be addressed. These comments are in addition to the ones previously submitted for the Precise Plan by memorandum dated January 27, 1993.

Population-Based Park Issues:

See California Terraces Precise Plan memorandum dated January 27, 1993.

Open Space Issues:

See California Terraces Precise Plan memorandum dated January 27, 1993.

Additional comments follow.

1. Page 24, paragraph 2

36 Should read ... "maintained by the Home Owner's Association or a Landscape Maintenance District.

2. Page 59, paragraph 6

37 Does not agree with paragraph 2, page 24, where these manufactured slopes are to be maintained by a Home Owner's Association or Landscape Maintenance District.

3. Figure 20

38 The site plan does not agree with site plan of figure 19.

4. Figure 21

39 The title of the graphic is misleading. "Grading of Canyons" would also include the extensive filling in of the canyon. This is not delineated.

RESPONSES

35. Only two of the comments included within the January 1993 Park and Recreation memorandum concern physical impacts to the environment and require a response (i.e., park acreages and maintenance of natural open space). The balance of the comments are directed at the precise plan. Calculations for determining park acreages for California Terraces are based on the adopted Otay Mesa Community Plan.

With respect to the second comment, natural open space areas required by the City of San Diego as part of the regional open space system should be deeded to the City and maintained by a Landscape Maintenance District.

36. The final EIR has been revised to reflect this comment.

37. The final EIR has been revised to reflect this comment.

38. This figure has been revised in the final EIR.

39. The term *grading* in the title of this figure is used in the generic sense to mean both cutting and filling and is appropriate in this context.

5. Page 64, paragraph 9

40 All manufactured slopes, for <u>both</u> VTM's should be maintained by the same mechanism. The maintenance for the California Terraces VTM is by a Home Owner's Association or a Landscape Maintenance District.

6. Page 70, paragraph 2

41 If maintenance responsibility is accepted by a Landscape Maintenance District, the minimum maintenance period would be two (2) years.

7. Page 75, paragraph 2

42 The City will not accept the deed to any open space that requires brush management.

8. General

43 The Dennery Canyon Vernal Pool Restoration and Preservation Plan was not included as Appendix C for review.

9. Natural Open Space and Manufactured Slopes Adjoining Natural Open Space

44 Only those areas which City staff determine to meet criteria for fee ownership, which include accessibility by general public and for maintenance, should be so owned. Areas that do not meet the criteria should be covered with an easement and remain in private or Homeowner association ownership.

<u>Management Issues</u>:

<u>General</u>

45 Two major problems exist with the EIR: incomplete biological surveys and
inadequate mitigation. Vernal pool fauna were not surveyed.
46 Significant, unmitigated biological impacts still exist after proposed
mitigation. Project is not consistent with environmental goals of the
Community Plan and Hillside Review Permit Overlay Zone.

47 The Increased Open Space Alternative should be the preferred alternative instead of the proposed project because it is the environmentally preferred alternative. The number of impacts which remain significant and unmitigated make the proposed project unjustifiable, especially when there is an environmentally preferred alternative which is only a 35 percent reduction.

RESPONSES

40. See comment 1.

41. The final EIR has been revised to reflect this comment.

42. As indicated on the tentative map (Figure 6 in the draft EIR), the fuel management zones will be placed in separate lots and will not be dedicated to the City as open space.

43. Appendixes to the draft EIR were available for review during the public review period at the City Planning Department. It is the policy of the City of San Diego not to circulate EIR appendixes along with the draft EIR during the public review period but, rather, have them available for interested parties.

44. See comment 35.

45. Fairy shrimp sampling studies from vernal pools on California Terraces have been included as part of the final EIR. The results of the sampling do not affect the Conclusions of the EIR that impacts to biological resources are significant and unmitigated.

46. Comment acknowledged.

47. As described in the draft EIR, the Increased Open Space alternative would reduce the landform alteration and biology impacts. This alternative would not meet the goals and objectives of the community plan. Because this alternative, like the proposed project, would not reduce the impacts to below a level of significance, CEQA Findings and a Statement of Overriding Considerations would continue to be required.

48 When redesigning the project can avoid impacts to sensitive habitat and endangered species, other alternations such as off-site preservation or restoration are even less desirable as mitigation. A recent 5-year study by Caltrans has been unable to restore viable vernal pools. The U.S. Fish and Wildlife Service has concluded that restoration of vernal pools is not valid mitigation.

49 Appendices were referred to for the biological report and Mitigation Monitoring Plan. Neither of these were included in the package I received for review and both are essential to understand fully the impacts and mitigation for the proposed project.

50 The Open Space Agreement was also not available for review but the project is apparently relying heavily on this for mitigation. The Plan indicates canyons are to be preserved as open space but only 2.5 acres onsite is being preserved of mesa terrain where vernal pools can exist.

1. Summary, Cumulative Impacts

51 The Summary does not include cumulative biological impact.

2. Table S-1, Summary of Findings, Biological Resources, Mitigation Measures

52 The statement, "The preserve would result in no net loss of vernal pools" is not correct. Replacing 25 existing pools, which support two plants and probably at least one fauna species proposed for federal listing as endangered, with a 2.5-acre site with only a few existing pools, and a 12-acre site with unknown number and quality of pools is hardly "no net loss". The EIR stresses striving for equality in quantity of pools but ignore the more important "quality" of the pools.

3. Figure 6, California Terraces Vesting Tentative Map

53 The vernal pool preserve site is not located in a place where it will be protected in the long-term. It is too small (2.5 acres) and it appears not to have sufficient preserved watershed to guarantee long-term maintenance of vernal pools.

4. Figure 28, Precise Plan Vegetation Map

54 Vernal pools should be marked on this map.

5. Page 94, Paragraph 3

55 Vernal pool animals (fairy shrimp and spadefoot toad) and mesa mint are not mentioned and all are currently candidates for federal listing.

6. Page 96, Paragraph 1

56 See previous comment.

7. Figure 31, Sensitive Biological Resources

57 Only 14 vernal pools were identified on the map. Please indicate the others.

RESPONSES

48. See response 6. The USFWS has not concluded that restoration of existing vernal pool habitat is not possible but, rather, has indicated that "re-creation" of vernal pool habitat is difficult. The USFWS has also indicated that they will continue to process the proposed project. Vernal pool restoration has been done by Caltrans at Del Mar Mesa, on the Brown parcel in the city of San Diego, and on NAS Miramar. Although not yet implemented, vernal pool restoration plans have been approved by the USFWS for the Navy's North Chollas project, for McMillin's Rancho del Rey SPA III, and at NAS Miramar (Marine Corps Training Center and Beazer Parcel "C"). In addition, contrary to the referenced five-year study done by Caltrans in an attempt to "create" vernal pool habitat on Del Mar Mesa, the proposed vernal pool plan would preserve and restore existing vernal pool habitat.

49. See response 43.

50. The referenced agreement between the City of San Diego and property owners on western Otay Mesa is included in the draft EIR as Figure 5. The 2.5-acre vernal pool preserve on California Terraces is adjacent to the open space in Dennery Canyon and represents a viable location for preserving and restoring vernal pools. The goal of the California Terraces preserve, along with the 9.5-acre preserve on the Otay Corporate Center project to the east of Dennery Canyon, is to increase the quality and quantity of the vernal pool habitat at a 3:1 ratio. The Dennery Canyon Vernal Pool Restoration and Preservation Plan, which has been approved by the City, provides further information.

51. A discussion of cumulative biological impacts are included on page S-25.

52. As described in the vernal pool plan, the goal of the plan is to preserve the most viable pools within the project area, to create a vernal pool preserve that is linked to regional open space for interrelated ecological functioning, and to restore formerly existing pools and their watersheds. The preserve would contain 13 of the 24 remaining natural pools and would allow the restoration of 73,900 square feet of additional potential habitat in 86 restored basins. It is important to note the taking of several vernal pools within the California Terraces project is a necessary component of the plan. The soil and plant materials obtained from these pools are vital components that will be "donated" into the preserved and restored pools within the vernal pool preserve. The resulting preserve, in terms of both the quantity and the quality of the habitat, would exceed that which currently exists within the project site.

53. The 2.5-acre preserve on California Terraces was selected because of its location adjacent to natural open space in Dennery Canyon. The preserve will be fenced to prohibit access from the neighborhood park to the south. The natural watershed area for the pools that are to be preserved and restored has been delineated and is proposed to be maintained.

54. Vernal pools are shown on Figures 30 and 31 rather than 28 and 29.

55. These species are referenced in Tables 6 and 7 of the EIR as well as in the biological technical report, which was an appendix to the draft EIR. The specific discussions of these species have been included in the biology section of the EIR. It should be noted that mesa mint and spadefoot toad were not observed on the project site, and the species of fairy shrimp identified on the site is not proposed for federal listing as endangered.

56. See response 55.

57. Figure 31 indicates all of the 32 vernal pools mapped on the property.

8. Page 107, Paragraph 3, Lines 13 and 16

58 Numbers of gnatcatcher pairs are conflicting (3 pairs versus 5 pairs). Please clarify.

9. Page 109, Paragraph 6

59 No mention is made of the two vernal pool species (spadefoot toad and fairy shrimp) which are candidate for federal listing. This should be included.

10. Page 110, Paragraph 1

60 No mention is made of the two vernal pool species (button celery and mesa mint), candidates for federal listing. This should be included.

11. Tables 9, 10, and 11

61 Vernal pool habitat type should be included.

12. Page 115 - 119, Mitigation, Monitoring, and Reporting Program

62 No mention, other than weed removal, is made of the "Enhancement" part of this Plan. Additional enhancement measures should be included in this Plan. Page 116, Paragraph 2, Line 3, mentions that 24 pools must be permanently established but no mention is made about how this will be accomplished.

13. Page 116, Paragraph 2, Last Line

63 Change from "diversity of pool plant fauna" to "diversity of pool plants and animals."

14. Page 116, Paragraphs 2 and 3

64 It should be required as part of any mitigation plan that vernal pools to be disturbed are characterized completely for plants and animals. Any pools preserved for mitigation of such pools should be of equal or greater size and, more importantly, quality.

15. Page 116, Paragraph 1

65 This section talks about the area of pools impacted and the surface areas of restored pools as being similar and, therefore, there is no let loss. Loss is not strictly a quantity issue but quality should be equally important. Even a ration of 3:1 will not guarantee "no net loss" of habitat function if the mitigation area is not of equal or better quality.

GEORGE J. LOVELAND

SLF:VJM:KS:sv

Attachments

cc: Park Development Deputy Director

RESPONSES

58. The final EIR has been revised regarding the number of gnatcatchers observed (three pairs) on the property.

59. See response 55.

60. Neither of these species was observed on the South Palm Vista VTM area of the precise plan. However, Table 7 (a listing of sensitive species observed throughout the entire precise plan) includes these species and indicates that button celery was observed on the property but Otay mesa mint was not.

61. These tables have been revised to reflect this comment.

62. The Dennery Canyon Vernal Pool Restoration and Preservation Plan is an appendix to the EIR and includes additional detail along with a grading plan describing how the vernal pool preserve would be constructed and maintained.

63. This sentence has been revised.

64. All the pools have been categorized completely for plants and animals. Much of the disturbed vernal pool habitat on California Terraces and Otay Corporate Center consists of ruts and other artificial depressions and in essence has already been "re-created" by the past and ongoing off-road vehicle use and currently supports elements of a vernal pool plant community. Virtually every pool basin which will be either impacted or preserved and restored by the project has been modified to some degree by human activity. It is the intent of the vernal pool plan to preserve and restore pools in a location which offers an opportunity for long-term survival of the habitat. The targeted goal of the plan is to substantially improve the vernal pool quality and increase the vernal pool surface area by a minimum ratio of 3:1 relative to the impacts. The total pool surface area of the restored site will approximate the natural predisturbance condition of the site.

65. See response 64.

CITY of SAN DIEGO

MEMORANDUM

FILE NO. : PDME0363.MEM

DATE : January 27, 1993

TO : Planning Director, Attn: Associate Planner Turgeon

FROM : Park and Recreation Director

SUBJECT : DECEMBER 1992 DRAFT OF THE CALIFORNIA TERRACES PRECISE PLAN (35-0095/7279)

This is in reference to your memorandum dated December 14, 1992 regarding the December 1992 Draft of the California Terraces Precise Plan. The following comments are submitted relative to park issues, open space issues and environmental/biological issues.

I. Park Issues

1. Page 1, Third Paragraph

The Otay Mesa Community Plan was adopted by City Council in April of 1981. That plan addressed a possible build-out population of 46,000 persons based on a 2.55 persons per dwelling unit within the community. Recent information provided by the Planning Department and SANDAG projects a 3.00 persons per dwelling unit and a build-out population of 54,000. The Park and Recreation Department believes this is a low population estimate.

The increased density will require an additional 19.20 useable acres of park within this community. California Terraces 5,375 dwelling units will generate a population of 16,125. Additional park acreage within this community must be considered.

2. Page 14, Table 3, correct

Planning Area 3 should show 10 useable acres for the Neighborhood Park, since the park and school are not on grade.

Planning Area 12 should show 20 useable acres for the Community Park, since the Junior High School is undersized.

Planning Area 17 should be separated into two (2) segments of 2.1 acres Vernal Pool (Open Space) and 5 useable acres Neighborhood Park.

3. Page 16, Paragraph 1, First Sentence

A total of 5,375 dwelling unity are proposed to accommodate an estimated maximum population of 16,125. See Comment #1.

RESPONSES

RESPONSES

4. Page 17, Table 4, correct

   Show an estimated population of 16,125. See Comment #1.

5. Page 29, Schools, Third Paragraph, rewrite

   The loss of any school will be detrimental to the General Plan Standards which require a five (5) useable acre neighborhood park if adjacent to an elementary school. If the elementary school is not required, then the adjacent neighborhood park shall be enlarged to ten (10) useable acres and only five (5) acres shall be rezoned to single or multi-family development.

6. Page 29, Parks, rewrite entire section

   Both community and neighborhood parks are provided in the California Terraces Plan. The proposed community park is located south of Del Sol Boulevard and will provide a twenty (20) useable acre facility adjoining the Jr. High School. The General Plan Standards allow a community park located adjacent to the Jr. High School to be 13 acres in size which the Jr. High School is 30 useable acres. The proposed school will contain only 20 acres and the possibility of a joint use of the school facilities may be unlikely. The school will require a joint use of the park facilities which will be an added burden on the park. This 20 acre site will contain a 17,000 square foot recreation building and a swimming pool along with all other amenities associated with a community park. The phasing of the community park shall be required prior to the pulling of a building permit for dwelling unit 3,500 within California Terraces or dwelling unit 5,000 for the Otay Mesa community located north of State Route 905.

   Two neighborhood parks are provided within the plan; both are paired with elementary school sites to enable sharing of facilities. The Design Element (Chapter 6) describes a rough concept proposal for an integrated design of school and park amenities. This concept is not an approved design until public review by the San Ysidro Recreation Council, Otay Mesa Nestor Recreation Council, Southern Area Committee, Facilities Committee and the Park and Recreation Board has resulted in a review and an affirmative finding. Phasing of the neighborhood parks will occur in sequence with development of the residential units associated with each park. The first neighborhood park shall be designed, constructed and deeded to the City prior to the recordation of any final map within this development containing dwelling unit number 1,500. The second park shall be designed

The eastern neighborhood park has been sited adjacent to an elementary school and some vernal pools. The vernal pools are on the top of the natural slope of Dennery Canyon and shall be considered part of the open space of that system. The neighborhood park shall be five (5) useable acres in size excluding the vernal pool drainage area. The vernal pool drainage basin is not useable population-based park acreage.

The term "useable acres" shall mean those acres of a property of which 80% are at a maximum of 2% grade and the remainder of the site shall not exceed 5% grade. The term "adjacent" shall mean property having a common boundary and a grade differential of no more that 8% between pads with an elevation change of no greater than 10' between the pads.

The northern neighborhood park exceeds the clarified term "adjacent" and should be ten (10) useable acres in size.

Note: The vernal pool preserve statement section should be moved to the open space section of the plan.

7. <u>Page 61, Landscape Design, Last Sentence</u>, clarification

In addition, landscape design of multi-family housing areas and commercial sites within the Precise Plan shall adhere to the California Terraces Conceptual Landscape Plan as well as the City of San Diego Landscape Technical Manual which shall take precedence in case of conflict.

8. <u>Page 64, Landscape Maintenance</u>, add additional information

The costs for the maintenance shall be addressed in this section. This should include Homeowners Association and the Lighting and Landscape Maintenance District.

9. <u>Page 71, Accent Pockets and View Overlooks</u>, additional wording

These areas shall be maintained by a Homeowners Association or by the Lighting and Landscaping Maintenance District after review by Open Space Division.

10. <u>Page 86, School/Park Sites</u>, additional objectives

    * The Americans With Disability Act shall be conformed to.

11. <u>Page 86, School/Park Elements</u>, additional elements or corrections

    * Automobile access and parking at THE SCHOOLS AND COMMUNITY PARK ONLY.

RESPONSES

- * Swimming pool at the community park.
- * Childrens apparatus area/tot lot at the elementary school AND PARK.
- * City Standards on use of turf will be followed.

12. Page 87, First Paragraph

No joint use agreement exists between the City and the San Ysidro School District. Joint use is possible but the parks and school shall be designed to operate independent of the other. Design of the school will probably be at a later date than the parks and conflict of facilities should be addressed at that time.

13. Page 87, Third Paragraph

Internal pick-up/drop-off points shall be designed on the school. Parking areas shall be designed on the schools and the community park.

14. Page 87, Sixth Paragraph

Joint use parking with the school district is possible but can not be guaranteed. The parking lot must contain required trees for shade and esthetics. The entire parking lot requires surveillance by the public and security forces from the street.

15. Page 87, Seventh Paragraph, rewrite

Figures 30, 31 and 32 are Concept Plans ONLY which should be considered flexible to allow for other solutions, such as reducing the size of the school by ENLARGING THE PARK TO ALLOW shifting of SCHOOL RECREATIONAL FACILITIES to the park. The final plan for the park sites must be approved by THE RECREATION COUNCIL HAVING JURISDICTION OVER THIS AREA OF THE COMMUNITY UNTIL A VIABLE POPULATION EXISTS WITHIN OTAY MESA COMMUNITY PLANNING AREA TO ESTABLISH A RECREATION COUNCIL UNDER CITY COUNCIL DIRECTION. THE APPROVED PARK PLANS ARE THEN REFERRED FOR APPROVAL TO the Southern Area Committee of the Park and Recreation Board, the Facilities Committee, and the Park and Recreation Board of the City of San Diego.

16. Page 87, Elementary School/Neighborhood Park Sites, Last Sentence

A joint use agreement with the School District could allow for the possible sharing of recreational facilities.

17. Page 88, School/Park Site North, Figure 30, redesign

The 2:1 slope between the school and park is not acceptable. No parking should be shown on the neighborhood park. The neighborhood park will have to be increased to ten (10) useable acres if the slope between the properties exceeds ten (10) feet in height or 8% in grade.

The interior drop-off area of the school can be decreased by indenting the curb line in front of the school by ten (10) feet to provide for bus or parent drop-off.

18. Page 89, School/Park Site East, Figure 31, redesign

The Vernal Pool portion shall not be part of the neighborhood park. It shall be included as a part of the Dennery Canyon Open Space System. No credit for population-based park acreage requirements will be given for the vernal pools.

The parking lot should be deleted from the plan as on-street parking is available. The neighborhood park must be five useable acres in size on the same grade as the school.

19. Page 90, School/Park Site South, Figure 32, redesign

The Community Park must be enlarged to twenty (20) useable acres adjacent to an undersized Junior High School. The recreation building should be identified as 17,000 square feet. A swimming pool is proposed for this site and should be sited. The parking lot for a community park of 20 acres and the facilities provided will require a minimum of 200 spaces. If a joint-use agreement is worked out between the City and the School District then a joint parking lot would be advisable.

20. Page 91, Community Interface, redesign

To accommodate the 20 acre Community Park site.

21. Page 91, Community Interface, reword following objectives

- Major design concepts of the California Terraces Plan for arterial, major streets, and a collector SHALL BE COORDINATED WITH other precise plan areas TO SHOW A BLENDING OF IDEAS.
- All manufactured slopes THROUGHOUT THE OTAY MESA COMMUNITY shall be contoured or rounded to effect as much of a natural appearance as possible; landscape proposals SHALL FOLLOW CITY OF SAN DIEGO GUIDELINES.

22. Page 104, North Phase, First Paragraph, reword last sentence

The elementary school will be initiated in conjunction with this phase. The neighborhood park will be designed, constructed and deeded to the City by the developer prior to the pulling of building permits for dwelling unit 1,500 within California Terraces development, not just the north phase.

23. Page 105, Central Phase, Second Paragraph, reword last sentence

A community park, which is located at the southwest corner of Del Sol Boulevard and Palm Avenue, will be DESIGNED, CONSTRUCTED AND DEEDED TO THE CITY PRIOR TO THE PULLING OF BUILDING PERMIT NUMBER 3,500 WITHIN THE CALIFORNIA TERRACE OR BUILDING PERMIT 5,000, WHICHEVER COMES FIRST, OF THE ENTIRE OTAY MESA COMMUNITY LOCATED NORTH OF STATE ROUTE 905. THE DESIGN AND CONSTRUCTION OF THE RECREATION BUILDING AND THE SWIMMING POOL MAY BE DONE BY THE DEVELOPER OF CALIFORNIA TERRACE BUT THE ROUGH SITING WILL BE REQUIRED.

24. Page 105, East Phase, additional wording

The elementary school located within this phase shall be initiated during this phase unless not required by the School District. The neighborhood park located within this phase shall be designed, constructed and deeded to the City prior to the pulling of building permit 3,000 for California Terraces.

25. Page 113, Administrative Amendments, Item d., rewrite first sentence

Conversion of A PORTION of school sites to residential use, provided the property is not required by the affected school district.

LANDSCAPE MASTER PLAN

26. Page 8, III Streetscape Plant Material List, corrections

Schinus molle, California Pepper, is not an acceptable street tree.

27. Page 10, IV Design Techniques for Specific Landscaping conditions, b. Level Conditions, reword first sentence

Level conditions are defined as a landscape area which has less than a 3:1 slope ratio. These areas are termed "mowable" BY HAND. A MACHINE, GANG MOWER, CANNOT OPERATE ON A SLOPE STEEPER THAN 5:1 AND PREFERRED AT 8:1.

RESPONSES

28. Page 10, C. Medians (Center Islands), reword second paragraph

The planting areas must be graded AND IRRIGATED TO PREVENT ANY RUNOFF FROM CROSSING THE CURB. A SYSTEM OF DRAINS WITHIN THE CENTER ISLANDS SHALL BE DESIGNED TO CARRY THE RUNOFF UNDER THE STREET TO DISCHARGE INTO CITY STORM SEWERS.

29. CALIFORNIA TERRACE PRECISE PLAN CONCEPT/FINAL MAP, corrections by planning area number

(3) - Northern Neighborhood Park:

Require 5.0 useable acres if on the same grade as the school or not more than 10 feet above school pad, separated by a 5:1 slope, with a disabled access between the school and park.

(12)- Community Park:

Require 13 acres if adjacent to 30 acre Junior High School. Require 20 useable acres if adjacent to undersized Junior High School.

(17)- Eastern Neighborhood Park:

Require 5.0 useable acres if on same grade as school. Vernal Pools are not population based parks and acreage cannot be counted as such.

II. Open Space Issues

1. Page 25, paragraph 5

Please include the referenced Dennery Canyon Vernal Pool and Preservation Plan as an attachment to this document.

2. Page 26, RPO Mitigation

No brush management will be done on land owned in fee title by the City. Where brush management is to be done on "open space lots" those parcels shall be privately owned with an open space easement granted to the City.

3. Page 27, bullet 1

Last sentence in this bullet is not understandable. Please expand on concept.

RESPONSES

Page 27, bullet 2

Determination of non-breeding season should be done by a certified biologist.

4. Page 28, Table 8

Natural Open Space: Only those areas which City staff determine to meet criteria for fee ownership, which include accessibility by general public and for maintenance, should be so owned. Areas that do not meet the criteria should be covered with an easement and remain in private or Homeowner Association ownership.

Manufactured Slopes Adjoining Natural Open Space: Same comment as above.

Medians, Street Parkways, Accent Pockets: Land outside the public right-of-way which is privately owned, but landscaped and maintained by a Landscape Maintenance District, must have a landscape easement placed upon it.

The RPO mitigation area does not appear on this chart. Who is responsible for maintenance? How is it funded?

5. Page 30, paragraph 2

Per exhibit 31 there will be no connection between the park and open space. A vernal pool preserve with a fence runs along the entire border.

6. Page 52, general

Streetscape Design - It should be stated that all planting and irrigation within the public right-of-way shall conform to the standards of the city of San Diego Landscape Technical Manual (LTM).

7. Page 53, general

Walls and fences shall be on private property, not on City-owned property. Maintenance of walls and fences shall be the responsibility of the private property owners or Homeowner Associations, not the City.

8. Page 53, paragraph 7

"Dense shrub massing" should not include species which at maturity

RESPONSES

9. Exhibit 19f, section 3

The sidewalk configuration at the base of an up hill slope should be avoided. There is the possibility of soil continually washing onto sidewalk, causing a maintenance liability problem.

The sidewalk configuration adjacent to a downhill slope should be avoided unless there is a minimum 3' level separation between sidewalk and top of slope, due to potential safety liability problems.

10. Page 61, paragraph 3

Approval by the Park and Recreation Department for graded slopes would not be necessary unless they are adjacent to open space.

The Precise Plan shall also adhere to the City of San Diego Landscape Technical Manual.

11. Page 61, bullet 3

Since indigenous and native plants are the same, this statement is redundant. Imported plants would not be indigenous; if imports are to be used they should be non-invasive.

12. Page 70, paragraph 3

Drainage - No drainage outlets should be sited on City-owned land unless they are located at the lowest possible elevation, i.e., toe of slope or canyon bottom.

13. Page 95, paragraph 4

The first sentence should read "During design, construction and maintenance of developments, areas designated as natural open space shall be left intact." The third sentence should read, "The trampling of vegetation underfoot by vehicle will not be permitted."

14. Page 101, bullet

Landscape Maintenance - add to paragraph 2; "The City will not assume any responsibility for brush management for this project."

15. Page 106, bullet

Should read "selected open space areas, exclusive of Brush Management"

16. Appendix A, page 3, paragraph 4

There should be no relaxation of lawn restrictions for this project. Alternative drought tolerant and low maintenance ground cover should be used.

17. Appendix A, page 8, list 1

Platanus racemosa is too large and broad a tree at maturity for most of these sites. Also limbs break to easily for use in this area. Pyrus kawakami have a fireblight problem and are high maintenance.

18. General

The community plan for this area recommends trails systems through the open space for connection to other developments and to the Otay River Valley. This document does not address this issue.

The Landscape Master Plan of Site Plan does not include areas of brush management.

This plan does not address Vernal Pool Maintenance funding and it's long term maintenance.

The Otay Community Plan recommends "open space corridors linking activity centers with the neighborhoods and the Lower Otay Park. The "low-median density residential" areas northeast of Palm Avenue (#8 on exhibit 7 page 15) eliminates any connection from California Terraces major open space to Dennery Ranch Development, where an open space linkage to lower Otay Park is proposed.

Please provide information on maintenance responsibility if a landscape maintenance district is not created, or is created and later disbanded. The text identifies different maintenance responsibilities by using such verbiage as "should be maintained" or "would be maintained". Example page 76 last paragraph and page 78, second paragraph. One is definitive the other is not.

III. Biological/Environmental Issues

Vernal Pool Issue

Twelve vernal pools are being impacted. A 2.5-acre onsite preserve is proposed in the text but not identified in any figure. This area is not a large enough area to be an effective preserve or serve as

RESPONSES

The 2.5-acre preserve needs to be larger. There is no way of knowing if any existing pools will be part of the preserve as there is no figure indicating its location. There is also no information provided on the 9-acre preserve site and how many other sites are dependent on the 9-acre preserve for mitigation. There is no way of knowing what resources will be lost by destroying the other pools because no biological information was provided. Were surveys done for sensitive/endangered vernal pool animal species, such as fairy shrimp and spadefoot toad? If not, they should be required before deciding on what pools will be impacted and what mitigation should be required or if it can be mitigated.

Page 6, Last Paragraph

The last paragraph indicates three endangered species are present but does not indicate in which pools. If these species are in the pools scheduled to be impacted, **THEY SHOULD NOT BE DESTROYED, BUT PRESERVED** (see Federal Endangered Species Act).

Page 20, Resource Planning Goals

The precise plan does not provide a balance between community and habitat needs as it proposes in its goals.

Page 20, Last Paragraph

Maritime succulent scrub is considered to be a sensitive habitat which is becoming rare in San Diego County. The proposed precise plan would eliminate half of this habitat onsite. This seems to be disproportionate to the goal of a "balance" between community and environmental needs.

Page 20, Top Half

It is interesting to note that the one habitat type which is not sensitive will be saved (i.e., mixed chaparral) and the two sensitive habitats, Maritime succulent scrub and Diegan coastal sage scrub, will be impacted about 50 percent and 75 percent, respectively. Something is wrong with the planning. This breakdown needs to be reversed in favor of saving more of the sensitive habitats. Additionally, preserving these habitats should be done in large areas or connected to an existing, large open space system.

Page 25, Paragraph 5

The Dennery Canyon Vernal Pool and Preservation Plan is not included in this document and, therefore, cannot be reviewed for accuracy of site characterizations (flora and fauna); delineation of pool size and location; characterization of pools to be lost versus pools to be saved; methods for "restoring" pools; criteria for success in the unlikely event that the restoration is successful; maintenance requirements for long-term preservation, such as the watershed area which needs to also be preserved to ensure long-term viability of the "preserved" pools.

CALTRANS recently conducted a five-year study for U.S. Fish and Wildlife Service on the effectiveness of restoring vernal pools. There has been no success. Therefore, there can be no mitigation for lost pools. Preservation of existing pools with endangered species can not serve as mitigation for lost pools. This impact is significant and no mitigation is presented. This project is unlawful according to CEQA and needs to be redesigned to avoid vernal pools containing sensitive, rare or endangered species.

Page 25, Paragraph 6 (bullet items)

Ratios are given for restoration; 3:1 is deemed acceptable. On what basis was this accepted? Were the people making this decision qualified to do so?

GEORGE I. LOVELAND

GIL:VJM:sv

cc: Park Development Deputy Director
Open Space Deputy Director

CHULA VISTA ELEMENTARY SCHOOL DISTRICT

84 EAST "J" STREET • CHULA VISTA, CALIFORNIA 91910 • 619 425-9600

EACH CHILD IS AN INDIVIDUAL OF GREAT WORTH

BOARD OF EDUCATION
SEPH D CUMMINGS, Ph.D.
LARRY CUNNINGHAM
SHARON GILES
PATRICK A JUDD
GREG R SANDOVAL

SUPERINTENDENT
JOHN F VUGRIN, Ph.D.

January 5, 1993

RECEIVED
JAN 7
PLANNING DEPT

Mr. Bernard Turgeon
Associate Planner
City of San Diego
Planning Department
1010 Second Avenue, Ste. 600 (MS 660)
San Diego, CA 92101

RE: Precise Plan, California Terraces (35-0095/7279)

Dear Mr. Turgeon:

Thank you for providing a copy of the Precise Plan for California Terraces for our review and comment. I also received a copy of the Draft EIR and am using information from that document to formulate my response, which is also intended, by copy of this letter, to serve as comments on the DEIR.

The Public Facilities Element of the Precise Plan regarding schools is
66 inadequate for several reasons: 1) Impacts to school facilities are not
identified or quantified. Student generation rates for each district need to
be applied to the number of proposed dwelling units to make this
67 determination. 2) Responsibility for providing school sites and financing
needed facilities is not specified. The method and means of assuring that
facilities will be available to serve this project at the time of need need to
be detailed. The developer is responsible for providing and financing
needed sites and schools, and the mechanism by which this will be
68 achieved must be stated. (3) Finally, should any of the elementary
schools be sited within the Chula Vista Elementary School District, we
would need to review any proposed site(s) in terms of both State
Department of Education and District criteria.

69 Based on Figure 4 in the DEIR, it appears that, with the anticipated realignment of Palm Avenue, the 249 units northeast of Palm will be within the Chula Vista Elementary School District's jurisdiction. We have been working with the three developments within our jurisdiction (Robinhood Ridge, Hidden Trails and Dennery Ranch) for some time to

RESPONSES

66. The provision for three elementary school sites and one middle school site exceeds projected student demand that will result from this project. The proposed number of school sites results from application of student generation rates provided by the San Ysidro School District. The San Ysidro district-wide rates were applied to all units in the project, regardless of their location under the current school district boundary configuration. Application of these student generation rates produces a conservative (i.e., high) projection because these rates are significantly higher than those currently used by the Chula Vista Elementary School District and higher than anticipated actual future student generation rates for this area.

67. The responsibility of the developer for dedicating school sites and paying fees to defray the costs of constructing school facilities is governed by state law. The state legislature has expressly declared that the subject of financing of school facilities with development fees is a matter of statewide concern. As such, the legislature has preempted local legislation that would require fees or other consideration to be paid as a condition of the approval of development. Newly enacted Senate Bill 1287 (Government Code, Section 65995 et seq.) specifically prohibits a local agency (e.g., a city council) from either denying approval of a project on the basis of the adequacy of school facilities or imposing conditions, other than the requirement to pay the prescribed school facilities fees, on the approval of the project for the purposes of providing school facilities. The various school districts and the developer remain free to mutually devise additional means of financing school facilities or to voluntarily utilize other financing techniques such as annexation into existing Mello-Roos facilities districts or the initiation of the formation of new districts.

68. As reflected by current school district boundaries, 870 units from the California Terraces project are located in the Chula Vista Elementary School District. There are 4,505 units located within the San Ysidro School District (see attached corrected boundary map.) School site locations were planned based on conversations with personnel from both school districts. Representations were made that a boundary adjustment could occur which would allow the elementary-aged school children of all future residents within California Terraces to be served by the San Ysidro School District. Site planning for the schools took into consideration the principles of the "School Site Selection and Approval Guide" from the California State Department of Education.

69. See comment 2.

identify potential elementary sites and agree on the method of full mitigation for the impacts these projects will have on elementary schools. It appears that this mitigation will take the form of a Mello-Roos Community Facilities District (CFD). We would require that whatever portion of California Terraces that ends up being within our adjusted boundaries participate in the CFD.

Thank you for the opportunity to comment. If you have any questions, please contact me.

Sincerely,

Kate Shurson

Kate Shurson
Director of Planning & Facilities

KS:dp

cc: Theresa Wilkinson
Ann Hix ✓

RECEIVED
JAN 27 '93
PLANNING DEPT

San Diego
ASSOCIATION OF
GOVERNMENTS
Suite 800, First Interstate Plaza
401 B Street
San Diego, California 92101
(619)595-5300 Fax (619)595-5305

January 27, 1993

Ms. Ann Hix, Principal Planner
City Planning Department
202 C Street, Mail Station 4C
San Diego, CA 92101

Dear Ann

SANDAG staff has reviewed the Draft Environmental Impact Report for California Terraces within Otay Mesa, and we have the following comments as listed below. These comments are from SANDAG staff and have not been reviewed or approved by the SANDAG Board of Directors.

70 1. The proposed project is located within an area which could be defined as a preserve design area by the Multiple Species Conservation Program (MSCP). As you are well aware, there has been, and continues to be, a tremendous amount of public resources being invested into this program and its ultimate success. We urge that the goals and objectives of this program be adhered to during its planning process and all proposed projects be reviewed for their ultimate compatibility and consistency with the recommendations of the MSCP.

71 2. A group of biologists from around the region representing the major habitat conservation programs currently underway have prepared a set of Biological Standards and Criteria to be used for the MSCP preserve design system. Sensitive species identified within the project area should be reviewed against the standards and criteria to assure consistency with the ongoing regional planning process.

72 3. SANDAG has developed a regional standardized vegetation classification system for geographic information system purposes to assure consistency between various mapping techniques. Again, any mapping that has or will occur within the project area should be consistent with this classification system.

73 4. The SANDAG Board has adopted the Regional Growth Management Strategy, including a portion of an Open Space Element, that addresses sensitive lands: steep slopes, floodplains and wetlands. The City of San Diego has approved the Strategy, and also has adopted policies to protect all the rivers outside the current urban area.

RESPONSES

70. Preserve design areas have not been designated by the Multiple Species Conservation Program (MSCP) or approved by the Metro service agencies included within the Clean Water Program. The City of San Diego does endorse the concept of multi-species preserves. Open space planning for California Terraces has been part of a regional effort for western Otay Mesa. An Open Space Agreement was developed cooperatively by the City of San Diego staff and property owners in a series of workshops concluding in March 1991. This comprehensive open space system incorporated the fundamental resource protection goals and objectives of the MSCP in advance of the Clean Water Program's more recent draft policies. Also see comment 3.

71. The biological standards and criteria used for the MSCP preserve design system have yet to reach final draft form. Any proposal will be subject to the review and adoption of the implementing agencies. Environmental resources will be managed by the City of San Diego. Also see comment 3.

72. Biological mapping for this project has been prepared in compliance with the City of San Diego guidelines governing biological technical reports. The classifications used by the City are consistent with the SANDAG system.

73. The Open Space Agreement for western Otay Mesa implements both regional and City objectives. This interconnected system provides an important link to the Otay River valley. It should be noted that the Otay River valley is outside of the project area.

RESPONSES

In order to ensure the preservation of sensitive lands, it is important that every project meet the adopted requirements. The requirements are of significant importance on the Otay River, because it flows through other jurisdictions downstream, and any impact upstream could affect the downstream areas.

Thank you very much for the opportunity to review this EIR.

Sincerely,

MIKE MC LAUGHLIN
Director of Land Use and
Public Facilities Planning

MM/JF/cd

San Diego County Water Authority
A Public Agency
3211 Fifth Avenue • San Diego, California 92103-5718
(619) 297-3218 FAX (619) 297-0511

January 27, 1993

RECEIVED
JAN 29 199
PLANNING DEPT

Ms. Ann B. Hix
City of San Diego
Planning Department
Development and Environmental Planning Division
202 "C" Street, MS 4C
San Diego, CA 92101

Dear Ms. Hix:

Notice of Preparation
Draft Environmental Impact Report
California Terraces DEP. No.s 86-1032, 90-0574)

We have reviewed the Draft Environmental Impact Report (DEIR) for the above project and have the following comments:

74 It is stated in the Public Services and Utilities Section of the DEIR that the project will conform to the City of San Diego water conservation requirements in regard to landscaping and low flow fixtures. The Water Authority recommends that these water conservation measures remain a condition of project approval.

75 There is no mention in the DEIR of the use of reclaimed water in this development. Please include a discussion of the potential use of reclaimed water for landscape irrigation. If reclaimed water is not available at this time but may be available in the future, we suggest that the plan include the design and installation of reclaimed water supply lines within the development.

76 Also, please incorporate into your development approval and occupancy process the dissemination of the latest Xeriscape information to the new occupants of the development. Xeriscape and other water conservation information can be obtained by contacting the San Diego County Water Authority at the address and phone number listed at the top of this letter.

Sincerely,

Gordon G. Hess

Gordon Hess
Director of Water Resources Planning

GH\TC\s

MEMBER AGENCIES

CITIES
• Del Mar • Escondido • National City
• Oceanside • Poway • San Diego

COUNTY
• San Diego
(ex officio)

IRRIGATION DISTRICTS
• Santa Fe • South Bay

WATER DISTRICTS
• Helix • Otay
• San Dieguito

COUNTY WATER DISTRICT
• Vallecitos

PUBLIC UTILITY DISTRICT
• Fallbrook

FEDERAL AGENCY
• Pendleton Military Reservation

MUNICIPAL WATER DISTRICTS
• Buena Colorado
• Carlsbad
• Olivenhain
• Padre Dam
• Rainbow
• Ramona
• Rincon del Diablo
• Valley Center
• Yuima

PRINTED ON RECYCLED PAPER

RESPONSES

74. The applicant will comply with the City of San Diego water conservation policy, which requires that landscape plans include drought-tolerant plants and irrigation systems designed to limit wasted water. The project will also comply with the Uniform Building Code, which requires low-flow fixtures.

75. City of San Diego Ordinance 0-17327 requires use of reclaimed water to irrigate common areas and/or open space areas with reclaimed water, if a source of reclaimed water is available. Although the project is exempt from this ordinance because of the status of the California Terraces Vesting Tentative Map, the applicant is willing to consider the use of reclaimed water at the time of final design, if a source is available.

76. As indicated in the California Terraces Master Landscape Plan, the applicant will include the use of drought-tolerant plants within the project. Information on drought-tolerant plant species will be provided to new occupants of the development.

SDGE San Diego Gas & Electric
P.O. BOX 1831 • SAN DIEGO, CA 92112-4150 • 619/696-2000

RECEIVED
JAN 26 1993
COMMUNITY PLANNING

FILE NO.

January 25, 1993

Mr. Bernard Turgeon
City of San Diego Planning Department
1010 Second Ave., Ste. 600 (MS 660)
San Diego, CA 92101

RE: Response to 12/92 Draft of the California Terraces Precise Plan (35-0095/7279)

Dear Mr. Turgeon:

Thank you for the opportunity to review the proposed project. While gas and electric distribution facilities can be made available to this project according to San Diego Gas & Electric's rules filed with and approved by the California Public Utilities Commission, the continued availability of gas and electric energy for this and future projects is dependent on the supply of fuel and other essential materials, and governmental approval of facilities construction.

77 The draft EIR should also address, where applicable, the environmental effects of the project regarding:

1. Proposed grading in the right-of-way (R/W).
2. Proposed encroachments in the R/W and their impacts upon the existing R/W access road network, i.e. private or public access roads.
3. Increased drainage flow in the R/W as a result of the development.
4. Proposed land uses in the R/W i.e. open space.

78 SDG&E has no plans for any future gas system or electrical substation improvements in the area, which would be effected by the proposed project. SDG&E is not aware of the proposed electrical transmission route relocation called out on Utility Exhibit 10 and described on page 35 of the Precise Plan. SDG&E would only be able to support such a relocation if it is proposed to be relocated to an equal or superior location.

79 SDG&E strongly supports the use of active and passive solar energy, conservation methods and alternative technologies to mitigate the energy demands of this project.

Very truly yours,
San Diego Gas & Electric

Stella Holland

Stella Holland

RESPONSES

77. The existing SDG&E easements and facilities are shown on the vesting tentative map. The vesting tentative map also shows proposed grading, drainage, and land use, together with SDG&E facilities, which must be protected or relocated. Final design of the project will include close coordination with SDG&E.

78. Preliminary plans for the route relocation have been provided to and discussed with several SDG&E representatives including Mr. Rick Gardner, Mr. Kip Kline, Ms. Sue Scott, Mr. Terry Nebel, and Mr. Mike Turner. Development of the project will require coordination with SDG&E including formal submittal and processing of relocation plans.

79. The precise plan design element includes a section on energy conservation. This section discussed use of building and site design methods to conserve energy.

Pardee Construction
Company

110 West "C" Street, Suite 2200
San Diego, California 92101
Tel (619) 231 9744
Fax (619) 231 1765

Weyerhaeuser

RECEIVED
JAN 2 8 1993
RECON

January 27, 1993

Cathy Winterrowd, Senior Planner
Development & Environmental
  Planning Division
The City of San Diego
202 C Street - MS 4A
San Diego, CA 92101

Reference: Comments - California Terraces Draft EIR
(DEP 86-1032; DEP 90-0574)

Dear Cathy:

The purpose of this letter is to present Pardee Construction Company's comments on the Draft EIR and Conclusions for California Terraces. As the applicant for the project, we would like to clarify a number of points related to the Conclusions included in public distribution draft.

LANDFORM ALTERATION/VISUAL QUALITY

80 The Conclusions indicate the proposed project would require approximately 12.83 million cubic yards of earthwork. This statement is incorrect. The correct amount of earthwork which will be required for the Precise Plan, as accurately stated on page 59 of the draft EIR, is 6.7 million cubic yards of cut. The conventional method of calculating grading figures, as used in other EIRs, is to quote the cut figure and not a combined total of cut and fill. Implementation of the California Terraces Precise Plan will actually require 12,984 cubic yards per graded acre of 10,080 cubic yards of grading per gross acre. The conclusions stated 13,200 cubic yards per acre.

81 With respect to visual quality, the Conclusions state that "As currently proposed, several large noise attenuation barriers are proposed along the major roadways including: Palm Avenue, Del Sol

RESPONSES

80. The final EIR has been revised to reflect this comment.

81. Comment noted. The noise wall along Del Sol Boulevard between Palm Avenue and the western boundary of the precise plan would be a maximum of five feet in height.

Boulevard and SR-905". Pages 133 and 135 and Figure 36 within the Draft EIR indicate the locations where noise walls may be required in excess of six feet in height. The reference to Del Sol Boulevard should be deleted from this discussion as no wall would be over five feet.

82 On the south side of SR-905, walls over six feet high will be required. However, they will be located approximately 20 to 40 feet above the freeway at a distance of 140 to 530 feet away from the travel lanes, thereby lessening any visual impact or walled effect. It should also be noted these walls are required by the City as noise mitigation for impacts from a State-constructed freeway.

BIOLOGY

83 A discussion should be inserted in the biology section of the Conclusions which acknowledges the City Staff-sponsored Open Space Agreement described on page 13 of the Draft EIR. Further, the characterization in the Conclusions that the majority of the open space "would be fragmented" does not recognize that California Terraces is a portion of a larger regional open space system in the residential portion of the Otay Mesa Community Plan. Linking off-site to the Otay Valley River Park, this system encompasses approximately 620 acres. The open space is fragmented only if each ownership and precise plan is considered individually. The more comprehensive approach of considering all ownerships together is the reason the City and the property owners worked together to develop a connected open space network.

PUBLIC SERVICES

84 By the adoption of AB 1287, the State Legislature has pre-empted a local agency's authority to deny approval of a project on the basis of adequacy of school facilities or imposing conditions, other than the requirement to pay the limited school facilities fees, on the approval of a project for the purposes of providing school facilities. As a result, it may be inappropriate for the conclusions to comment regarding the impact of the project on the school facilities beyond that allowed by AB 1287. Also, the use of the word "exasperated" is questionable.

RESPONSES

82. Comment noted.

83. The EIR Conclusions acknowledge the planning efforts that have occurred regarding a regional open space system and no changes to the final EIR are necessary.

84. Comment noted. Please see response to the Chula Vista Elementary School District letter.

PROJECT ALTERNATIVES

Reduced Grading Alternative

85 The discussion presented in the Conclusions for the Reduced Grading Alternative states that implementation of this alternative would substantially reduce impacts to biological resources. This conclusion is not supported by facts contained in the Draft EIR. The Draft EIR indicates on page 206 that impacts to biological resources would be reduced but would remain significant and unmitigated.

Alternative Grading/Product Type

86 This brief summary is not consistent with the text of the Draft EIR (pages 209-214). Nowhere in the text of the Draft EIR is it mentioned that any of the impact reductions would be substantial as stated in the Conclusions. In fact, the potential for significant reductions in landform alteration is described as "limited" and reductions to biological impacts are only considered "possible". In fact, the biological and landform impacts of this alternative are identical to that of the proposed project. The summary of this alternative should be re-written for the Final EIR to more accurately reflect the true effectiveness of reducing impacts as described in the EIR.

Increased Open Space Alternative

87 The Conclusions should be expanded to include the statement on page 208 that this alternative would not implement all of the goals and objectives of the community plan in terms of density and land use. This is an important reason for the rejection of this alternative.

Mitigation Monitoring and Reporting Program Incorporated into the Project

WATER SUPPLY

88 The second sentence of this paragraph which states that "All off-site improvements would be completed prior to the final map" is incorrect. In actuality, a Water Supply Master Plan for Western

RESPONSES

85. The Conclusions accurately reflect the EIR text and no revisions are necessary.

86. It is acknowledged that the reduction in impacts associated with this alternative may not be substantial.

87. Comment noted.

88. Comment noted. Please see response 67.

Otay Mesa will be prepared and ultimately approved by the Water Utilities Department. This plan will determine required facilities Cathy Winterrowd and establish a method for constructing these facilities tied to a buildout of the area. It is appropriate to state that the identified off-site facilities will be assured in accordance with the Water Supply Master Plan.

89 Later in the paragraph it is stated that "All mitigation shall be noted as mitigation on grading plan for the Vesting Tentative Maps". A more accurate description is that mitigation shall be noted on improvement plans for the final map. Improvement plans rather than grading plans customarily include water facilities.

NOISE

90 This section of the Conclusions states that all sound attenuation barriers should be constructed prior to issuance of a CPIOZ permit. It should be revised to state that "all sound attenuation barriers should be <u>identified</u> prior to issuance of a CPIOZ permit and needed segments constructed prior to occupancy." This method reflects the actual sequence of events.

We appreciate the opportunity to provide these comments on the Draft EIR and request that the clarifications stated within this letter be incorporated into the Final EIR.

Sincerely,

David R. Poole
Project Manager

DRP:sgo
cs: K. Keeter
    Project Design

    M. Madigan
    Pardee Construction

    John Ponder

RESPONSES

89. Comment noted.

90. Comment noted.

San Diego Biodiversity Project
P.O. Box 1944 Julian, CA 92036

December 20, 1992

City of San Diego Planning Department
Development and Environmental Planning Division
202 "C" Street, Mail Station 4C
San Diego, CA 92101

ATTN: Ms. Ann Hix, Principal Planner
RE: Biological Resources Report for California Terraces

Dear Ms. Hix,

Having reviewed the above document, we would like to offer the following comments:

91 1) Many federal candidate 2 species are listed in table 6 and include several species such as the San Diego fairy shrimp (Branchinecta sandiegensis), Checkerspot butterfly (Euphydryas editha quino), Western spadefoot toad (Scaphiopus hammondii), Pacific pocket mouse (Perognathus longimembris pacificus), White-eared pocket mouse (Perognathas alticola alticola), Pallid San Diego pocket mouse (Chaetodipus fallux pallidus), Southern grasshopper mouse (Onychomys torridus ramona), and the San Diego desert woodrat (Neotoma lepida intermedia) that we feel are becoming dangerously rare in San Diego County. One species, the Riverside fairy shrimp (Streptocephalus woottoni) has been found in at least one location east of Brown Field in a historic vernal pool that has been enlarged as a cattle tank, yet this species possible occurrence on the project site was not mentioned.

Soil hydration tests completed by an expert in fairy shrimp studies must be conducted in representative vernal pools across the entire project site in order to determine true impacts to these species.

A survey by an entomologist who knows the habits and looks of the Checkerspot butterfly must be completed for this species across the entire project site in order to determine true impacts to this species.

Directed surveys at the appropriate time of year must be completed for the Western spadefoot toad.

Trapping must be completed to determine the presence (or lack of) of any of the three sensitive pocket mice, grasshopper mouse, or the desert woodrat.

Without appropriate surveys for the above sensitive species, determination of real impacts cannot be made. It is likely that impacts to these species will be significant if they are present, and mitigation in the form of project redesign or off-site mitigation must be required.

92 2) If full development of the Precise Plan is carried out as proposed, no remaining areas of diegan coastal sage scrub or maritime succulent scrub will support viable populations of the California gnatcatcher, coastal cactus wren, or any other sage scrub community type dependant species. This brings the acreage impacts numbers to286 acres of diegan coastal sage scrub, and 66 acres of maritime succulent scrub for the entire Precise Plan. At least six coastal

RESPONSES

91. None of the referenced Category 2 species warrant further study beyond that completed for the EIR. The Conclusions in the draft EIR state that impacts to biological resources are significant and unmitigated. See also response 7.

92. The biology section of the EIR (see Table 4) describes the direct impacts to coastal sage scrub (202 acres) and maritime succulent scrub (40 acres). The EIR acknowledges that these impacts would likely compromise the value of the remaining habitat. However, the preserved acreage would be interconnected with the regional open space system and provide habitat for the referenced species.

cactus wrens and their micro-habitat would be eliminated due to their
almost complete lack of tolorance of any human presence. At least 21
California gnatcatchers would be eliminated from this area due to lack of
remaining appropriate habitat after buildout. San Diego horned lizards
do not withstand nearby human presence mainly due to predation by domestic
pets and collection, as well as general loss of habitat.
All of the above individual impacts add up to one large extremely
serious significant impact to the sage scrub communitjes ocourring within this
93 Precise Plan. Mitigation for this impact can only be accomplished through
massive redesign of this project, as offsite mitigation is only appropriate
for projects where habitats onsite are isolated and of minimal value. This is
simply not the case with the California Terraces Precise Plan.
If project redesign is rejected as an alternative hy the applicant as
expected, then two options remain. One would involve the purchase and protection
of at least 858 acres of gnatcatcher and cactus wren occupied diegan coastal
sage scrub, and the purchase and protection of at least 198 acres of maritime
94 succulent scrub. A 3:1 mitigation ratio is used because of the extreme
sensitivity of the land to be impacted. Remember, at least 15 increasingly rare
species will be completely eliminated from the project site.
Option number two involves the dedication of sensitive lands already
owned by the applicant as biological preserves or conservation easements. One
highly significant parcel owned by the applicant on Carmel Mountain supports
California gnatcatcher occupied diegan coastal sage scrub, southern maritime
chaparral, native southern California grassland, and vernal pools supporting
the San Diego fairy shrimp.
If either of these two options were chosen, it may be worth considering
allowing the applicant develop the entire California Terraces property, including
some of the steeper slopes, and areas proposed as open-space. However, Otay
tarplant, Small-leaved rose, Snake cholla, and all vernal pools must be
protected onsite.

95 3) The loss of 25 of the thirty-two vernal pools within the project
boundries cannot be mitigated through the "creation" of new vernal pools. All
"creation" studies point to the need for intensive long term (a little more than
five years, we're afraid) management to maintain any kind of species diversity
similar to that found in natural pools. Project redesign to protect onsite
vernal pools with a restoration plan or offsite purchase and protection are the
96 applicants only alternatives. We are also concerned with the statement that
"The restorationefforts (for vernal pools) will be monitered by the subdivider
for a minimum five-year period or until the specific success criteria described
in the plan have been met". Funds for this monitoring plan (for restored
vernal pools only) should be set aside now by the applicant, as tough economic
times are ahead for all of the development industry.
97 Any vernal pool lands "protected" after project buildout must not become
the responsibility of the City of San Diego, as long term funding for the
maintenance of barricades and restoration work is not available. It is doubtful

RESPONSES

93. Historically, mitigation for biological impact can take several forms. The draft EIR indicates that partial mitigation to vernal pools would be accomplished by implementation of the Dennery Canyon Vernal Pool Restoration and Preservation Plan. In addition, the 132 acres of natural open space preserved on-site would contribute to the regional open space system. However, the draft EIR acknowledges that these measures would not represent full mitigation and that Findings and a Statement of Overriding Considerations would be necessary for the project to be approved.

94. The ratios described in the draft EIR are consistent with acceptable mitigation ratios used by the City of San Diego for these habitat types. The EIR acknowledges that the project's biological impacts cannot be fully mitigated and require the decision-making body of the City of San Diego to make Findings and a Statement of Overriding Considerations. See also response 3.

95. See responses 5 and 6.

96. Monitoring of the vernal pool preserve will be a condition of the California Terraces tentative map approval and will be ensured by bonding by the applicant. The vernal pool plan, which applies to all the applicant's ownerships on Otay Mesa, has been approved by the City of San Diego in conjunction with the Otay Corporate Center South project and will also be a condition of approval for both the California Terraces and the Otay Corporate Center North projects. The resolutions of approval for these projects require that the preserve be monitored by the applicant for a five-year period or until the success criteria established in the plan are met.

97. The City of San Diego would be able to provide the long-term maintenance requirements for the vernal pool preserve through the establishment of a maintenance fund. The fund

RESPONSES

Agencies that we feel could provide long-term maintenance of any vernal pool preserve include the Nature Conservancy, the UC Natural Reserve System, and possibly a land conservancy formed by proponents of the Tijuana Estuary and Otay River Valley Park. Again, long-term funding would need to be provided.

98 4) Impacts to the small-leaved rose can only be mitigated through avoidence. Impacts to the Otay tarweed, a plant that may soon be listed as Endangered by USFWS, can only be mitigated through avoidence. As a last resort, the protection through purchase of land of an offsite population of this rare plant would reduce the significance of impacts to this species. This could be accomplished through the offsite protection of sage scrub communities.

This concludes our comments on the Biological Resources Report for the California Terraces Precise Plan. We would appreciate notification of any public hearings regarding this project as well as a copy of the Final EIR with Appendices.

Sincerely,
David Hogan
David Hogan, Coordinator

98. Please see comments and responses to comments 8-10.

Summary

Environmental Setting

The approximately 665-acre California Terraces Precise Plan area is situated in the northwestern portion of the Otay Mesa community planning area in the city of San Diego, between Interstate 805 (I-805) and Heritage Road. The approximate 543-acre California Terraces Vesting Tentative Map comprises most of the precise plan area, with the exception of isolated parcels throughout the planning area and the South Palm Vista Vesting Tentative Map located on the western boundary. The precise plan project site is currently zoned A-1-10 and is designated for residential use in the community plan. Surrounding precise plans include Dennery Ranch and Hidden Trails to the north, Santee Investments and El Mirador to the south, and South Palm to the west.

Development currently exists to the west and northwest of I-805 in San Ysidro, South San Diego, and Chula Vista. Scattered residences and Brown Field are present to the east within Otay Mesa. Brown Field is approximately 4,000 feet east of the project site. No development currently exists within the precise plan area. Numerous dirt roads and trails are present in many portions of the site. Unauthorized activity (e.g., off-road-vehicle use, trash dumping, and transitory residence) occurs on the property. San Diego Gas & Electric (SDG&E) transmission and distribution lines cross the precise plan area in north-south and east-west alignments.

Topographically, the precise plan area is a large, flat mesa top at an elevation of approximately 500 feet above mean sea level (MSL), which is dissected by steep canyons that are generally north and southwest trending. The major on-site canyon is Dennery Canyon, which is north-northwest trending.

Five plant communities are present within the precise plan area: Diegan coastal sage scrub, maritime succulent scrub, southern mixed chaparral, nonnative grassland, and San Diego mesa claypan vernal pools. The mesa top supports a mixture of annual grasses and weeds on previously cultivated and grazed land. Trees on the site are introduced species of eucalyptus. The prevalent vegetation form on canyon slopes and floors is coastal sage scrub and maritime succulent scrub species.

Project Description

A. Precise Plan

The precise plan proposes primarily residential uses on the 664.8-acre site. Other proposed uses include four school sites, three parks, five commercial centers, and open space. Portions of several major circulation roads are included in the precise plan area, including Palm Avenue, Otay Mesa Road, Del Sol Boulevard, and State Route 905 (SR-905).

A total of 5,375 dwelling units are proposed, resulting in a density of 16.1 units per residential acre. The proposed single-family areas (detached units) are primarily on the mesa tops, incorporating canyon and valley view opportunities. The attached units cluster around community services and are near freeway access points or along major circulation routes.

A total of 24.4 gross acres of commercial uses are proposed for the precise plan. Five commercial centers are included in the California Terraces Precise Plan. A large 16-acre site at the southeast corner of Otay Mesa Road and future Palm Avenue would provide space for a major supermarket, drugstore, or hardware store along with other commercial services. The four smaller commercial sites would accommodate more specialized stores such as delis, gas stations, and other small shops.

School sites would comprise 54.7 acres of the precise plan area. Four schools are proposed in the precise plan, three elementary schools and one junior high school. The precise plan also includes one community park and two neighborhood parks. The community park is located adjacent to the junior high school.

The precise plan proposes 153.4 acres of open space. Approximately 132.5 acres (20 percent) of the precise plan area is proposed as natural open space, with 20.9 acres proposed as revegetated open space. The open space consists primarily of the canyon areas which dissect the mesa. Graded slopes at the canyon heads, slopes along traffic arteries and entries, community entry areas, neighborhood entries, and the common areas within residential (attached units) areas provide the additional 21 acres of graded, replanted open space.

The precise plan area is currently served by two major freeways, I-805 and SR-905/Otay Mesa Road. Circulation Element roadways which would be constructed through the project include Palm Avenue (four- and six-lane major), a segment of Del Sol Boulevard (four-lane collector), and "A" Street (four-lane major). Palm Avenue would connect

Otay Valley Road and SR-905, Del Sol Boulevard would ultimately connect with I-805, and "A" Street would connect Palm Avenue and Otay Mesa Road.

Improvements outside the precise plan boundary would be required for ultimate implementation and build-out of the precise plan. These sewer, circulation, and water improvements include right-of-way dedications or acquisitions.

B. California Terraces Vesting Tentative Map (VTM)

The California Terraces VTM comprises approximately 543.5 acres (82 percent) of the 665-acre California Terraces Precise Plan area. The proposed land uses are consistent with those identified for this area in the precise plan. The majority of the proposed land use is residential, with two elementary school sites mapped and portions of the other elementary school and junior high school within the VTM boundary. The two neighborhood parks and one community park, as identified in the precise plan, are located within the tentative map boundaries and are included in the California Terraces vesting tentative map. All of the five commercial centers identified in the precise plan are included in the tentative map.

A total of 4,991 dwelling units are proposed on 323.5 residential acres within the VTM portion of the precise plan area, resulting in a density of 15.4 units per gross residential acre. This portion of the development would contain single-family and multi-family residences plus most of the public facility uses contained within the precise plan.

A total of 108 acres would be preserved as open space within the California Terraces VTM portion of the precise plan. This represents 20 percent of the 543 acres for this VTM. The proposed open space would occur predominantly on undisturbed slopes.

The VTM contains six major roadways; Palm Avenue, Del Sol Boulevard, "A" Street, Otay Mesa Road, Hidden Trails Road, and Dennery Canyon Road. Palm Avenue would be constructed as a six-lane prime arterial transitioning to a four-lane major, Del Sol Boulevard would be constructed as a four-lane collector within the VTM boundaries, "A" Street would be constructed as a four-lane major, Otay Mesa Road would be constructed as a six-lane major east of the future SR-905 alignment and as a half-width four-lane collector south of future SR-905, Hidden Trails Road would be constructed on-site as a two-lane collector, and Dennery Canyon Road would be improved to a four-lane collector for a portion of its length within the VTM and as a graded street reservation within the remainder.

C. South Palm Vista Planned Residential Development/Vesting Tentative Map

This VTM comprises approximately 27.3 acres (4 percent) of the proposed precise plan (664.8 acres). A total of 70 single-family detached dwelling units are proposed on 27.3 acres in the central/western part of the California Terraces precise plan area, resulting in a density of 2.5 units per gross residential acre. This portion of the project would contain single-family detached homes on lots ranging from 4,200 to about 6,000 square feet.

A total of 12.2 acres would be preserved as open space within the South Palm Vista portion of the precise plan. This represents approximately 45 percent of the 27.3 acres within the VTM. The open space would be located on undisturbed slopes in the western and southern part of the Planned Residential Development (PRD)/VTM.

Environmental Analysis

Table S-1 provides a summary of the project impacts and proposed mitigation measures, which are described below.

A. Land Use

1) Impact

a) Precise Plan

The precise plan proposes single- and multi-family residential, neighborhood commercial, educational, recreational, and open space uses which would be compatible with surrounding proposed development. The precise plan also proposes redistributed residential densities, fewer residential units, and a slightly different housing mix. The community plan indicates a residential density of approximately 19.1 dwelling unit per acre (du/acre), and the project proposes 16.1 du/acre. The proposed residential development generally conforms with the configuration shown in the community plan, and the rearranging of land use densities and locations does not constitute a significant environmental impact.

The three elementary school sites and one junior high school site proposed in the precise plan are consistent with those designated in the community plan. California Terraces proposes three parks within its project boundaries, each adjacent to a school. Overall, the precise plan proposes approximately a 10 percent reduction of parkland compared to the

TABLE S-1
SUMMARY OF FINDINGS

Issue Area	Potential Impact	Mitigation Measures	Residual Impact
Land Use	The project would not implement the environmental goals of the Otay Mesa Community Plan, RPO, or the HR Guidelines.	Project design only partially implements goals of community plan.	Not fully mitigated.
Landform Alteration/ Visual Quality	The proposed project would require approximately 6.7 million cubic yards of earthwork (12,984 cubic yards per gross acre). Manufactured slopes in excess of 60 feet would be created with a maximum slope height of 136 feet. Approximately 57 percent of acreage within the HR zone would be graded. Significant visual impacts would occur due to the extent of landform alteration and the numerous manufactured slopes in excess of 60 feet.	All manufactured slopes shall be rounded and contour graded and have a maximum ratio of 2:1. These grading techniques would also reduce the visual quality impacts. Other measures to reduce visual quality impacts include revegetation of slopes in accordance with the City's Landscape Technical Manual.	Not fully mitigated.
Geology/Soils/ Water Quality	Without specific mitigation measures, potentially significant impacts could occur associated with ancient landslides, bentonite clay and deep alluvial deposits, and cohesionless zones of terrace deposits. Short-term erosion impacts could occur during grading and from brush management activities.	Extensive mitigation measures are required to alleviate the geotechnical hazards on-site. Such measures include removal of expansive materials, recompaction of alluvium, use of stability fills, and buttressing. Erosion control measures during grading (e.g., sandbagging and detendetention basins) shall be required and compliance with the brush management program would avoid erosional impacts.	Mitigated.
Biological Resources	Impacts to three sensitive habitats (coastal sage scrub, maritime succulent scrub, and San Diego vernal pool habitat).	Mitigation for vernal pool impacts would be accomplished by the creation of a 12-acre vernal pool preserve on the Otay Corporate Center and California Terraces projects. A vernal pool restoration and enhancement plan is attached as an appendix to this EIR. The preserve	Not fully mitigated.

TABLE S-1
SUMMARY OF FINDINGS
(continued)

Issue Area	Potential Impact	Mitigation Measures	Residual Impac
Biological Resources (cont.)		would result in no net loss of vernal pools. Partial mitigation for impacts to coastal sage scrub would be accomplished by revegetation. The project has also been redesigned and is consistent with the Draft Open Space and Planning Agreement between the City and developers on western Otay Mesa.	
Cultural Resources	Impacts to SDI-6941, Locus D, SDI-7604, Locus E, and SDI-10,200 would be significant without completion of a data recovery and analysis program.	Completion of the analysis program and final report would mitigate impacts.	Mitigated.
Noise	Exterior noise levels at single-family residences, school, and park uses adjacent to Palm Avenue, "A" Street, Del Sol Boulevard, Otay Mesa Road, and SR-905 would exceed the City's 65 CNEL standard.	The use of noise walls of varying heights would be required along the above-referenced roadways to mitigate exterior noise impacts. An interior acoustical analysis shall be submitted with building plans to ensure compliance with the City's 45 CNEL interior standard.	Mitigated.
Traffic Circulation	The proposed project would generate 50,836 ADT. This would create a significant impact on the circulation system in Otay Mesa.	Adoption of the precise plan street system and construction of the improvements outlined in the Transportation Improvement Phasing Plan (Table 15 in the EIR) would mitigate impacts. The phasing plan describes dwelling unit thresholds which are keyed to various improvements to Palm Avenue, "A" Street, Del Sol Boulevard, and Otay Mesa Road.	Mitigated.
Air Quality	Long-term emissions of criteria pollutants due to project-generated ADT in the area.	Provision of alternate transportation routes (bicycle and pedestrian), provision of housing in proximity to jobs in Otay Mesa, and accommodation of bus routes and trolley stops would allow the project to conform with RAQS.	Not fully mitigated

TABLE S-1
SUMMARY OF FINDINGS
(continued)

Issue Area	Potential Impact	Mitigation Measures	Residual Impact
Public Services and Utilities	Addition of students would impact the area's middle and senior high schools. Impacts to parks, water, and sewer service are not significant.	Agreements with the affected school districts prior to recording final maps shall be required to ensure that funding is available.	Mitigated.
Safety	No significant impacts regarding Brown Field FAZ or brush management have been identified.	None required.	Mitigated.
Paleontology	Potential for fossil finds in the geologic formations on-site (San Diego and Otay formations).	A program for the monitoring and recovery of paleontological finds during grading operations shall be required.	Mitigated.

community plan. The precise plan provides open space areas in the same general locations as those specified in the community plan and an increased acreage of natural open space. The precise plan is also in conformance with the "Draft Agreement of Open Space and Planning Issues" map for northwestern Otay Mesa. This draft agreement (dated November 1990) between the City and several property owners on western Otay Mesa outlines a regional open space system.

The precise plan proposes five sites (totaling 24.4 acres) for commercial use. The proposed California Terraces Precise Plan eliminates the 16.6-acre site at the northern boundary. The applicant considers this site no longer necessary because of an earlier community plan amendment which redesignated 31 acres at the intersection of Palm Avenue and I-805 as commercial. This site is known as the Gateway Fair.

Potential land use incompatibilities exist in two general locations within the precise plan project site; between the future town center and the surrounding residential areas, and at major intersections. The precise plan incorporates several design features such as landscaping, grade separation, and roadway and parking area siting which would serve as buffers in these areas. The buffer designs would be incorporated into the California Terraces Master Landscape Plan and implemented through subsequent tentative maps. Land use buffering occurs at all of the major intersections of the precise plan. Noise impacts at these major intersections can be mitigated as described in the noise section.

Development of the California Terraces Precise Plan would not achieve the goals and objectives of the Otay Mesa Community Plan related to landform alteration and grading, nor aims of the Hillside Review Overlay Zone. Both the Otay Mesa Community Plan and Hillside Review encourage hillside development that conforms to the natural terrain and minimizes disturbance of steep slopes through the utilization of split building pads, split streets, and split-level homes. As discussed in detail under the landform alteration analysis, approximately 138 acres (57 percent) of the 243 acres in Hillside Review (HR) are proposed to be graded. The mass grading combined with large, level development units would not reflect the intent of the Otay Mesa Community Plan nor the Hillside Review policies. Thus, the project is inconsistent with the community plan related to hillside development as well as being inconsistent with the provisions of the Hillside Review Overlay Zone. Alternatives to the proposed project which would reduce these impacts are fully discussed in Chapter 6 of the EIR.

b) California Terraces VTM

The California Terraces VTM includes 543.5 acres of the 664.8 acres of the precise plan area owned by Pardee Construction Company. The VTM proposes the same land use mix and location as the precise plan.

The California Terraces VTM application does not include PRDs for all of the residential areas, as required by the community plan for residential projects with significant noise and other impacts. This is a potentially significant impact. Use of the Community Plan Implementation Overlay Zone (CPIOZ) as part of the mitigation would be assured through the Mitigation, Monitoring, and Reporting Program.

The same potential land use compatibility impacts exist for this VTM as discussed for the precise plan. The landscape and buffering measures provided for the precise plan would be implemented by the VTMs and would reduce this potential conflict.

c) South Palm Vista PRD/VTM

The proposed residential density in this PRD/VTM is in conformance with the Otay Mesa Community Plan and the precise plan.

d) Remaining Parcels

Four small areas (totaling 94.0 acres) within the precise plan are not included in the two currently proposed VTMs. These parcels are owned by several different individuals who have elected at this time not to submit tentative maps. Future environmental review of subsequent tentative maps of these parcels would be required.

2) Mitigation

Implementation of the Mitigation, Monitoring, and Reporting Program for the precise plan and the VTMs would ensure that mitigation is accomplished.

B. Landform Alteration/Visual Quality

1) Impact

a) Precise Plan

The precise plan proposes to grade approximately 516 of the total 664.8 acres (78 percent). The maximum slope height would be 136 feet. Of the 243 acres within the Hillside Review zone, 138 acres (57 percent) would be graded within the precise plan. The creation of large, manufactured slopes (those over 60 feet in height), especially in on-site canyons, represents the most significant visual impact. Specifically identified slopes over 30 feet in height would be contour graded and rounded.

The proposed grading and build-out of the precise plan would significantly alter the visual character of the property. Implementation of the grading plans described above would alter the skyline, mesa top, and canyon views. From the west and north, viewsheds of the California Terraces skyline and mesa top would be altered. Views of residential structures would be interspersed with views of commercial, recreational, and institutional land uses. The presently vacant mesa top would be developed with streets, houses, parks, schools, and commercial areas. The canyons would be altered since many of the canyon heads would be filled and subsequently incorporated into development pads.

Portions of the developed site would be visible from four major off-site roadways, I-805, SR-905, Otay Mesa Road, and Otay Valley Road. Major on-site roads would also permit views of the project site. These roads include Palm Avenue and Del Sol Boulevard.

Wherever possible, grading and architectural design would reduce the need for noise attenuation walls. Where these walls are determined to be necessary, landscaping is proposed to "soften" the visual impacts. The design of noise walls and respective landscaping would be reviewed and approved by the Planning Director during the PRD and CPIOZ review process and during the review of all future permits.

The precise plan proposes to implement a comprehensive brush management program which will comply with the purpose and intent of the City's Landscape Technical Manual for Brush Management. The VTMs are exempt from the requirements of the Landscape Technical Manual because of the submittal date of the maps. The selective thinning of native vegetation and planting with retardant and low-volume plantings within the brush management zones would change the composition of the existing native vegetation. This incremental alteration of the appearance of slopes adjacent to the development areas would add to the region's overall shift from a rural to urban setting.

b) California Terraces VTM

The proposed VTM (543.5 acres) makes up approximately 82 percent of the proposed precise plan (664.8 acres). The total quantity of cut and fill would be balanced within the area shown on the VTM. Mesa top cutting would provide the fill dirt for proposed building areas and roadways. The maximum slope height would be 136 feet. The maximum cut is approximately 30 feet in the northwestern portion of the site.

The VTM would preserve approximately 40 percent of the steep slopes in open space. The open space system for the VTM as well as for the entire precise plan is based upon the "Draft Agreement of Open Space and Planning Issues" formulated by City staff and property owners in the area through a series of design workshops between November 1990 and April 1991.

There would also be long-range skyline views (approximately one-quarter mile in the distance) of the medium density (15-30 du/acre) development on the mesa top within the

California Terraces VTM. Developing the project site would create a significant visual impact to I-805.

c) South Palm Vista PRD/VTM

The South Palm Vista PRD/VTM is located in the central/western portion of the precise plan area. The proposed grading for the South Palm Vista VTM would result in the export of 197,100 cubic yards of dirt. The grading plan indicates that 8.78 acres, or 32 percent, of this 27.3-acre site would be graded. Of the 9.88 acres within the Hillside Review zone, 1.2 acres (12 percent) would be graded. Manufactured slopes would range from 14 to 55 feet in height and be contour graded.

The South Palm Vista PRD/VTM portion of the precise plan is located on a ridge top overlooking the South Palm Precise Plan to the west and I-805. Homes and manufactured slopes located along the outer edge of the development would be visible from certain view points below, including portions of I-805. The slopes and homes would represent a visual impact.

2) Mitigation

The precise plan and both VTMs as proposed would have significant unmitigated landform alteration impacts. However, a number of measures have been incorporated into the project design to lessen the impacts associated with the proposed grading. These measures include the use of slope rounding and contour grading, realignment of Del Sol Boulevard from the community plan alignment to lessen impacts to the east/west-trending canyon. Implementation of these measures would reduce the grading impacts of the project. However, the landform alteration impacts would remain significant and unmitigated. The landform alteration impacts could be further reduced by the adoption of one of the alternatives under Alternative B, described in Section VI of this EIR. These project redesign alternatives are discussed later in this Summary under Alternatives.

The areas proposed as natural open space would reduce the visual quality impacts of the project by retaining a portion of the natural character of the site. The precise plan incorporates design objectives which attempt to reduce the impacts which would result from implementation of the project. The design objectives include grading guidelines, landscaping concepts, and streetscape treatment. These measures would provide partial mitigation for the significant visual quality impact resulting from the project grading.

C. Geology/Soils and Erosion/Water Quality

1) Impact

The site is considered "suitable for the proposed development" in the project geotechnical report. No significant impact on development is anticipated at this time due to the geologic or soil conditions, provided that stated mitigation and/or corrective measures are implemented.

The disruption of natural soil profiles by grading operations would result in the exposure of subsoils to the erosive forces of wind and water, thereby temporarily increasing susceptibility to erosion. The geologic units found within the California Terraces Precise Plan area are moderately to highly erosive. Cut and fill operations could result in significant erosion if proper grading techniques are not utilized.

The City of San Diego Brush Management Plan requires property owners to maintain an effective firebreak made by removing and clearing away an area measuring 110 feet in width from any building or structure. Potential impacts related to the clearing of a firebreak include increased soil erosion, slope failure, and downstream sedimentation. When grading for house pads and firebreaks, sensitive grading techniques would take into account the potential for soil erosion. Grading would be limited to the minimum area necessary. Further, an effective landscape maintenance plan requiring weed- and debris-free planting areas would be implemented as a requirement of the Hillside Review permit and subsequent VTMs. These measures, in addition to the mitigation measures outlined below, would effectively reduce the potential for increased erosion resulting from compliance with the City's brush management program.

2) Mitigation

The City of San Diego Engineering and Development Department mandates specific engineering geological requirements for tentative maps. Specific mitigation of potential geological constraints would be based on detailed field data conducted for grading and improvement plan approvals through the Engineering and Development Department and would be implemented by the project applicant. Mitigation would include measures such as removing expansive materials, alluvium, and fill sites, recompacting these areas, buttressing major landslides, and providing drains in canyon areas.

The following measures would reduce erosion impacts to below a level of significance: grading shall be limited to avoid designated natural open space areas and these areas shall be flagged; final earth surfaces shall be watered and capped; roadbeds shall be sandbagged where necessary until paved; berms, bladed ditches, or sandbags shall be used to control sediment from graded building pads; and temporary and permanent drainage facilities shall be constructed on-site concurrent with grading operations. It shall be a condition of approval of the precise plan that the above mitigation measures be conditions of all subsequent tentative maps within the precise plan.

It shall be a condition of all tentative maps within the precise plan area to prepare a detailed brush management program consistent with the guidelines of the City's Landscape Technical Manual. Erosion-control measures include the limitations on brush removal as noted in the Brush Management Program, sensitive grading techniques, the planting of fire-resistant native ground covers in and around the natural chaparral after grading, a landscape maintenance program, and brush removal methods that do not disturb existing root systems.

D. Biological Resources

1) Impact

a) California Terraces Precise Plan

Three plant communities, Diegan coastal sage scrub, maritime succulent scrub, and San Diego mesa claypan vernal pools, would be significantly impacted through implementation of the proposed precise plan. Habitat for the coastal California gnatcatcher and San Diego cactus wren would be lost commensurate to losses in Diegan coastal sage scrub and maritime succulent scrub habitats. Twenty-six (81 percent) of the 32 vernal pools within the project boundaries would be significantly impacted by the project, which would affect the sensitive plant species found within them, including all of the San Diego button celery contained within the project site. In addition, sensitive plant species such as Otay tarplant, small-leaved rose, coast barrel cactus, San Diego sunflower, cliff spurge, San Diego bur-sage, small-leaved rose, and ashy spikemoss would also be significantly impacted.

Approximately 202 acres (70 percent) of the high-quality, undisturbed Diegan coastal sage scrub and 40 acres (62 percent) of the maritime succulent scrub would be impacted. All of the disturbed Diegan coastal sage scrub would be impacted. All but three acres of grassland with scattered shrubs would be developed.

The preserved plant and wildlife community acreage (approximately 187 acres) occurs on steep slopes of the canyons within the project area. Dennery Canyon, within the eastern portion of the precise plan, would be retained as natural open space and would be connected to the regional open space system. However, many of the open space areas would be isolated from each other by development, which will affect their long-term viability and usefulness to wildlife.

Brush management zones would be applied to the precise plan area. Portions of Zones 2 and 3 would encroach into approximately 19.2 acres of native vegetation associated with open space areas. These zones would be selectively thinned, which would reduce the habitat value provided by the native vegetation in the open space areas. These areas are in addition to the impacts described above. The shrubs in these zones would be trimmed, but they would still exist, and short plants, such as the coast barrel cactus and pygmy spikemoss, would not be affected at all. The coastal California gnatcatcher would probably continue to use coastal sagebrush that was trimmed to 18 inches. If brush management activities occur during the gnatcatcher breeding season, potential impacts to nests could occur.

b) California Terraces VTM

As described for the precise plan, three plant communities, Diegan coastal sage scrub, maritime succulent scrub, and San Diego mesa claypan vernal pools, would be significantly impacted through implementation of the proposed California Terraces VTM. Approximately 167 acres (76 percent) of the high-quality, undisturbed Diegan coastal sage scrub and 32.5 acres (65 percent) of the maritime succulent scrub would be impacted by the VTM.

The VTM essentially implements the precise plan as proposed. Therefore, impacts to wildlife would be similar to those discussed above.

Approximately 14.9 acres of native vegetation would be selectively thinned with implementation of the California Terraces VTM brush management plan. These impacted areas are in addition to the impacts described above. The effects on biological resources would be similar to those resulting from implementation of the brush management plan prepared for the precise plan.

c) South Palm Vista VTM

Three sensitive plant communities would be significantly impacted by the implementation of the South Palm Vista VTM: Diegan coastal sage scrub, maritime succulent scrub, and San Diego mesa claypan vernal pools. Of the eight acres of coastal sage scrub in the South Palm VTM, 5.6 acres would be lost. Of the 14.1 acres of maritime succulent scrub present, 5.4 acres would be lost. All seven of the vernal pools present would be lost. This loss of habitat would result in impacts to the coastal California gnatcatcher, San Diego cactus wren, coast barrel cactus, and San Diego bur-sage. Approximately 11 acres of coastal California gnatcatcher habitat would be lost.

Native vegetation would be selectively thinned (approximately 3.6 acres) with implementation of the South Palm Vista VTM brush management plan. These impacted areas are in addition to the impacts described above. The effects on biological resources would be similar to those resulting from implementation of the brush management plan prepared for the precise plan.

2) Mitigation

a) Precise Plan

Impacts to biological resources on a precise plan level as well as for the California Terraces, South Palm Vista, and other subsequent TMs are considered significant and not fully mitigated.

Impacts have been reduced by revising the precise plan to accommodate the open space concept as reflected in the Draft Open Space Agreement. However, impacts to coastal sage scrub and small-leaved rose would remain significant and unmitigated. Impacts to vernal pools would partially be mitigated by the adoption of the vernal pool preservation and enhancement plan for the Pardee ownership on Otay Mesa.

Complete mitigation for these impacts along with the loss of other sensitive species and communities from the project site could only be accomplished by redesign of the project to significantly expand the areas reserved for natural open space. Alternatives to the proposed project are discussed later in this Summary.

Implementation of the following mitigation measures would reduce potentially significant impacts to biological resources as a result of brush management requirements, although not to below a level of significance. A detailed brush management plan shall be prepared for subsequent tentative maps. A qualified biologist will be contracted to monitor the clearing of vegetation in association with brush management during all maintenance periods.

b) California Terraces and South Palm Vista VTMs

Partial mitigation of the impacts to vernal pool habitat on California Terraces and the South Palm Vista VTMs would result from the implementation of a vernal pool preservation plan. This plan is included as Appendix C of this report. The preservation plan proposes a 12-acre vernal pool preserve with 18 existing pools having a surface area of 13,696 square feet and plans for enhancement of the preserve to support 20 to 49 new pools with 20,200 to 27,500 square feet of surface area. The majority of the preserve would be established on the Otay Corporate Center North project just east of California Terraces. This preserve would result in no net loss of vernal pool surface area or number of basins. The enhancement plan would also result in an overall increase in pool habitat quality due to rehabilitation and management efforts and incorporation of the preserve with the larger regional permanent open space system.

Partial mitigation for the impacts to biological resources for the South Palm Vista VTM has been accomplished by the realignment of Del Sol Boulevard to the south into the South Palm Precise Plan area. However, the impacts to sensitive habitats within the VTM would remain significant and not fully mitigated.

Complete mitigation for these impacts along with the loss of other sensitive species and communities from the project site could only be accomplished by redesign of the project to significantly expand the areas reserved for natural open space. Alternatives to the proposed project are discussed below.

E. Cultural Resources

1) Impact

a) California Terraces Precise Plan

Implementation of the California Terraces Precise Plan and off-site improvements would completely or partially affect 16 of the 19 archaeology sites located within the boundary or off-site improvement areas. The three sites which would not be impacted by the precise plan, SDI-8640, SDI-10,205, and SDI-10,208, would be placed in open space. These sites were tested and found not to be significant.

The precise plan would impact three sites which were determined to be significant. Mitigation for the three sites—SDI-6941, Locus D; SDI-7604, Locus E; and SDI-10,200—is ongoing. Completion of this data recovery and analysis report would mitigate the impact.

SDI-10,201 and SDI-10,198 are located off-site and would not be impacted by implementation of the precise plan. There are no materials present on the surface which would attract attention to these sites, and the only important change would be a potential increase in pedestrian traffic across the sites.

b) California Terraces VTM

Implementation of the California Terraces VTM and off-site improvements would completely or partially adversely affect 14 of the 19 sites located within the boundary or off-site improvement areas. Three sites which would not be impacted by the VTM—SDI-8640, SDI-10,205, and SDI-10,208—would be placed in open space consistent with the precise plan. These sites were tested and found not to be significant.

As stated above, mitigation of the remaining three sites is ongoing. A final mitigation report, which is described below, is being prepared.

SDI-10,201 and SDI-10,198 are located off-site and would not be impacted by the VTM. There are no materials present on the surface which would attract attention to these sites and the only important change would be a potential increase in pedestrian traffic across the sites.

c) South Palm VTM

Implementation of the South Palm Vista VTM would directly impact SDI-10,210 by the placement of houses. This site was tested and determined not to be significant.

2) Mitigation

A data recovery program is being conducted which, through recovery of archaeological materials, would mitigate impacts to the cultural resources. The following mitigation measures would reduce potentially significant impacts from the California Terraces Precise Plan and VTM to below a level of significance.

a. Completion of the data recovery program at SDI-6941, Locus D and artifact analysis and special studies, including radiocarbon dating and faunal analysis.

b. Completion of the detailed analysis of the lithic material recovered from SDI-7604, Locus E and SDI-10,200.

c. Preparation of a report documenting the results of the data recovery program.

d. Monitoring of all grading activities at the sites.

F. Noise

1) Impact

Portions of residential areas and school and park uses proposed immediately adjacent to Palm Avenue, "A" Street, Del Sol Boulevard, Otay Mesa Road, and SR-905 would be exposed to noise levels in excess of the City's 65 Community Noise Equivalent Level (CNEL) standard for exterior residential area, unless appropriate noise abatement is implemented. The South Palm Vista VTM area would not be impacted by noise.

In areas within the precise plan where residences are directly adjacent to SR-905, Palm Avenue, Otay Mesa Road, and Del Sol Boulevard, these buildings could experience interior noise levels greater than 45 CNEL. Typical construction techniques generally provide 15 A-weighted decibels of exterior to interior attenuation.

Future noise levels could also exceed standards in some of the commercial lots, depending on the specific commercial use proposed. Lots at Planning Areas 20, 21, and 22 would only be impacted if office and professional uses are ultimately built. Retail commercial uses would not be impacted. Planning Area 23 adjacent to SR-905 would be exposed to future noise levels in excess of 75 CNEL, and any type of commercial use in those areas would be impacted by noise above the City standards. Planning Area 27 would not be exposed to noise levels in excess of the City's commercial standards.

Projected noise from Brown Field and Rodriguez Field (Tijuana Airport) were determined not to have a significant impact on the proposed project. The City of San Diego is also considering the Otay Mesa area as a potential site for another major airport (known as TwinPort) to supplement operations at Lindbergh Field. If an angled runway configuration for TwinPort is ultimately approved, the residential area proposed for California Terraces may be incompatible with the noise levels generated by the new airport and additional acoustical studies would be necessary to determine the airport's noise impacts to the project site. A parallel runway configuration would not impact future residential use within the California Terraces Precise Plan.

If the City Council eliminates Otay Mesa as a potential site for a new airport, Brown Field and Rodriguez Field would operate as discussed above and there would be no aircraft-related noise impacts to the proposed project.

2) Mitigation

a) California Terraces Precise Plan

The locations of noise barriers and/or setbacks needed to achieve City noise level standards at the ground-floor level are shown in Figure 36 of the EIR and described in Table 13 of the EIR. Construction of the noise barriers shall be a condition of the future tentative maps which include those areas.

The recommended noise barriers would be effective for ground-floor receptors only. Second-story noise levels for residential buildings directly adjacent to Del Sol Boulevard, SR-905, Palm Avenue, and Otay Mesa Road would not be reduced by noise barriers. Because specific building designs have not been developed at this planning level, the applicant shall demonstrate to the satisfaction of the City's Building Inspection Department that all multi-story single- and multi-family buildings adjacent to major roadways on the tentative map have been designed to achieve an interior standard of 45 CNEL. This review will be accomplished through the PRD and CPIOZ process.

b) California Terraces VTM

Since the California Terraces VTM area includes areas shown on Figure 36 of the EIR as requiring noise mitigation, provision of the noise barriers recommended for the California Terraces Precise Plan area shall be a condition of the VTM.

It shall be a condition of the VTM that all multi-story residential buildings adjacent to SR-905, Palm Avenue, Otay Mesa Road, and Del Sol Boulevard shall achieve interior noise levels of 45 CNEL or less to meet the applicable City and State standards.

c) South Palm Vista VTM

Noise mitigation is not required for this VTM area.

G. Traffic Circulation

1) Impact

Because the project area is undeveloped, a new street system must be constructed within the project area to carry the project-generated traffic and traffic from surrounding development. This system would connect with existing major roadways such as I-805, SR-905, Otay Valley Road, and Otay Mesa Road.

The California Terraces Precise Plan proposes primarily residential, educational, recreational, and neighborhood commercial uses. These land uses would be developed in four phases and would generate a total of 50,856 average daily traffic (ADT). The precise plan roadway system would be similar to the street system designated in the community plan. However, the project does propose some modifications to the roadway alignments. In the community plan circulation system, Caliente Boulevard would extend north across SR-905 and Otay Mesa Road to connect with Otay Valley Road. Del Sol Boulevard would connect Palm Avenue and I-805. In the project's proposed circulation system, the segment of roadway labeled Palm Avenue, which crosses Dennery Canyon in the community plan, would be deleted entirely and the segment shown as Caliente Boulevard would be constructed as Palm Avenue. "A" Street would connect this new Palm Avenue with Otay Mesa Road. A segment of Del Sol Boulevard would also be constructed so that it could ultimately connect this roadway with the existing undercrossing of I-805. The need to construct the remaining portion of the segment (from the westerly boundary of the junior high school to the existing terminus of Del Sol Boulevard) would be determined during environmental review of proposed developments on the surrounding properties.

Because California Terraces would be developed in four phases, the build-out traffic volumes would occur in stages. Therefore, the ultimate traffic improvements can also be phased to accommodate the incremental construction of the project.

Cumulative traffic generated by development of Otay Mesa could impact on- and off-ramps at I-805 and SR-905. However, development of public transportation could help reduce vehicle trips generated in the area. A trolley line has been planned by the Metropolitan Transit Development Board (MTDB) to run from the Iris Street station east along the SR-905 alignment to a point one mile east of I-805, continuing along the Otay Mesa Road alignment to future SR-125. A station has been planned on Caliente Boulevard which would be adjacent to the south project boundary. This line is planned for development within the next 20 years. The community plan calls for a public transportation system consisting of four subsystems: regional express, subregional, intracommunity, and local. Intracommunity routes near the project site are proposed for Palm Avenue, Otay Valley Road, Otay Mesa Road, and Del Sol Boulevard. Currently, there is no bus service in the project area. The transit agency determined to be responsible for the area would determine the timing of development and the number and locations of routes in the project area. Other public transit facilities such as ramp signalization on I-805, high occupancy vehicle lanes on I-805 or SR-905, and park-and-ride lots would be the responsibility of the California Department of Transportation (Caltrans) to study and develop if determined necessary.

The California Terraces Precise Plan bikeway system would provide internal bicycle circulation, while linking the planning area to the community bike network and community activity centers such as parks, schools, the future town center, and institutional complexes. The bikeway system would involve the provision of marked bicycle lanes within the roadbeds of arterials, major streets, and access-controlled collector roads consistent with the bikeway system shown in the community plan.

The precise plan proposes pedestrian pathways to link the various residential projects with the community or neighborhood facilities. The pedestrian path system would include sidewalks within the parkways of arterial, major, and four-lane collectors (Palm Avenue, "A" Street, Del Sol Boulevard, and Otay Mesa Road), which are constructed in accordance with the streetscape design described in Chapter 4 of the precise plan. Standard sidewalks would be built along all local and collector residential streets and pathways would be constructed within attached housing projects.

2) Mitigation

Traffic impacts resulting from the build-out of the precise plan and the adjacent community can be mitigated to a level below significance by adoption of the precise plan street system in subsequent tentative maps. All roadway improvements shall meet the

City's street design standards. These improvements can be constructed in accordance with the phasing described in this EIR.

Reducing the vehicle miles traveled by residents and users of the project site would help relieve cumulative impacts to the region's circulation system. Vehicle trips could be reduced by providing access to public transportation. The applicant shall cooperate with San Diego Transit to develop needed bus routes through the project site. If requested by MTDB, the applicant shall cooperate with that agency to plan and dedicate right-of-way along the SR-905/Otay Mesa Road planned route.

H. Air Quality

1) Impact

Implementation of the proposed project would result in long-term emissions of criteria pollutants due to increases in traffic in the area. Additional impacts could also occur if traffic generated within the project area were to result in inadequate traffic flow.

The traffic report prepared for this project concluded that with implementation of the mitigation measures recommended in the traffic report, all roadways used by the precise plan traffic would operate at acceptable levels of service. Therefore, air quality impacts due to inadequate traffic flow would not occur.

For long-term emissions, the precise plan area contributions to the control of regional air quality may be measured by the degree to which the project is consistent with regional plans to improve and maintain air quality. The regional plan for San Diego is the San Diego Regional Air Quality Standards (RAQS). The project does require a community plan amendment to generally decrease the intensity of use. This decrease in units along with the creation of residential units in close proximity to jobs in Otay Mesa would allow the RAQS to be implemented.

Implementation of the proposed project could cause significant direct impacts to regional air quality due to increases in pollutant emissions caused by project traffic. However, the precise plan has incorporated measures which would allow it to conform to the RAQS, including the provision of bike lanes and pedestrian trails to reduce vehicle miles traveled.

2) Mitigation

a) California Terraces Precise Plan

The provision of alternative transportation routes shall be a condition of subsequent tentative maps.

b) California Terraces and South Palm Vista VTMs

The alternative transportation routes shall be constructed prior to issuance of building permits. This shall be a condition of the VTM.

I. Public Services and Utilities

1) Impact

a) California Terraces Precise Plan

The precise plan proposes four school facilities, three elementary schools (serving grades K-6), and a junior high school (serving grades 7-8). The San Ysidro Elementary School District has, by letter dated March 18, 1987, determined that the allocation of one junior high school and three elementary schools is adequate for the proposed dwelling units. However, prior to the development of these on-site schools, students would attend the San Ysidro Middle School and cause it to operate over capacity. This would constitute an adverse impact until development of the on-site schools are completed. It is not clear at this time whether high school students from the proposed project would attend Montgomery or Southwest high schools or a future planned high school. Adding students to the presently overcrowded high schools prior to the provision of an additional high school would constitute a significant impact.

California Terraces Precise Plan proposes three park sites within the project boundaries, which would adequately serve the project area. All park sites would be developed with recreational facilities, and the parks would be designated, dedicated, and developed in accordance with the community plan. In addition, all park sites would be integrated with school facilities as recommended in the community plan.

Development of the precise plan area would occur in four phases. The California Terraces VTM implements this same phasing program. In general, public facilities would be provided as needed under the Public Facilities Financing Program. Development of the public facilities would be based on the recommended standards of the general plan for schools and parks.

Streets, utilities, and drainage facilities would be constructed along with residential development to ensure sufficient capacity to meet residents' requirements.

The initial phases of the precise plan development (or the first development to occur in this area) would require upgrading the existing water pump station for capacity and pressure. The later phases would require development of a second pump station. In addition to these two stations, an emergency water connection to the Otay Water District is proposed. With the two stations and the emergency tie, an adequate and reliable water supply would be available for the project site. On-site transmission mains would be sized in accordance with the overall ultimate system plan.

The project site, as well as the 40 acres designated for the future town center, would be served by a new off-site trunk sewer. The trunk sewer would connect with the existing Otay International Center trunk sewer in Otay Valley. The portion of the plan area which lies south of SR-905 would eventually be sewered southwesterly into the City's gravity system at Beyer Boulevard and I-805. An off-site extension of this sewer would be needed within Otay Mesa Road, northeasterly of its present terminus. In the interim, the single-family residences proposed south of SR-905 would be served by a temporary pump station or gravity sewer. The temporary system would discharge effluent to the gravity sewer system north of SR-905, and would be adequate for the proposed project.

b) California Terraces and South Palm Vista VTMs

As described in the project description, the California Terraces VTM includes two elementary school sites and a major portion of another elementary school and a junior high school.

The California Terraces VTM would map the three park sites of the precise plan. These would be in the same locations as identified in the precise plan and would be 5.0 and 5.6 acres for the neighborhood parks and 13.0 acres for the community park, as recommended in the General Plan.

2) Mitigation

a) California Terraces Precise Plan

The City of San Diego Planning Department shall ensure that it is a condition of approval of future tentative maps within the precise plan boundary that the developer be required to demonstrate that agreements have been made with the affected school districts prior to recording the final map to ensure that funding is available. Funding could be derived from a Mello-Roos Community Facilities District. Implementation of those applicable portions of the Public Facilities Financing Program shall be a condition of subsequent tentative maps.

b) California Terraces and South Palm Vista VTMs

The City of San Diego Planning Department shall ensure that it is a condition of these tentative maps that the developer be required to demonstrate that agreements have been made with the affected school districts prior to recording the final map to ensure that funding is available. Funding could be derived from a Mello-Roos Community Facilities District.

J. Safety

1) Impact

a) Proximity to Brown Field

The Flight Activity Zone (FAZ) for Brown Field does not enter into the precise plan boundary. The project site therefore does not require any FAZ-related restrictions on development. Since no noise or safety constraints to residential development west of Dennery Canyon have been identified, development of the project site would not expose people or property to safety hazards associated with Brown Field or Rodriguez Field.

b) Proximity to Natural Open Space

In complying with the brush management program, the risk of fire hazard would be reduced. Implementation of this brush management plan would effectively reduce the risk of fire for the developed areas adjacent to natural vegetation areas.

2) Mitigation

No mitigation, other than implementation of the brush management program as described in the Mitigation, Monitoring, and Reporting Program, is required.

K. Paleontology

1) Impact

The limitations of field surveys prevent a precise determination of the potential for significant fossil finds in the project area prior to grading. In general, however, there is a potential for such finds in the San Diego and Miocene/Oligocene Otay formations on-site. The reliable detection of fossils requires the presence of a paleontologist when grading occurs.

2) Mitigation

A program for the recovery of paleontological resources during grading and earthwork shall be implemented. A qualified paleontologist and/or paleontological monitor shall be retained to implement the monitoring program. The paleontologist's duties shall include monitoring, salvaging, preparing materials for deposit at a scientific institution that houses paleontological collections, and preparing a results report.

L. Cumulative Impacts

1) Land Use

In Chapter 4.A., Land Use, the proposed project's land uses are analyzed together with the land uses proposed or approved for surrounding properties and found to be compatible. However, the precise plan, along with other projects in the surrounding area, would not meet the environmental goals of the Otay Mesa Community Plan or the Hillside Review guidelines for landform alteration. This is considered a significant cumulative impact.

2) Biology

Development of the project, along with other approved and proposed projects in the Otay Mesa area, would cause a significant cumulative impact to the sensitive habitats and plant and animal species which exist in the area. These include Diegan coastal sage scrub, southern maritime chaparral, and vernal pool habitats; coastal California gnatcatcher and San Diego horned lizard; and the sensitive plant species San Diego button celery, coast barrel cactus, San Diego sunflower, small-leaved rose, cliff spurge, San Diego bur-sage, and ashy spikemoss. Cumulative impacts to biological resources would be reduced by the project's consistency with the regional open space system (Draft Open Space Agreement), creation of the vernal pool preservation and enhancement plan, and on-site revegetation.

3) Traffic Circulation

The ultimate development proposed by the California Terraces Precise Plan would significantly contribute to the increase in traffic volumes on the roadways within the Otay Mesa area. However, the transportation impacts which would result from the build-out of California Terraces and the adjacent community would be accommodated by the street system recommended by Urban Systems. This revised system was derived from the SANDAG-Otay Mesa/City travel forecast prepared by SANDAG and City staff.

In addition, bikeways and pedestrian pathways are proposed to partially reduce vehicle trips within the project site. The Metropolitan Transit Development Board has also planned a trolley line to be constructed within the next 20 years from the Iris Street station to SR-125 which would pass east/west through the project along the SR-905 and Otay Mesa Road alignments.

4) Air Quality

Considered with other new development in the San Diego air basin, this project would contribute to nonattainment of clean air standards and cumulative impacts to air quality would be considered significant. Mitigation for cumulative air quality impacts is beyond the scope of this project.

5) Landform Alteration/Visual Quality

Grading and development of the proposed project site would significantly alter the existing landform. This project along with other projects proposed in the area would have a significant cumulative impact on landforms and visual quality in the region because of the widespread changes from undeveloped open space to urban and suburban environments which would occur if all proposed projects in the areas were built out.

6) Water Quality

The potential for significant cumulative water quality and erosion impacts from the development of western Otay Mesa would be reduced by implementing grading and erosion control techniques consistent with City requirements and the use of sedimentation basins where feasible. Cumulative water quality impacts would be mitigated by the implementation of these measures.

7) Schools

Because the school fees may be insufficient to provide permanent school facilities for students generated from residential developments, and because there is inadequate high school space for additional students in the Sweetwater Union High School District, this project is expected to add a significant cumulative impact to schools and educational services to students. This cumulative impact could be mitigated by some form of agreement between the developer and the school districts.

Alternatives

A. Alternatives Considered but Rejected

The California Terraces Precise Plan has been in-process in the City of San Diego since 1983. The precise plan was originally initiated by the City's Planning Commission in 1983 and the first formal submittal was made to the Planning Department in 1985. Since this time, the precise plan has undergone five revisions and formal resubmittals. The following discussion describes the previous alternative versions of the precise plan which have been considered by the applicant and the City of San Diego.

The second submittal, made in September 1985, eliminated or substantially reduced many of the large cut and fill slopes proposed under the original submittal. This modification reduced grading and visual impacts. In addition, the second submittal added a second neighborhood park and a portion of a third elementary school.

Under the third submittal, made in May 1987, 718 single-family lots proposed east of Dennery Canyon were deleted to accommodate the Brown Field Master Plan and eliminate land use conflicts. Because of this modification, the total project area was reduced from 777 acres to 647 acres. In addition, Palm Avenue was realigned along the new eastern boundary of the site, extended off-site to the northwest, and then extended along the northern boundary of the site to link to I-805.

Under the fourth submittal, in November 1987, a nine-acre vernal pool preserve was created east of Dennery Canyon to mitigate on-site impacts to vernal pools. Commercial areas along Otay Mesa Road were reconfigured to avoid the "strip commercial" concept. Planned Residential Development requirements and Planned Commercial Development requirements were also added.

The fifth submittal was made in March 1990. The alignment of Palm Avenue described under the third submittal was completely eliminated. This was done in response to financing and environmental concerns associated with the alignment of Palm Avenue proposed in the third submittal. The segment of Caliente Boulevard proposed to be constructed for future extension across Dennery Canyon was eliminated, along with its associated 90-foot-high fill slope. Land uses in the southeast portion of the site were replanned to preserve an entire finger of Dennery Canyon for open space. Also in this area, a two-acre vernal pool preserve was created adjacent to the neighborhood park.

Finally, the sixth submittal was made in April 1991. This is the proposed project. The modifications were made in cooperation with the Planning and Engineering Departments in a series of workshops. The project is consistent with the Draft Agreement of Open Space and Planning Issues which resulted from the workshops in November 1990.

B. No Project

The No Project alternative typically implies no use of the project site. This approach would result in the retention of the property, at least temporarily, in its present undeveloped condition. However, the biological impacts associated with the off-road-vehicle use of the site would continue to occur. The potential for impacts relating to biological resources, landform alteration, visual quality, archaeological resources, and public facilities would be eliminated. The underlying zone is agricultural, but no agricultural uses would be allowed without the approval of a permit through the City. Application of this use would create similar impacts as the proposed project. The permanent retention of the site as open space would not implement the goals and objective of the community plan and would require reevaluation of the community plan.

C. Reduced Grading Alternative

The project redesign alternative to reduce landform alteration impacts to below a level of significance would avoid the Hillside Review Overlay Zone and reduce all the manufactured slope heights to less than 60 feet. The amount of developable land would be altered and the number of residential units would be reduced by approximately 56 percent. Accordingly, the amount of open space would be increased by approximately 130 acres and extent of manufactured slopes would be reduced. The commercial, park, and school acreage would also be reduced. However, the school and park sites would need to be redesigned to meet the applicable minimum standards.

Since reduced grading would avoid the steep slopes and retain more of the natural landform, this alternative would result in reduced visual impact. Successful revegetation of the fill slopes would reduce the visual contrast, and would eventually reduce the visual impact to below a level of significance. Impacts to biological resources, while reduced due to the increase in natural open space, would remain significant and unmitigated due to the loss of sensitive habitats. All remaining issues would be similar to the proposed project and would be mitigated by the same means. Cumulative air quality impacts would remain significant and unmitigated.

D. Increased Open Space

This alternative would reduce the identified biological impacts as well as the amount of grading into steep slopes. This alternative is considered the environmentally preferable alternative. The redesign would include the reconstruction of SR-905 to place a bridge over a previously filled canyon to link open space north and south of the freeway. This alternative would reduce the developable acreage by approximately 115 acres and reduce the number of dwelling units by approximately 1,885 (a 35 percent reduction). The modifications to the developable acreage would substantially reduce biology impacts to sensitive plant species and vegetation communities. Landform alteration impacts would also be substantially lessened under the redesign, but not to a level below significance.

The reduced biology impact alternative would also permit the in situ preservation of the small-leaved rose population, a state-listed endangered species. In order to preserve the rose, Palm Avenue would have to be realigned.

E. Alternative Grading/Product Type

Possible reductions to the landform alteration and visual quality impacts could be achieved by proposing a different housing product type which accommodates smaller graded pads and/or stepped grading. The layout of the proposed development could be redesigned to reduce the amount of slope grading. This could be accomplished without a loss in the number of units by increasing the densities at these locations.

The distribution of residential unit types could be changed so that single-family detached, duplexes, and multi-family units are intermixed more to allow for sensitive grading and to reduce impacts to visually sensitive areas. The units could be designed to retain some of the existing topographical features on-site. This alternative would also conform with the Otay Mesa Community Plan goal for developing a distinctive and sensitive project while creating a balance of housing types and while applying the Hillside Review Guidelines.

For a distinctive, sensitive development to occur buildings must be designed which terrace from one to two stories from front to back in order to more closely follow existing grade. This could be done without significantly reducing usable pad area, number of building units, or building square footage. In addition, this type of design would meet the goals and intent of the Land Use Element of the Otay Mesa Community Plan. However, residential houses and multi-family buildings would have to be designed in a less conventional, more custom-design fashion to accommodate such grading approaches, resulting in significant increases to building costs.

It should, however, be noted that the natural landforms associated with the California Terraces site are not the most conducive for utilizing the "stepped building" concepts described above. These concepts work most effectively at reducing landform alteration where the natural slope gradients are in the 10-25 percent range. By contrast the demarcation between the existing nearly flat land on the mesa tops and the steep canyon (slopes greater than 50 percent) is distinct and well defined on the project site. Since the majority of the proposed development has been situated for the flatter mesa top areas, the potential for significant reductions in landform alteration impact benefits which could accrue from this alternative is limited.

In summary, the proposed grading for the development, including all of the proposed land uses, could be redesigned through the use of layout and custom-type architectural methods to utilize steeper and more sensitive grading approaches which would retain more of the existing landform, protect additional visual and biological resources, and meet the goals of the Otay Mesa Community Plan without a loss of units. While partially reducing the landform alteration impacts associated with the project, impacts would still remain and housing costs would be increased.

F. Conversion of School Sites to Other Land Uses

Three elementary schools and a junior high school are currently proposed as part of the project. It is the responsibility of the school district to select the sites and reserve them under the Subdivision Map Act (Section 66480).

Under this alternative, the effects of the school district declining the need for one or more sites on the California Terraces property are analyzed. Specifically, two situations are considered, (1) the school district declines the use of all three elementary school sites and (2) the school district declines the use of the junior high school site.

Under the Subdivision Map Act, if the school district does not wish to utilize a proposed school site, then the site may be developed consistent with the adjacent land uses designated by the community plan dependent upon. The alternative land uses proposed if the elementary school sites or the junior high school site are not used by the school district are residential uses consistent with the density of the surrounding residential areas.

If the elementary school sites are redesignated, both neighborhood parks would increase to 10 acres and 257 residential units would be added to the project. The community park would remain at 13 acres. Traffic generated would increase by 916 ADT.

If the junior high school site is redesignated, the community park would increase to 20 acres and 82 residential units would be added to the project. There would be a 272 ADT increase in traffic generation.

Based on the projected dwelling units, neither conversion situation would significantly increase traffic on the surrounding roadways, nor would either situation increase noise levels. The amount of grading would be similar to the proposed project and biological impacts would remain the same.

Cumulative air quality impacts would be slightly greater under these alternative situations because of the incremental increase in traffic, but the conclusion reached under the proposed project that cumulative impacts are significant would not change. Because the San Diego Air Basin has not attained air quality standards for ozone and particulates, any increase in emissions would contribute to continuing nonattainment of the standards. It is the responsibility of the San Diego Air Pollution Control District to implement and enforce programs and regulations to achieve air quality standards across the basin.

The demand for public services would also be slightly greater due to the small increase in the number of residential units on the project site. However, because the increase in numbers of residential units is small under either school site conversion scenario, major design changes to streets, utilities, drainage, water, and sewer facilities would not be required. The existing water pump station would still require upgrading as under the proposed project, and a second water pump station would still need to be constructed for later phases of development. New sewer mains required under the proposed project would still be required with the redesignation of the school sites.

G. Alternative School Sites

The precise plan proposes four school facilities, three elementary schools (serving grades K-6) and a junior high school (serving grades 7-8). A 10.8-acre elementary school site would be provided in the northern portion of the project site, near Palm Avenue, and another 10-acre elementary school site would be provided to the east of the future town center. A 12-acre elementary school is also planned along the western portion of the project boundary, to the north of SR-905. This school site would be located adjacent to a junior high school site. The precise plan would provide a 20-acre junior high school site in the west-central portion of the project area, to the south of Del Sol Boulevard.

A majority of the precise plan falls within a two-mile radius of Brown Field runways. Education Code 39005, 39006, 39007, and 81036 and Government Code 15854.5 establish a requirement of the State of California to investigate and make recommendations on the acquisition of property for a new school site or for an addition to a present school site located within two miles of an airport/heliport runway. Such an investigation has not been done for the California Terraces property.

In response to this state code requirement, and also the San Ysidro School District's review of the site, two project designs which relocate the school sites are included as project alternatives.

The first alternative represents an alternate site design which would locate all schools outside the two-mile Brown Field radius line. This alternative would result in approximately 300 fewer dwelling units than is currently proposed. Since this alternative would require aligning all the schools along the western border of the site, the elementary school sites would not provide easy access for students from the eastern portions of the precise plan area. Other impacts (e.g., landform alteration and visual quality and biology) would remain similar to the proposed project.

The second school site alternative is recommended by the San Ysidro School District. It provides for an additional school within the precise plan area, but all schools would be located within the two-mile radius from the Brown Field runways. Under this alternative, four elementary school sites and one junior high school site would be built. This proposal could be achieved pending approval of a community plan amendment to relocate the school sites. As with the above alternative, other impacts (e.g., landform alteration and visual quality and biology) would remain similar to the proposed project's.

ENVIRONMENTAL IMPACT REPORT FOR THE CALIFORNIA TERRACES PRECISE PLAN

DEP Nos. 86-1032 and 90-0574

DECEMBER 4, 1992

This document printed on recycled paper.

TABLE OF CONTENTS

FIGURES

FIGURES (cont.)

TABLES

PHOTOGRAPHS

APPENDIXES

Chapter One

Introduction

This draft environmental impact report (EIR) has been prepared according to the requirements of the City of San Diego and the California Environmental Quality Act (CEQA) of 1970, as amended. It is an informational document intended for both the decision maker and the public and, as such, represents relevant information concerning the proposed California Terraces Precise Plan, California Terraces Vesting Tentative Map (VTM), South Palm Vista Vesting Tentative Map, and associated discretionary actions. This EIR addresses the impacts associated with these actions in the level of detail necessary for all of the related discretionary actions. Discretionary actions necessary for the development and covered by this EIR include a precise plan, two vesting tentative maps (California Terraces and South Palm Vista), a master rezone, a Resource Protection Ordinance (RPO) permit (for the South Palm Vista VTM only), a Planned Residential Development (PRD) permit for South Palm Vista, a Hillside Review (HR) permit, and a community plan amendment. Discretionary approval of the proposed project is the responsibility of the City of San Diego.

The project involves a proposal for approximately 664.8 acres in the western portion of the Otay Mesa community planning area. The precise plan project consists of predominantly residential uses along with schools, parks, open space, and commercial centers. The two tentative maps implement those portions of the precise plan. Approximately 23 percent of the site would be retained as open space. The entire precise plan area is located within the Otay Mesa community planning area.

The City of San Diego Environmental Analysis Section (EAS) conducted an initial study and determined that the project could result in significant environmental impacts. Therefore, an environmental impact report is required. A scoping letter indicating those issues to be addressed in the EIR was prepared. The potentially significant issues identified during the initial study included land use, traffic circulation, air quality, geology and soils, biological resources, landform alteration/visual quality, cultural resources, noise, public services, safety, and cumulative effects. For each of these topics, a discussion is presented of the existing conditions followed by identification of specific issues, potential impacts, identification of the significance of the impacts, and mitigation measures for those issues which have been identified as significant. Mitigation monitoring and reporting requirements are provided within the mitigation section. Analyses of alternatives to the proposed project are presented in Chapter 6.

The requirements described in the state CEQA Guidelines (1986, 1992) were followed in the preparation of this EIR. A brief summary of the proposed action is provided in the Project Description section and consequences of the proposed action are discussed in detail in the Environmental Analysis sections of the document, as required in Section 15140 of the guidelines. In accordance with Section 15142, a description of the environmental setting is provided and the relationship of the proposed action to the surrounding land uses is also evaluated.

Assembly Bill 3180, as passed by the California legislature in the 1987-1988 session, added Section 21081.6 to the Public Resources Code. This bill requires a public agency "to adopt a reporting and monitoring program for the changes to the project which it has adopted in order to mitigate or avoid significant effects on the environment." The purpose of this program is to ensure compliance during project implementation. Such a monitoring program must be adopted by the public agency when the public agency makes the required findings. Mitigation monitoring is required for all projects requiring an EIR or a Negative Declaration approved after December 31, 1988. Mitigation monitoring programs should, at minimum, identify the following: the entity responsible for monitoring the program, what exactly is being monitored and how, what schedule is required to provide adequate monitoring, and what identifies the monitoring as complete.

Chapter Two

Environmental Setting

The California Terraces Precise Plan area is situated in the northwestern portion of the Otay Mesa community planning area in the City of San Diego (Figures 1 and 2). The approximately 665-acre precise plan area is located between Interstate 805 (I-805) and Heritage Road, with the western boundary approximately one-quarter mile east of I-805 and the eastern boundary approximately three-quarters mile west of Heritage Road. The approximately 543-acre California Terraces tentative map comprises most of the precise plan area, with the exception of isolated parcels throughout the planning area (see Figure 2). The approximately 27-acre South Palm Vista tentative map is located within the western portion of the precise plan area. The precise plan project site is currently zoned A-1-10, with approximately 36 percent of the area designated HR, and is designated for residential, open space, commercial, school, and park uses in the community plan. The area is bounded on the north by the Dennery Ranch Precise Plan area, on the northeast by the Hidden Trails Precise Plan area, on the southeast by the Santee Investments Precise Plan area, on the southwest by the El Mirador Precise Plan area, and on the west by the South Palm Precise Plan area. None of these surrounding areas have been developed.

Topographically, the precise plan area is a large, flat mesa top at an elevation of approximately 500 feet above mean sea level (MSL) dissected in the north, west, and south by steep canyons which are generally north and southwest trending. The mesa tops, primarily near the canyon rims, offer views to the Pacific Ocean, Tijuana and Otay valleys, San Ysidro, San Ysidro Mountains, and the hills of Tijuana, Mexico. The major on-site canyon is Dennery Canyon, which is north-northwest trending. Elevations on the property range from approximately 240 feet above MSL in the north to 530 feet above MSL near Otay Mesa Road. An aerial photograph of the precise plan project site is shown on Figure 3. A prominent ridge on the north extends northwesterly towards the Palm Avenue interchange with I-805.

Five plant communities are present within the precise plan area: Diegan coastal sage scrub (286 acres), maritime succulent scrub (65.7 acres), southern mixed chaparral (1.8 acres), nonnative grassland (227 acres), and San Diego mesa claypan vernal pools. All of these habitats are present on the California Terraces tentative map area and only Diegan

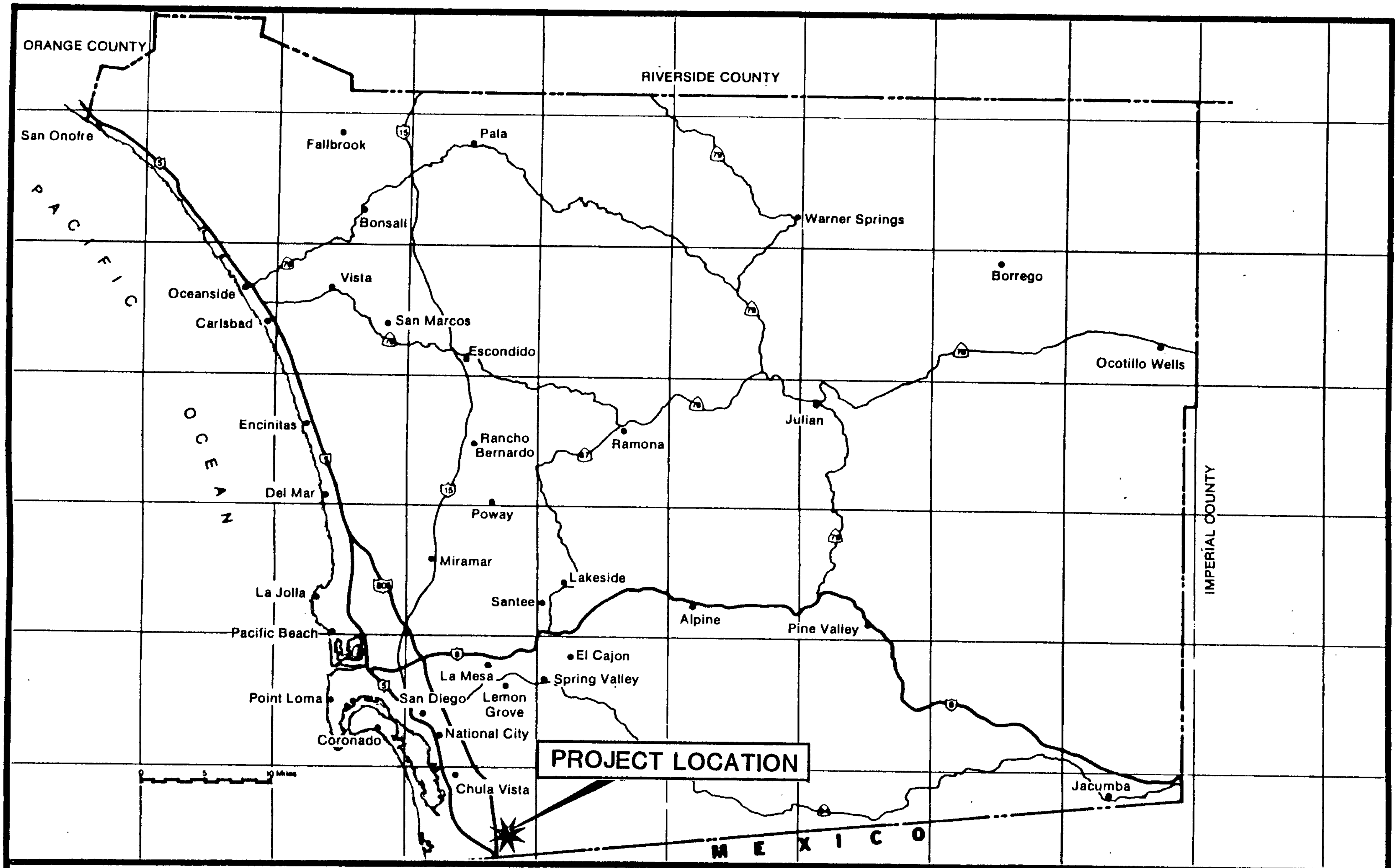


FIGURE 1. THE LOCATION OF THE PROPOSED PROJECT RELATIVE TO THE COUNTY OF SAN DIEGO.

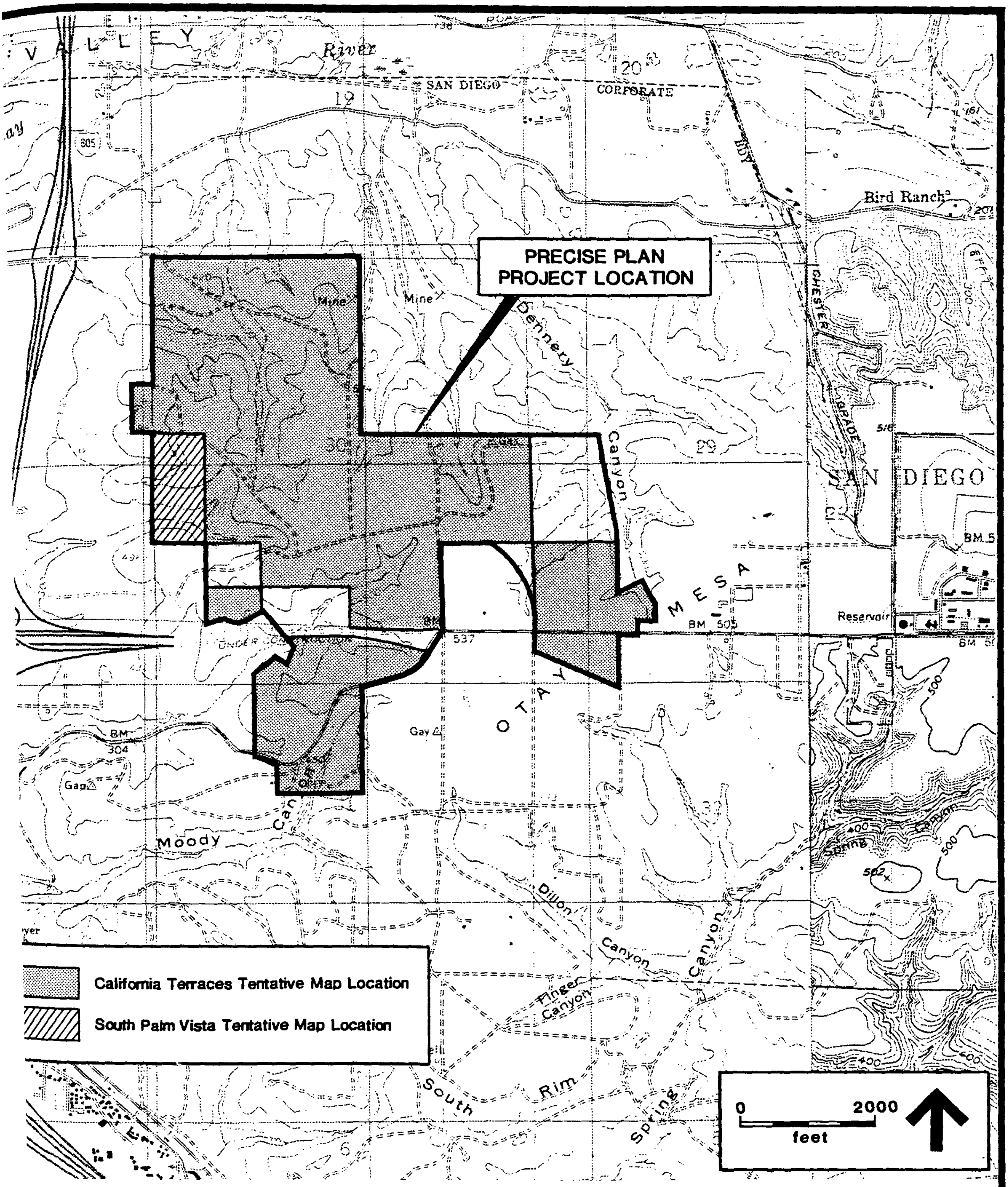


FIGURE 2. PROJECT LOCATION ON U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAPS, OTAY MESA AND IMPERIAL BEACH QUADRANGLES

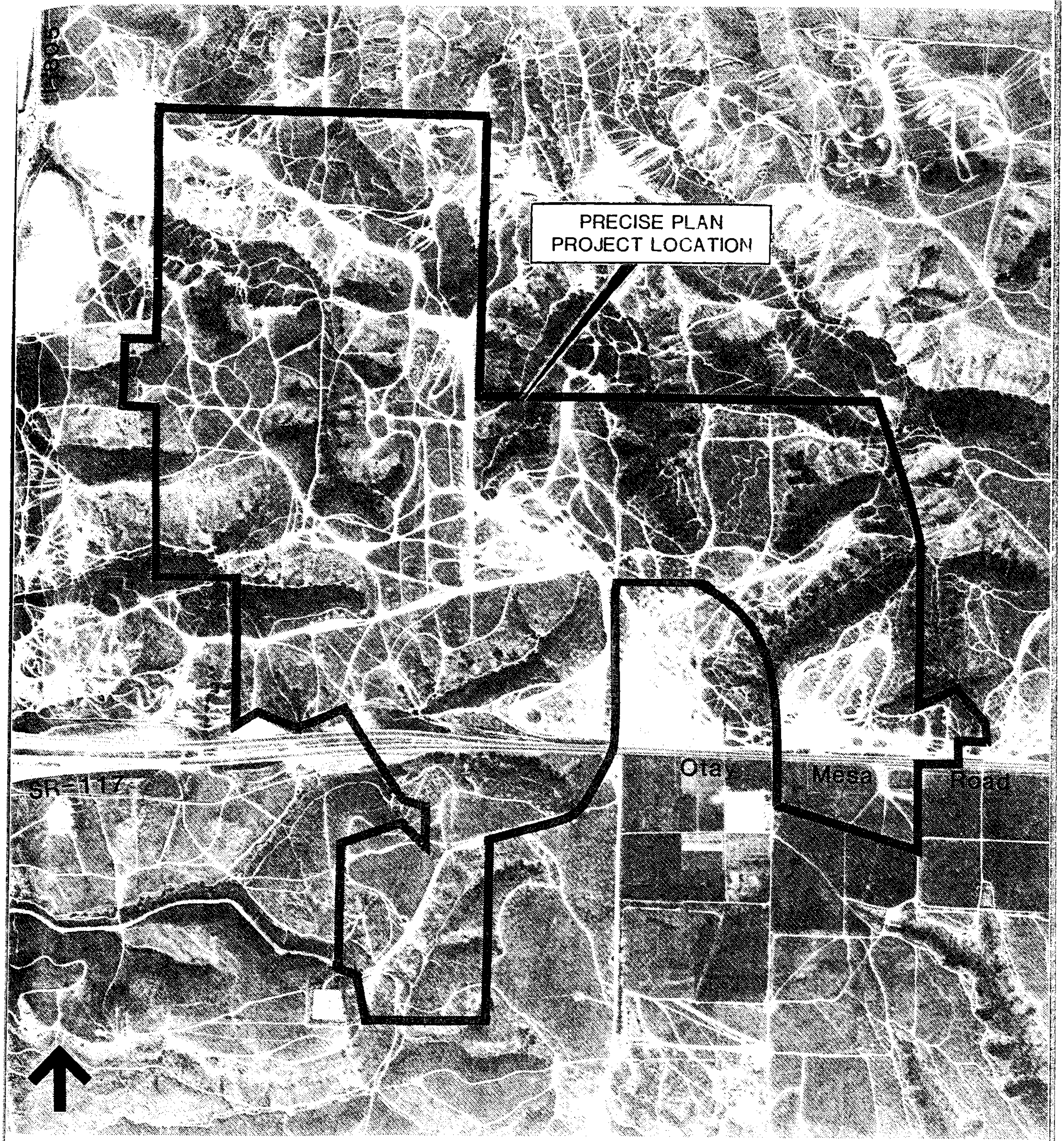


FIGURE 3. AERIAL PHOTOGRAPH OF CALIFORNIA TERRACES PRECISE PLAN

coastal sage scrub, maritime succulent scrub, and southern mixed chaparral are present on the South Palm Vista tentative map area. The mesa top supports a mixture of annual grasses and weeds on the previously grazed land. Trees on the site are an introduced species of eucalyptus. The prevalent vegetation form on canyon slopes and floors is coastal sage scrub and maritime succulent scrub species.

The San Diego claypan vernal pool community is considered sensitive by the Natural Diversity Data Base (NDDB) (Holland 1986). Diegan coastal sage scrub and maritime succulent scrub habitats which are also considered sensitive by the NDDB. Sensitive plant species that were observed within the precise plan area are San Diego button celery, coast barrel cactus, San Diego sunflower, San Diego bur-sage, cliff spurge, small-leaved rose, Otay tarplant, snake cholla, and ashy spikemoss. No wildlife species listed as rare and endangered by the state or federal governments were observed during surveys of the property. Two sensitive wildlife species observed on-site are candidates for federal listing, the California gnatcatcher and the San Diego horned lizard.

The precise plan area has numerous prehistoric archaeological sites, reflecting habitation in the area spanning thousands of years. Several significant sites were identified which encompass the three major prehistoric cultural traditions in the region, the San Dieguito, Milling Archaic, and Late Prehistoric.

Development currently exists to the west and northwest of I-805 in the San Ysidro community of San Diego and in Chula Vista. Scattered residences and Brown Field are present to the east within Otay Mesa. Brown Field is approximately 4,000 feet east of the project site. No development currently exists within the precise plan area. Numerous dirt roads and trails are present in many portions of the site. Unauthorized activity (e.g., off-road-vehicle use, trash dumping, and transitory residence) occurs on the property. San Diego Gas & Electric (SDG&E) transmission and distribution lines cross the precise plan area in north-south and east-west alignments.

Chapter Three
Project Description

A. California Terraces Precise Plan

1) Proposed Land Uses

The precise plan proposes primarily residential uses on the 664.8-acre site. Other proposed uses include four school sites, three parks, five commercial centers, and open space. Portions of several major circulation roads are included in the precise plan area, including Palm Avenue, Otay Mesa Road, Del Sol Boulevard, and State Route 905 (SR-905). The precise plan land use map showing the 26 planning areas is included as Figure 4, and Table 1 provides the acreage for each land use.

A total of 5,375 dwelling units (du) are proposed, in densities ranging from low (5-10 du/acre) to high-medium (30-43 du/acre) resulting in a density of 16.1 units per residential acre. The projected housing mix is summarized in Table 2. Four categories have been utilized: the first three correspond to density ranges of the Otay Mesa Community Plan; the fourth is a designator created to maximize dwelling unit count in the area surrounding the future town center, where maximum density is planned to allow pedestrian access to the commercial and multi-modal transportation uses. The categories are:

a. Low Density (from 5 up to 10 dwelling units per acre): primarily detached single-family units on small lots. This category comprises 20 percent of the residential units.

b. Low-Medium Density (from 10 up to 15 dwelling units per acre): attached units characterized by townhouse products; some flats. This density range totals 5 percent of the residential units.

c. Medium Density (from 15 up to 30 dwelling units per acre): a mix of attached housing designs with two- to three-story complexes providing apartments and

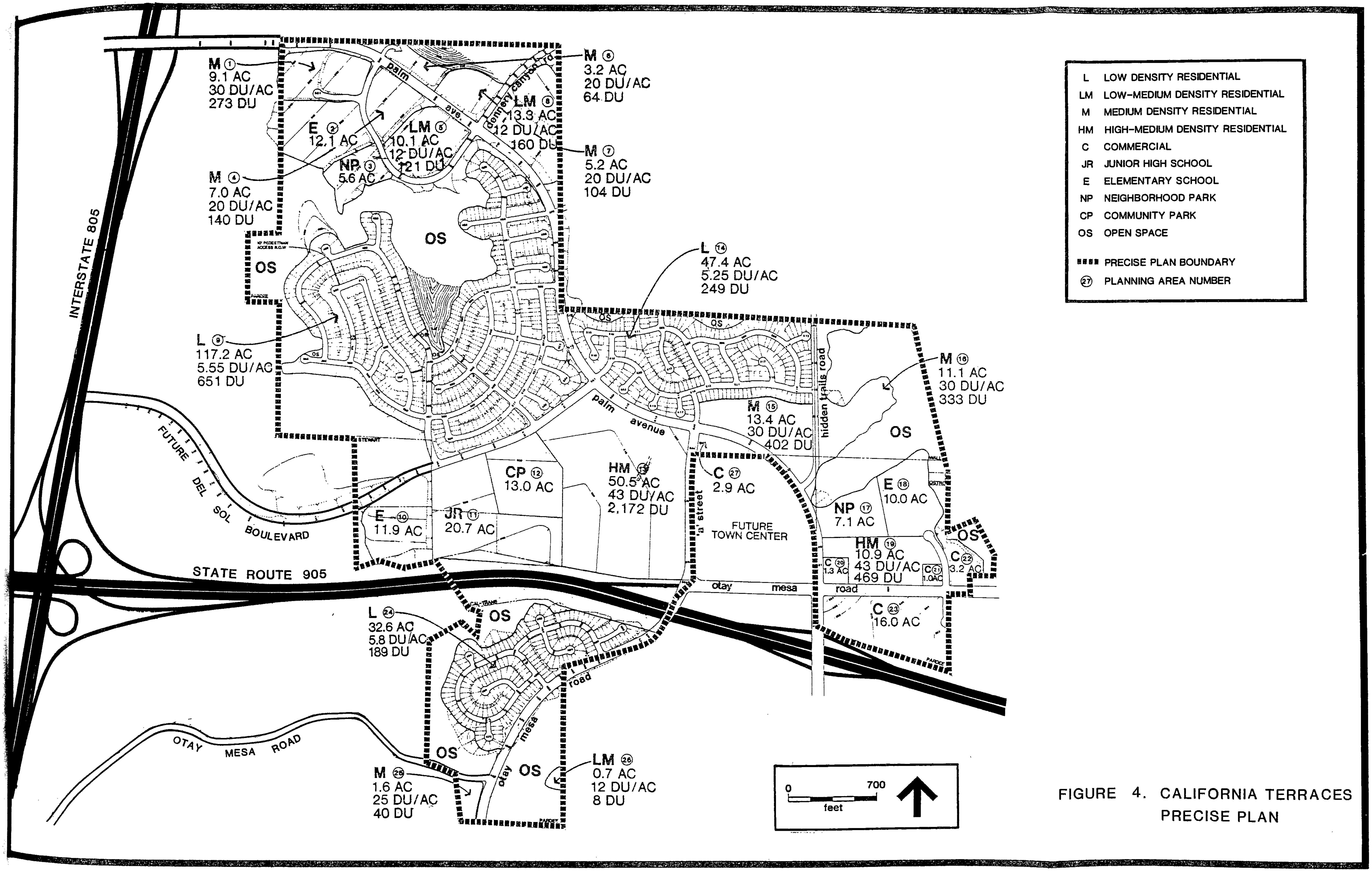


FIGURE 4. CALIFORNIA TERRACES PRECISE PLAN

TABLE 1
LAND USE TABULATION FOR THE CALIFORNIA TERRACES PRECISE PLAN

Land Use Designation	Gross Acreage	Dwelling Units
Residential		
Low Density	197.2	1,089
Low-Medium Density	24.1	289
Medium Density	50.6	1,356
High-Medium Density	61.4	2,641
Total Residential	333.3	5,375
Commercial	24.4	
Schools	54.7	
Parks	25.7	
Open Space	153.4	
Streets	47.7	
Freeway right-of-way	25.6	
TOTAL	664.8	5,375

TABLE 2
PROPOSED PRECISE PLAN HOUSING MIX

Housing Category	Density Range (du/ac)	Area (acres)	Number of Dwelling Units	Percent of Total Units	Persons Per Unit	Estimated Population Levels
Low	5-10	197.2	1,089	20	3.3	3,593
Low-Medium	10-15	24.1	289	5	2.7	780
Medium	15-30	50.6	1,356	25	2.2	2,983
High-Medium	30-43	61.4	2,641	50	1.9	4,998
TOTAL		333.3	5,375	100	2.5	12,354

condominium housing with compact living spaces. Approximately 25 percent of the residential units would be medium density.

d. High-Medium Density (from 30 up to 43 dwelling units per acre): a mix of attached housing of two to three stories with private apartments and condominiums over parking. This density range totals 50 percent of the residential units.

The proposed single-family areas (detached units) are primarily on the mesa tops, incorporating canyon and valley view opportunities. The attached units cluster around community services and are near freeway access points or along major circulation routes. The proposed highest density areas (attached units) are in two separate locations: adjacent to the future town center, near the elementary and junior high school sites, and south of Palm Avenue in the northern portion of the project site (see Figure 4).

A total of 24.4 gross acres of commercial uses are proposed for the precise plan. Five commercial centers are included in the California Terraces Precise Plan. Two of the sites are situated at the intersection of Otay Mesa Road and future Palm Avenue, adjacent to the off-site future town center. At the southeast corner of the intersection, a 16-acre site is planned to provide services such as a major supermarket, drugstore, or hardware store with accompanying smaller retail shops. Additional potential exists for offices, financial services, restaurants, and other services or retail establishments. Smaller, more specialized stores, such as delicatessen, gas station, convenience store, liquor store, and other small shops, are planned for a 1.3-acre site at the northeastern corner of the intersection. A one-acre site and a 3.2-acre site are located on Otay Mesa Road to the east of the other commercial sites. They will supply services similar to the 1.3-acre site. A 2.9-acre commercial site is planned southeast of the intersection of "A" Street and Palm Avenue, just north of the future town center site. The future town center proposed in the Otay Mesa Community Plan is not included within California Terraces and is to be considered in a separate precise plan.

2) Public Facilities

School sites would comprise 54.7 acres of the precise plan area. Four schools are proposed in the precise plan: three elementary schools and one junior high school. The proposed gross acreages for the elementary school sites are 12.1 acres, 11.9 acres, and 10.0 acres; the proposed gross acreage for the junior high school site is 20.7 acres. The General Plan provides guidelines and standards for school sites of 10.0 net usable acres for elementary schools and 30.0 net usable acres for junior high schools (p. 291). An elementary school and a junior high school would be situated adjacent to one another on the south side of Del Sol Boulevard. An elementary school would be located in the northern portion of the plan area and another elementary school would be located to the east of the town center.

The precise plan includes one community park and two neighborhood parks. The community park is located adjacent to the junior high school. This 13-acre site would serve the junior high school and elementary school to the west. Some sharing of recreational facilities with the school site is expected. The two neighborhood parks are located adjacent to the elementary schools in the northern and eastern portions of the plan area. The total area designated for park uses would be 25.7 acres. The General Plan goal for neighborhood parks is a minimum of five usable acres when located next to an elementary school and 10 acres when not. Community parks should have 13 usable acres if adjacent to a junior high school or 20 acres if not according to the General Plan (p. 313).

3) Open Space

The precise plan proposes 153.4 acres of open space. Approximately 132.5 acres (20 percent) of the precise plan area is proposed as natural open space, and 20.9 acres are proposed as revegetated manufactured slopes or brush management open space. The open space consists primarily of the canyon areas which dissect the mesa. Graded slopes at the canyon heads, slopes along traffic arteries and entries, community entry areas, neighborhood entries, and the common areas within residential (attached units) areas provide an additional 21 acres of graded, replanted open space. The size and configuration of the California Terraces Precise Plan open space system was designed to conform with the November 1990 "Draft Agreement of Open Space and Planning Issues" for a regional open space system between the City of San Diego and precise plan applicants in northwest Otay Mesa (Figure 5). The agreement was formulated in a series of design workshops conducted through March, 1991, which were coordinated by City staff and attended by landowners in the northwest Otay Mesa area.

4) Circulation

The precise plan area is currently served by two major freeways: I-805 and SR-905/Otay Mesa Road. I-805 presently exists as an eight-lane north-south freeway approximately one-eighth mile west of the project area. To the south, I-805 connects with the San Ysidro border crossing. SR-905 is an existing east/west four-lane freeway between Interstate 5 (I-5) and a point approximately three-quarters of a mile east of I-805. At this point, SR-905 transitions to the four-lane Otay Mesa Road. SR-905 is ultimately planned by California Department of Transportation (Caltrans) to extend eastward to connect with the Otay Mesa international border crossing. SR-905 is an east/west roadway connecting I-805 with Otay Mesa Road near the south-central portion of the project site. SR-905 is proposed as a future interstate freeway in the community plan. Palm Avenue is proposed

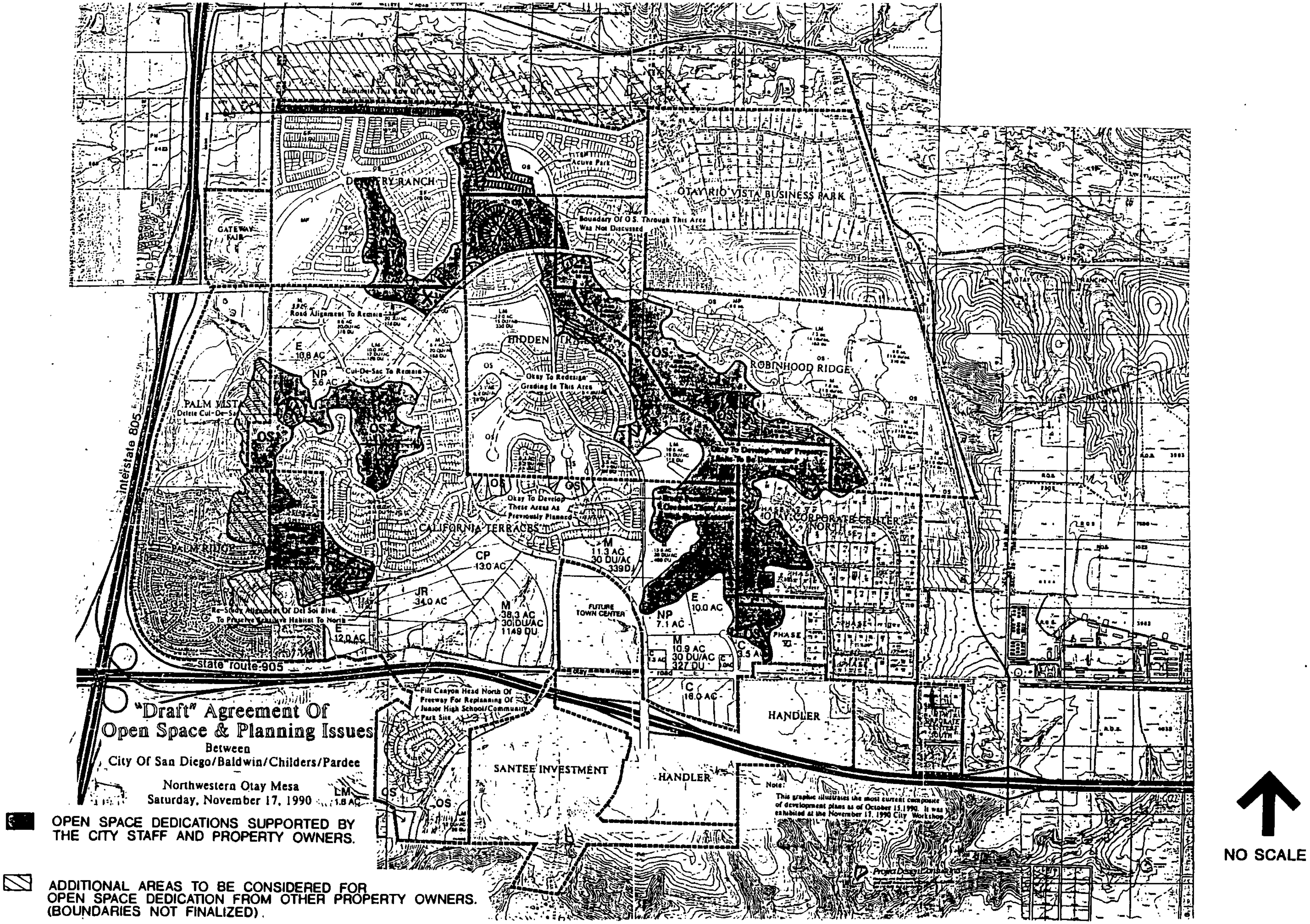


FIGURE 5. "DRAFT" AGREEMENT OF OPEN SPACE AND PLANNING ISSUES

as a four- to six-lane major street to link eastern industrial areas of the community plan with I-805. The following key streets are incorporated into the precise plan:

a. Palm Avenue is proposed as a six-lane major from Del Sol Boulevard south to Otay Mesa Road.

b. Del Sol Boulevard is an existing four-lane collector street which crosses under I-805 from the west and terminates just east of I-805. The precise plan shows construction of that portion between Palm Avenue west to the elementary school in Planning Area 10 (see Figure 4). The remainder of Del Sol Boulevard within the precise plan boundary will be "reserved as a future street" to assure a link to Del Sol Boulevard through the South Palm Precise Plan to the west.

c. "A" Street is proposed as a four-lane major street adjacent to the western boundary of the future town center site. This north-south roadway is proposed to extend southerly across Otay Mesa Road and the proposed extension of State Route 117 (SR-117) and then follow "old" Otay Mesa Road south of the proposed freeway to ultimately terminate at North Vista Avenue.

5) Grading

Approximately 6.7 million cubic yards of cut and 6.13 million cubic yards of fill would be required. This would amount to approximately 12,984 cubic yards per graded acre. Approximately 516 of the 664.8 total acres would be graded. Fifty-seven percent of the HR zone acreage (138 of 243 total acres) would be graded to accommodate the development and the public facilities and roadways.

6) Off-site Improvements

Improvements outside the precise plan boundary would be required for ultimate implementation and build-out of the precise plan. These sewer, circulation, and water improvements include right-of-way dedications or acquisitions and are as follows:

a. Extension of sewer lines from the northwest corner of the precise plan westerly and northerly to the existing Otay International Center (OIC) trunk sewer located in Otay Valley.

b. Extension of Palm Avenue from its existing intersection with I-805 to the northwestern portion of the precise plan area.

c. Widening of Otay Mesa Road to six lanes between the southwest corner of the town center and the east project boundary, including several frontages not within the California Terraces Precise Plan.

d. Four-lane improvements to two portions of the realigned Otay Mesa Road south of SR-117.

e. Four-lane improvements to proposed Palm Avenue (south and west of centerline) within the future town center site.

f. Minor improvements to the existing Otay Valley water pumping station to enable it to adequately serve the project area. Also, an emergency water connection to the Otay Water District near the southwestern corner of Brown Field.

7) Phasing Plan

A phasing program would be implemented to coordinate the timing and level of public facilities and the sequence and amount of residential development. The plan is consistent with the generalized phasing plan in the Otay Mesa Community Plan and is coordinated with the provisions of major public improvements. Some modification of this plan may occur based on design, engineering, and economic considerations. Subsequent phases may begin prior to completion of the preceding phase provided that all needed public facilities would be in place prior to completion of the subsequent phase. Implementation of the phasing program would avoid cumulative impacts to the public facilities within the Otay Mesa area.

Each phase would require the necessary public facilities and roadway improvements to develop the site. In general, development would initially occur in the northwestern area of the plan and would proceed toward the southeast. Each phase is summarized below.

a) North Phase

The North Phase consists of a total of 1,513 dwelling units. This phase will require the extension of Palm Avenue eastward from I-805 to "A" Street. "A" Street will be constructed from Palm Avenue to Otay Mesa Road. Del Sol Boulevard will be partially improved between Palm Avenue and the California Terraces boundary. The elementary school and neighborhood park located in the northwest portion of the community will be initiated in conjunction with this phase.

Palm Avenue would be extended eastward from I-805 through the precise plan area and through the future town center to Otay Mesa Road. "A" Street would be constructed from the project boundary to Otay Mesa Road. The northern elementary school and neighborhood park would be constructed in coordination with housing enrollments.

B. California Terraces Vesting Tentative Map

1) Land Use

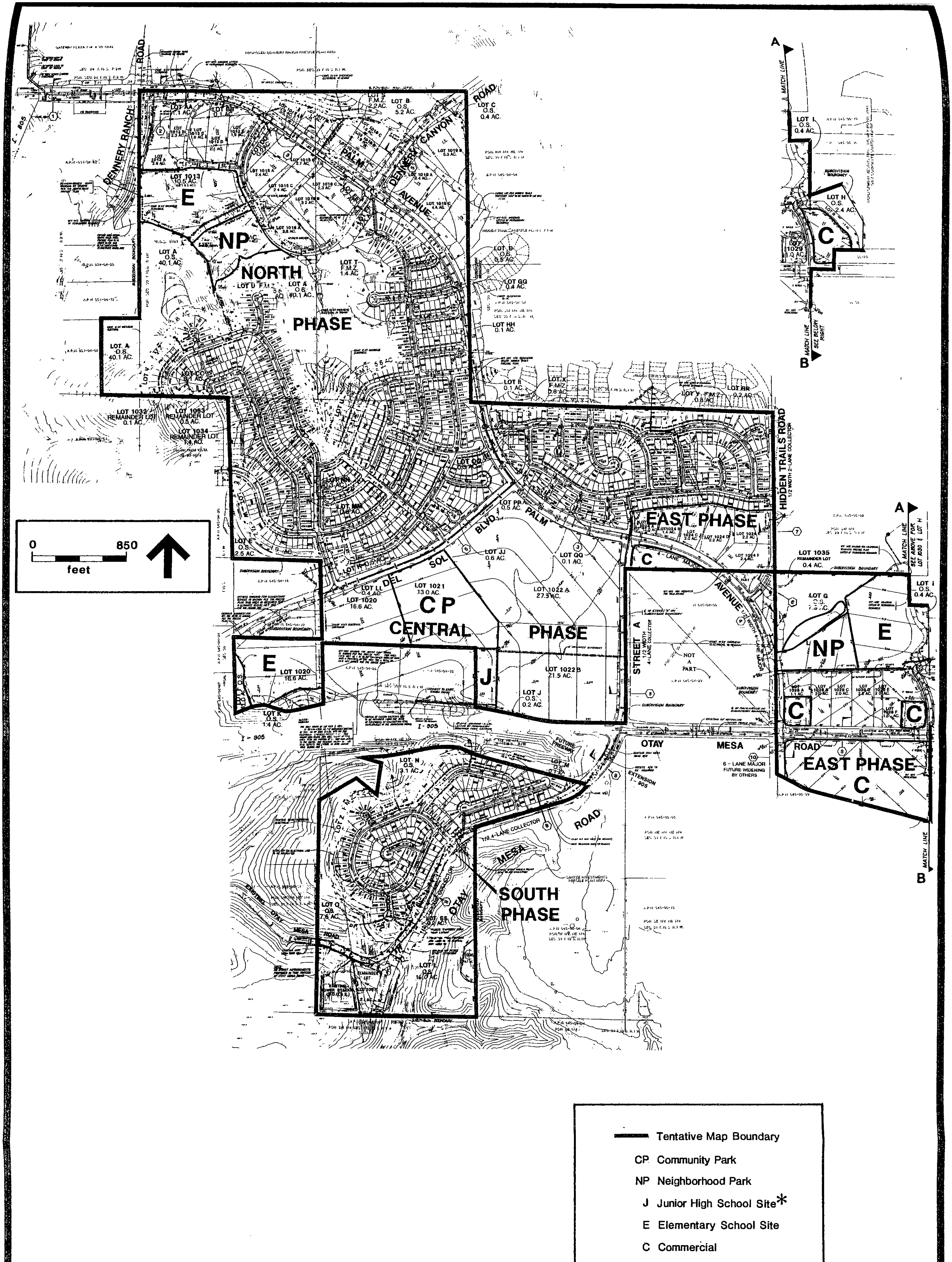
The California Terraces VTM comprises approximately 543.5 acres of the 665-acre California Terraces Precise Plan area. The proposed land uses are consistent with those identified for this area in the precise plan. The majority of the proposed land use is residential, with two elementary schools provided and portions of the other elementary school and junior high school within the VTM boundary. The two neighborhood parks and one community park, as identified in the precise plan, are located within the tentative map boundaries and would be provided with the California Terraces vesting tentative map. All of the five commercial centers identified in the precise plan are included in the tentative map area and would be provided.

A total of 4,991 dwelling units are proposed on 323.5 acres within the vesting tentative map, resulting in a range of densities of 5 to 43 dwelling units per gross residential acre. This portion of the development would contain single-family and multi-family residences plus most of the public facility uses contained within the precise plan. The California Terraces vesting tentative map is shown as Figure 6. The residential land use breakdown is provided as Table 3.

2) Public Facilities

The California Terraces VTM would provide all or a portion of the four school sites identified in the precise plan. It has not been determined at this time which school district(s) (San Ysidro and Chula Vista) would be utilized. The northernmost and easternmost elementary school sites would be graded and provided to the school district. These would comprise 10.5 and 10.3 acres (gross), respectively. The remainder of the northernmost school site would be graded with this VTM and provided with the South Palm Vista Precise Plan and subsequent tentative maps. The additional elementary and junior high school sites north of SR-905 would be graded. The 18.9-acre portions included in the VTM boundary would be provided to the school district. An adjacent 17.7 acres off-site would be graded for these two school sites. The on-site and off-site graded areas would provide a net 10.0 usable acres for the elementary schools and a net 25.0 usable acres for the junior high school.

The one community park and two neighborhood parks identified in the precise plan would be provided to the City by the VTM. The community park would be located north of the junior high school and would be 13.0 gross acres. The northern and eastern neighborhood parks would be located in approximately the same locations as shown in



*Off-site grading for the Junior High School is shown per the California Terraces Precise Plan. This off-site area is to be combined with the on-site area to provide a total 25.0 net acres.

FIGURE 6. CALIFORNIA TERRACES VESTING TENTATIVE MAP

TABLE 3
LAND USE TABULATION FOR THE CALIFORNIA TERRACES VTM

Land Use Designation	Gross Acreage	Dwelling Units
Residential		
Low Density	197.7	1,029
Low-Medium Density	8.3	289
Medium Density	42.2	1,032
High-Medium Density	59.9	2,641
Total Residential	308.1	4,991
Commercial	22.9	
Schools	39.7	
Parks	23.6	
Open Space	116.7	
Streets	32.5	
TOTAL	543.5	4,991

the precise plan and would be 5.0 net acres each. The locations of these facilities are shown on Figure 5.

3) Open Space

A total of 116.7 acres would be preserved as open space within the California Terraces VTM portion of the precise plan. This represents 21 percent of the 543 acres for this VTM. The proposed 88.8 acres of natural open space would occur predominantly on undisturbed slopes. In addition, 19.7 acres would be designated as open space for brush management, and 8.2 acres would be manufactured slopes.

4) Circulation

The VTM shows several of the major roads identified in the precise plan. The following lists the roads which would be provided and Figure 7 illustrates the level of on- and off-site improvements proposed at each segment.

a. Palm Avenue is provided as a six-lane prime arterial in the northern portion of the VTM area, transitioning to a four-lane major.

b. Del Sol Boulevard would be provided within the VTM boundary as a four-lane collector.

c. "A" Street, which connects Otay Mesa Road and Palm Avenue, would be provided as a four-lane major.

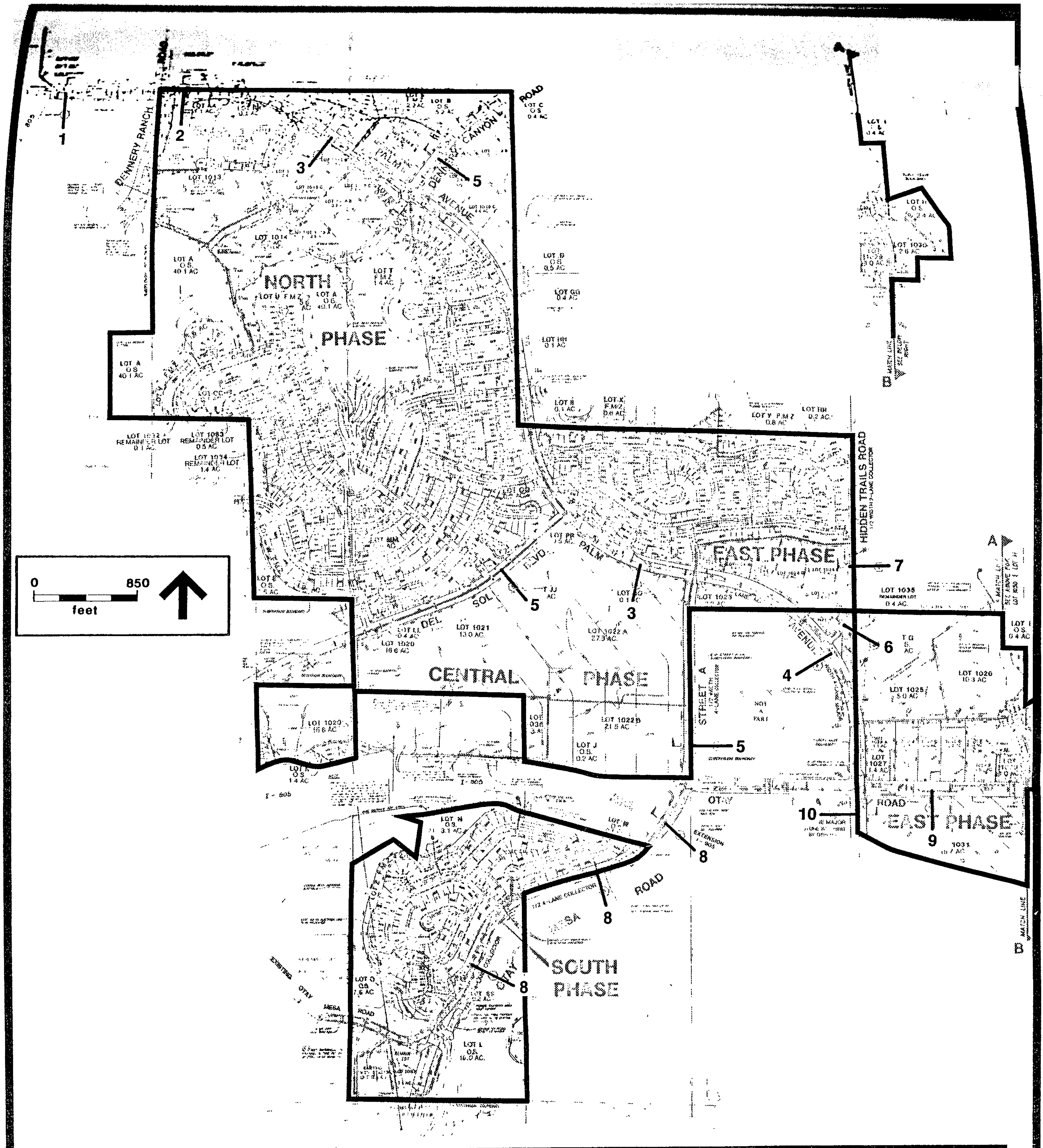
d. Two segments of Otay Mesa Road. The first is located east of the proposed SR-905 alignment and would be provided on- and off-site as a six-lane major road widening. South of proposed SR-905, Otay Mesa Road would be provided as half-width of a four- lane collector.

e. On-site improvements to Hidden Trails Road would be half-width improvements of a two-lane collector.

f. Full-width four-lane collector street improvements to Dennery Canyon Road.

5) Grading

The proposed VTM (543.5 acres) makes up approximately 82 percent of the proposed precise plan (664.8 acres). The total quantity of cut and fill, 5.3 million cubic yards of cut and fill, would be balanced within the area shown on the VTM. This amounts to



▬	Tentative Map Boundary

1	Interim 4-Lane Prime Arterial Palm Avenue	6	2-Lane Collector Hidden Trails Road
2	6-Lane Prime Arterial Transitioning to 4-Lane Major Palm Avenue	7	Half-Width, 2-Lane Collector Hidden Trails Road
3	6-Lane Major Palm Avenue	8	Half-Width, 4-Lane Collector Otay Mesa Road
4	Half-Width, 4-Lane Major Palm Avenue	9	Street Widening, 6-Lane Major Otay Mesa Road
5	4-Lane Collector Street "A," Del Sol Blvd., Dennery Canyon Road	10	Half-Width, 6-Lane Major Palm Avenue

FIGURE 7. CALIFORNIA TERRACES VESTING TENTATIVE MAP ROAD IMPROVEMENTS

approximately 12,420 cubic yards of cut and fill per graded acre. Cutting of the mesa top would provide the necessary fill dirt for proposed building areas and roadways. The proposed grading would reduce the height of the mesa top by approximately 30 feet in the northwest corner and by zero to ten feet over most of the project site. There are 196.39 acres within the HR zone, of which 133.8 acres (or 68.2 percent) would be graded.

The majority of the manufactured slopes on the exterior of the project would range in height between 30 and 60 feet. Seventeen slopes would reach heights over 60 feet. The maximum height of the tallest manufactured slope would be 136 feet. Manufactured open space areas and landscaping would be maintained by the homeowner's association or a Landscape Maintenance District.~~and an Open Space Maintenance District.~~

6) Off-site Improvements

Several off-site road improvements are proposed, as well as some off-site grading (see Figure 7). The off-site road improvements are:

a. Palm Avenue would be improved directly north of Otay Mesa Road as half-width of a four-lane major and half-width of a six-lane major south of Otay Mesa Road. A third off-site segment of Palm Avenue would be provided west of the northern portion of the VTM as an interim four-lane prime arterial.

b. The necessary grading for Del Sol Boulevard is shown per the South Palm Precise Plan off-site to the west, but the grading is not proposed as part of the VTM improvements.

c. Otay Mesa Road is shown as being widened to a six-lane major road east of SR-905. South of SR-905, Otay Mesa Road would be provided as half-width four-lane collector.

d. Hidden Trails Road connecting to Palm Avenue as full-width improvements as a two-lane collector.

7) Discretionary Actions

The discretionary actions associated with the California Terraces VTM are a vesting tentative map and a hillside review permit.

C. South Palm Vista PRD/VTM

A total of 70 single-family detached dwelling units are proposed on 27.3 acres in the central/western part of the California Terraces precise plan area. The South Palm Vista project area is designated for Low Density residential (5-19) dwelling units per acre in the precise plan, and the proposed zoning is R1-5000 with a Small Lot Overlay Zone. This portion of the project would contain single-family detached homes on lots ranging from 4,200 to about 6,000 square feet. Table 4 provides a land use breakdown for this VTM and Figure 8 shows the vesting tentative map. Figure 9 illustrates the Planned Residential Development site plan, and Figure 10 shows the configuration and locations of the building footprints for each lot.

A total of 12.2 acres would be preserved as open space within the South Palm Vista portion of the precise plan. This represents approximately 45 percent of the 27.3 acres within the VTM. The open space would be located on undisturbed slopes in the western and southern part of the PRD/VTM; about 0.5 acre would be revegetated manufactured slopes. An additional 3.6 acres would be designated for brush management. Portions of three residential streets would be provided within the VTM area. These will connect with those proposed in the California Terraces VTM.

This proposed VTM (27.3 acres) comprises approximately four percent of the proposed precise plan (664.8 acres). The total quantity of cut would be 241,300 cubic yards and fill would be 17,200 cubic yards, resulting in the export of 197,100 cubic yards of earth from this portion of the development. This would result in about 15,980 cubic yards per graded acre.

The discretionary actions associated with the South Palm Vista VTM are the approval of the VTM, the PRD permit, and a RPO permit for the VTM and PRD. This VTM is subject to RPO, due to the timing of the application submittal. The project's conformance with RPO is discussed in the Land Use section of this EIR.

TABLE 4
LAND USE TABULATION FOR THE SOUTH PALM VTM

Land Use Designation	Gross Acreage	Dwelling Units
Low Density Residential	11.5	70
Open Space	12.2	
Fuel Management Zone	3.6	
TOTAL	27.3	70

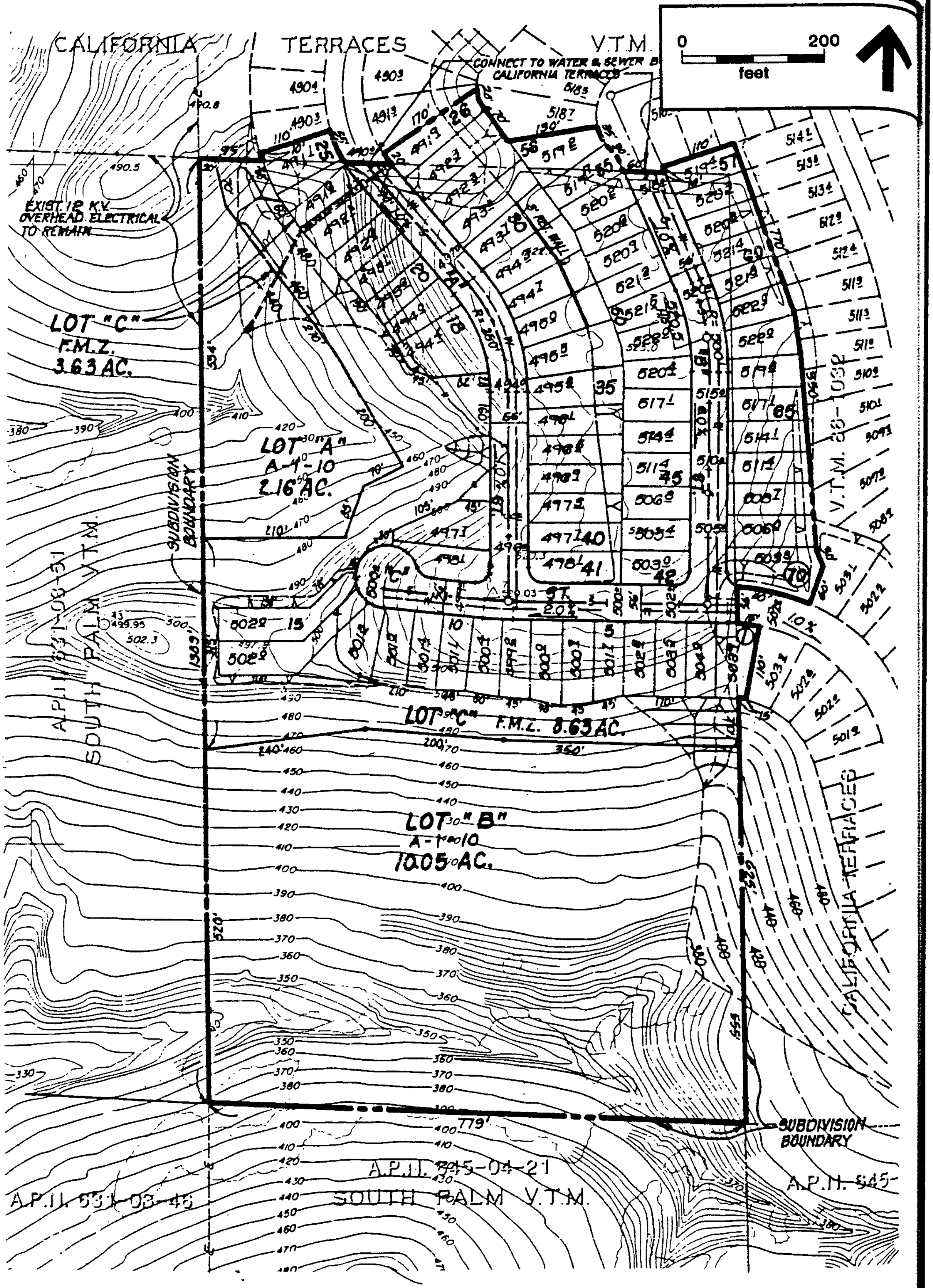


FIGURE 8. SOUTH PALM VISTA VESTING TENTATIVE MAP

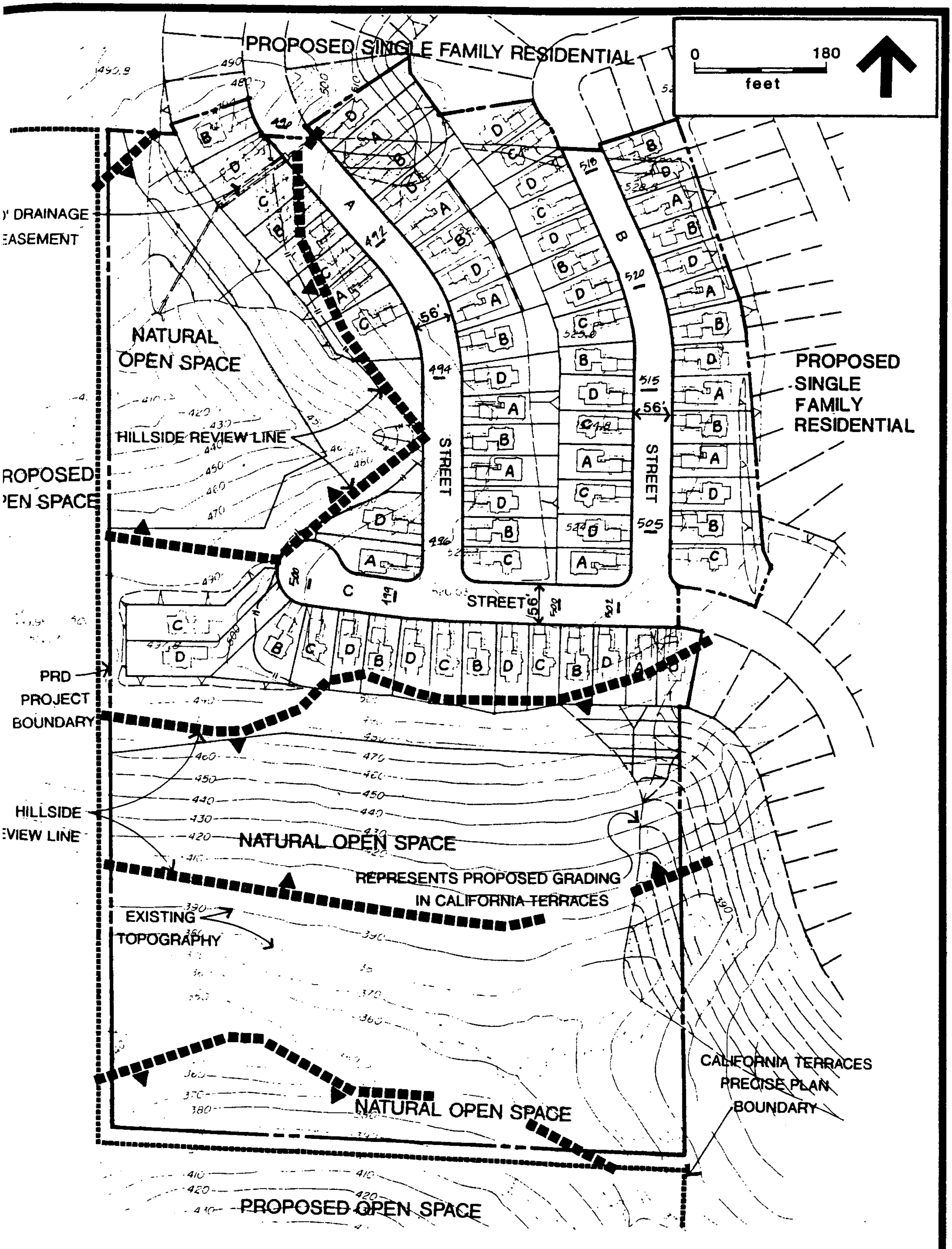


FIGURE 9. SOUTH PALM VISTA PLANNED RESIDENTIAL DEVELOPMENT

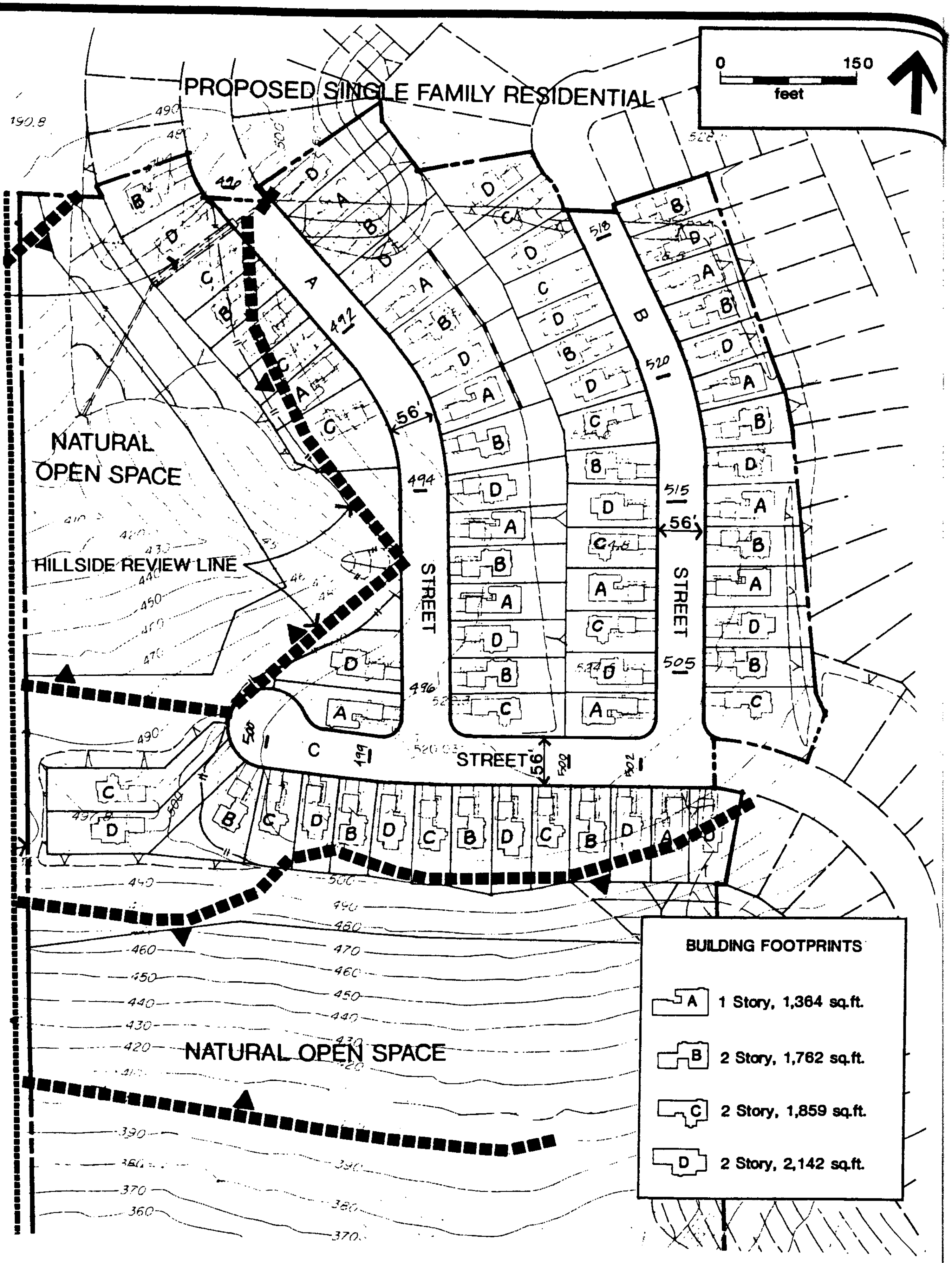


FIGURE 10. SOUTH PALM VISTA BUILDING ENVELOPES

Chapter Four
Environmental Analysis

A. Land Use

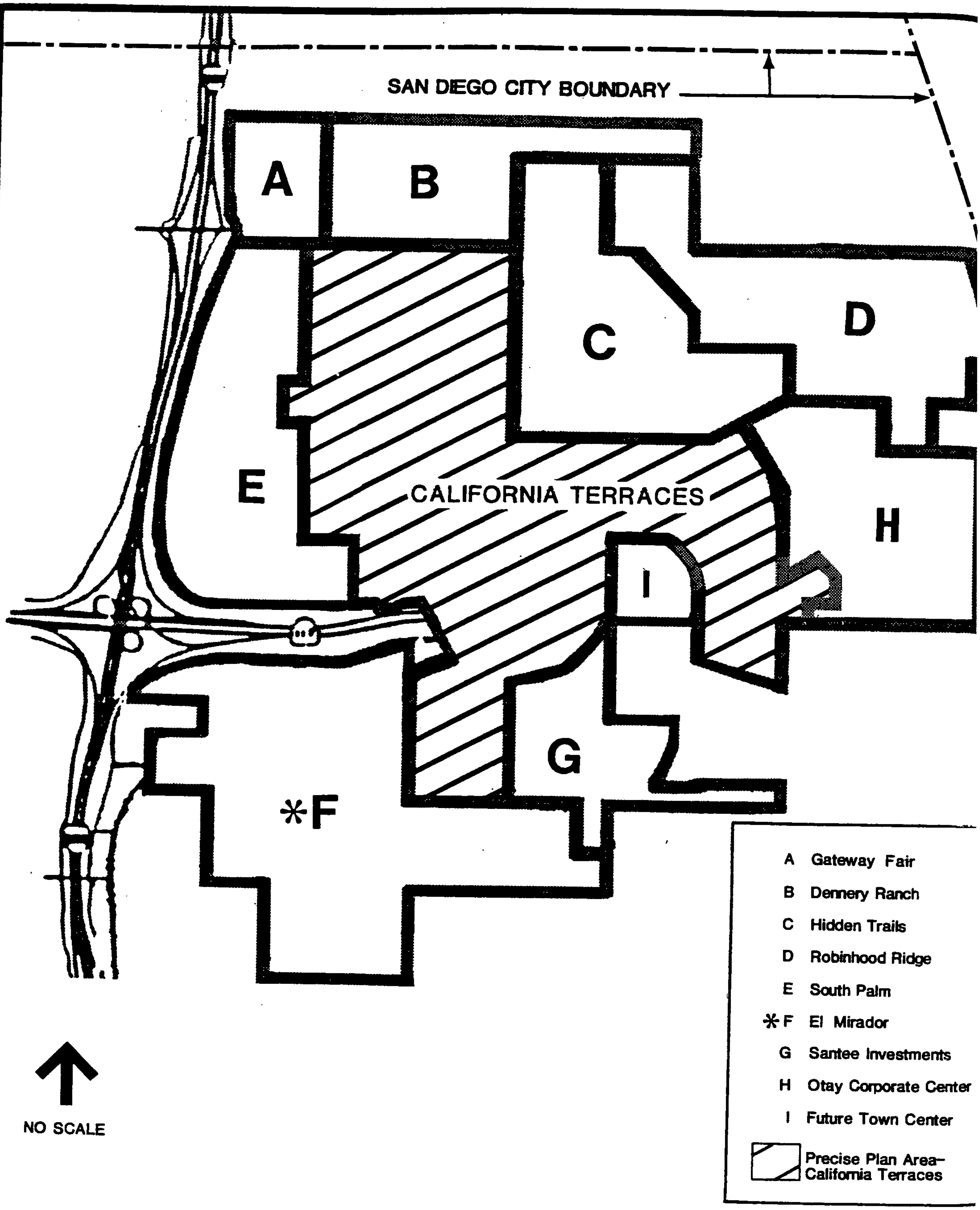
Existing Conditions

The 664.8-acre precise plan area is currently vacant. The land surrounding the site is also vacant, although several other developments are proposed in the area (Figure 11). Along the northeast boundary of the project site is the Hidden Trails Precise Plan. This plan includes residential and recreational uses. Further to the northeast of the project site is Robinhood Ridge Precise Plan, which proposes residential, educational, recreational, and commercial uses. To the southeast of the project site is Santee Investments Precise Plan, an area proposing residential, educational, and recreational uses. To the northwest of the project site is Gateway Fair, an approved planned commercial development. To the west is South Palm Precise Plan, an area proposing residential and open space uses.

Within the Progress Guide and General Plan for the City of San Diego, the project area is designated as Planned Urbanizing. This designation applies to areas that are presently developing or are expected to develop in the near future. Urban-level development is expected to coincide with the availability of necessary services. Development of the project area is governed by the goals, objectives, and policies of the adopted community plan for the area.

The entire project area is currently zoned A-1-10, an agricultural zone. A-1-10 is a temporary zone for lands within planned urbanizing areas. Development within this zone is permitted at a density of one residential unit per ten acres. The HR Overlay Zone is applied to approximately one-third of the site. This zone includes areas that have slopes in excess of 25 percent and differences in elevation of at least 50 feet.

California Terraces lies within the northwestern section of the Otay Mesa community planning area. Although the project site covers 664.8 acres, which is five percent of the 12,505-acre community planning area, the site comprises approximately one-third of the residential component of the community located in the western part of the community



* NOTE: THE APPLICATION FOR T
PROJECT HAS BEEN WITHDRA

FIGURE 11. CALIFORNIA TERRACES WITH SURROUNDING PROJECTS

plan area. Specifically, the community plan proposes a total of 18,200 dwelling units within the community plan boundary. Approximately 6,400 of these dwelling units are identified within the California Terraces precise plan boundary. The community plan sets guidelines for areas of general development, land uses, and densities of building units per acre. It does not determine precise density or dwelling unit design, precise road alignments, or the precise location of community facility sites (City of San Diego 1981:149).

The Otay Mesa Community Plan recommends development of Otay Mesa in four phases. California Terraces is within the first development phase. Phase I is generally defined as the area east of I-805 that has access to existing sewer facilities. At the present time, no residential development has occurred in this area (City of San Diego 1981:37, 146).

The Brown Field/Otay Mesa Airport site is also under consideration as an alternative airport by SANDAG for Lindbergh Field. The five potential airport sites under study include two at NAS Miramar, one in east Miramar, and two on Otay Mesa. The draft final "San Diego Air Carrier Airport Site Selection Study" was circulated for public review in January 1990. The study evaluated the technical feasibility of the five sites and identified the Otay Mesa area as the preferred alternative to be the subject of future study.

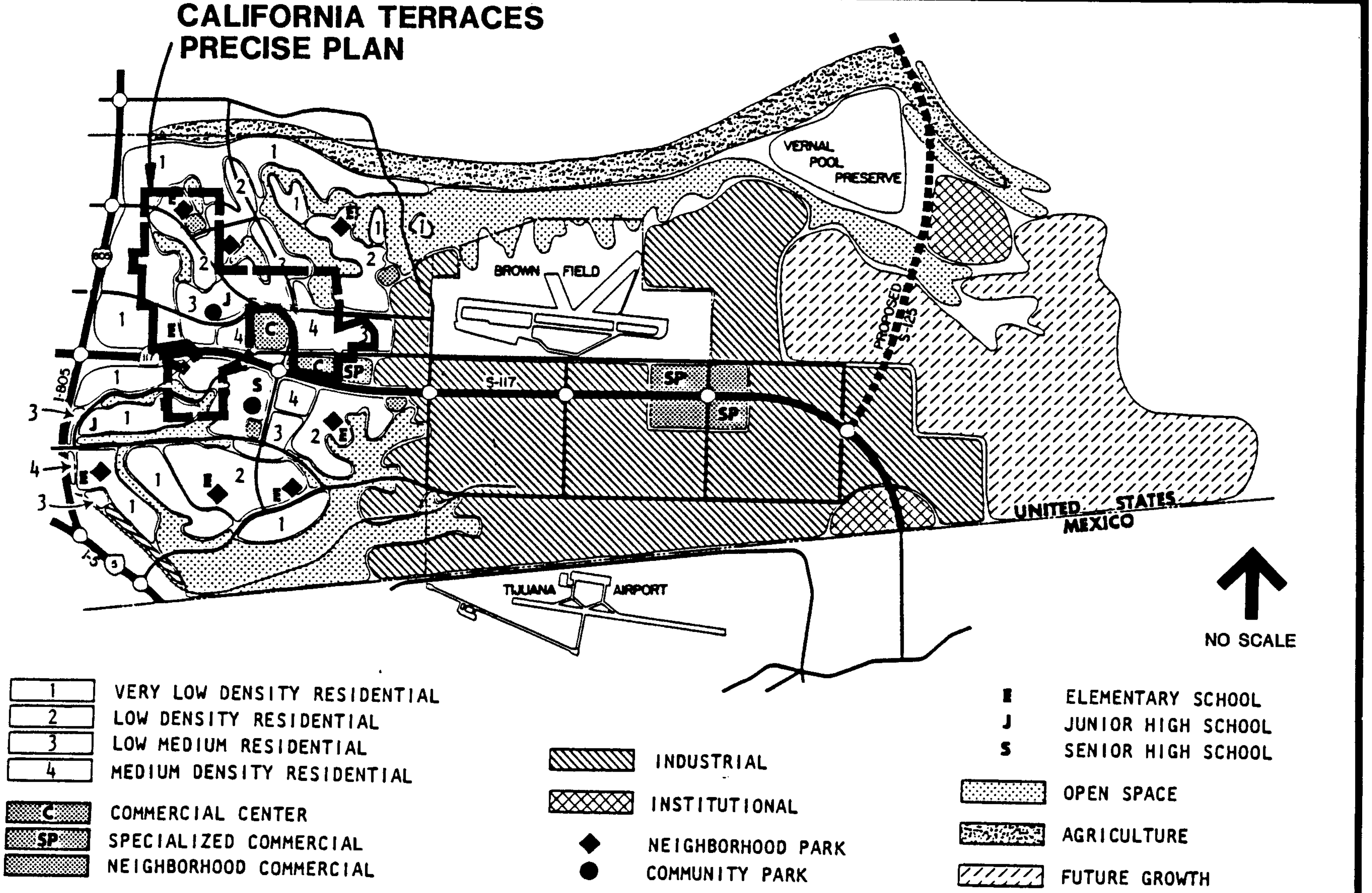
The City of San Diego is also considering a TwinPort concept for a binational airport at Brown Field. The City Council passed Resolution R-278003 on May 28, 1991, which identified the TwinPort concept on Otay Mesa as the City's preferred option for a new airport. On the same day, the City Council also adopted Resolution R-278004 which identified the TwinPort study area and stated the council's determination not to approve any actions which could allow residential development in the study area. On May 12, 1992, the council resolved to not approve any specific plans or rezonings within the study area (City of San Diego 1992).

The study area identified in Resolution R-278004 was based on a possible 65 CNEL contour line from TwinPort and it includes most of the California Terraces Precise Plan area, with the exception of the northwest corner.

As shown in Figure 12, the community plan designates the California Terraces property for a variety of land uses.

a) Residential

Residential uses are permitted at the following densities: very low density (0-5 dwelling units per acre [du/acre]); low density (5-10 du/acre); low medium density (10-15 du/acre); and medium density (15-30 du/acre). In total, the community plan permits the development of approximately 6,381 dwelling units within the project area.



SOURCE: OTAY MESA COMMUNITY PLAN, 1981

FIGURE 12. LAND USE DESIGNATIONS OF THE OTAY MESA COMMUNITY PLAN

b) Educational

The community plan designates four school sites within or partly within the boundaries of the precise plan area (Figure 13). Three elementary school sites are designated along the boundaries of the project site (the northern, north-central, and western boundaries). One junior high school site is designated in the central portion of the project area. The community plan does not provide recommended sizes for school sites. However, the City's Progress Guide and General Plan provides guidelines and standards for elementary and junior high schools to be 10 and 30 net usable acres, respectively.

c) Open Space

As shown in Figure 14, the community plan designates open space areas in several locations on the project site. The majority of these open space areas are designated in the north-central, southern, and eastern portions of the project area. They total 51.6 acres of open space. The community plan does not distinguish between natural open space and open space which has been revegetated.

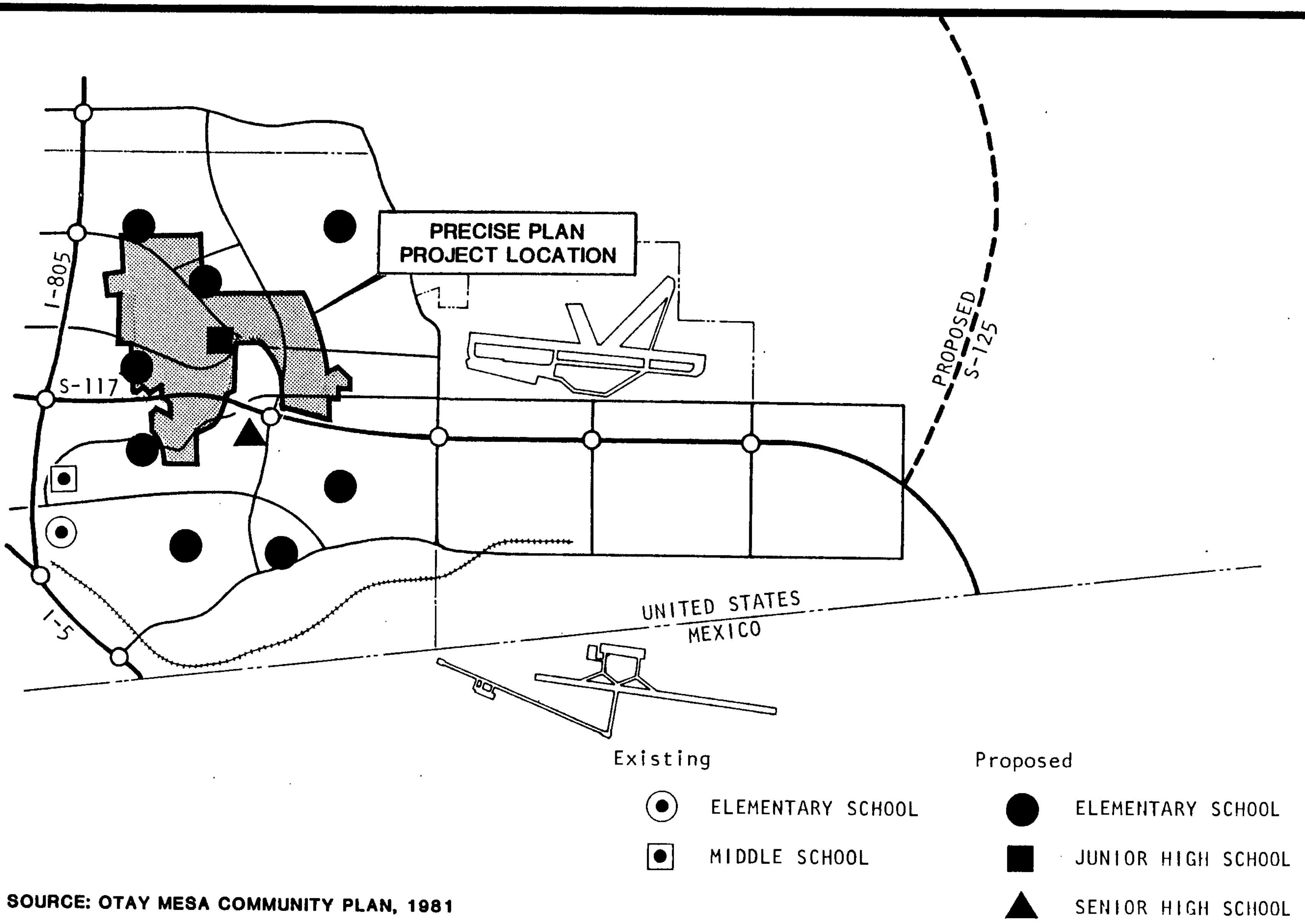
A draft agreement of open space and planning issues between the City of San Diego, the Baldwin Company, Childers, and the Pardee Construction Company was formulated in a series of design workshops conducted through March, 1991 (see Figure 5). The meetings were coordinated by City staff and attended by the landowners in the area. This agreement, if implemented, would establish a regional open space plan for northwestern Otay Mesa area.

d) Parkland

The Otay Mesa Community Plan designates two park sites within the project boundaries (see Figure 14). A neighborhood park site is designated in the north part of the project area, while a community park is designated to the north of future Del Sol Boulevard. San Diego's adopted Progress Guide and General Plan (1979) suggests that neighborhood parks contain a minimum usable area of five acres when adjacent to an elementary school and ten acres when not. Community parks should be about 13 acres when adjacent to a junior high school and 20 acres when not. The community plan does not provide specific recommended acreages for parks.

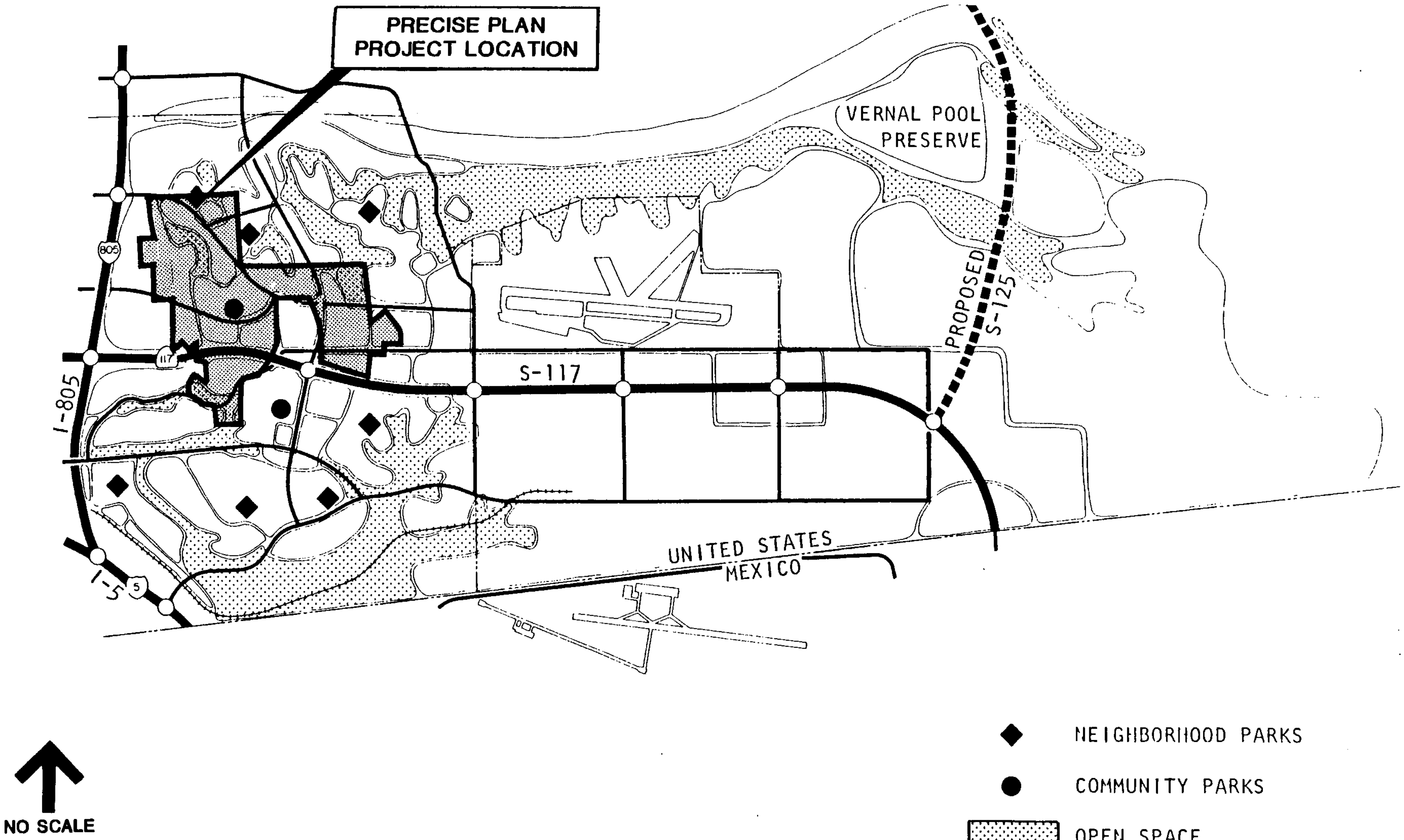
e) Commercial

The community plan designates 55.1 acres of the project site for commercial use (see Figure 12). One site is designated in the northern portion of the property, while another site is designated to the south of Otay Mesa Road.



SOURCE: OTAY MESA COMMUNITY PLAN, 1981

FIGURE 13. DESIGNATED SCHOOL SITES IN THE OTAY MESA COMMUNITY PLAN



SOURCE: OTAY MESA COMMUNITY PLAN, 1981

FIGURE 14. DESIGNATED PARKS AND OPEN SPACE IN THE OTAY MESA COMMUNITY PLAN

f) Circulation

The community plan designates 73.1 acres (see Figure 12) of the project site for roadways, with Palm Avenue running northwest/ southeast through the precise plan area.

g) Landform and Grading

Otay Mesa Community Plan/Landform and Grading Policies

The City of San Diego Otay Mesa Community Plan has specific guidelines related to landform and grading. Pertinent guidelines are listed below.

1. Development should be planned to relate to topography and natural features. Grading operations should strive to retain the character of the landform as much as is feasible.
2. Top of slope and toe of slope should be rounded to simulate natural contours.
3. Grading should be done in conformance with the Land Development Ordinance to insure proper drainage, slope stability, and ground cover revegetation.
4. Development and addition of landscape materials in natural steep hillside areas should be minimized and planned outside of areas subject to flooding.
5. Hillside homes should be adapted to the terrain, utilizing minimum level pads for buildings, yards, and streets.
6. Cut and fill slopes should reflect the natural hillside forms as much as possible. They should be contour graded and terraced to avoid extreme slope faces. Smooth flowing planes should be the goal.
7. Level terrain should be recontoured to create interesting forms.
8. Residential hillside streets should follow natural contours and give a sense of the predevelopment landforms.

Hillside Review Overlay Zone

The City of San Diego has adopted a Hillside Review Overlay Zone. The HR Overlay Zone is intended to foster urban development of a character which will respect the natural environment, thereby conserving the aesthetic qualities and restorative value of such land (City of San Diego 1983). The guidelines emphasize protecting the natural and topographic character and aesthetic qualities of the lands within the HR Overlay Zone. The HR Overlay Zone may be applied to property having slopes with a natural gradient in excess of 25 percent and a minimum elevation differential of 50 feet. General guidelines include: designing structures to fit into the hillsides; developing the least sensitive portion of the project site; preserving natural landforms, geologic features and vegetation; contour grading and blending of manufactured slopes with natural topography; varying architectural design; matching the scale and character of buildings with the surrounding terrain and neighborhood; retaining the visual quality of the site; and providing visual overlook areas for pedestrians. Approximately 243 acres of the site is within the HR Overlay Zone.

Resource Protection Ordinance

The Resource Protection Ordinance is designed to protect the environmentally sensitive areas of the city and establishes separate regulations for the following areas: hillsides, wetlands, floodways, floodplain fringe, biologically sensitive lands, and significant prehistoric or historic sites. The regulations outlined in the ordinance include limitations on permitted uses, requirements for buffer areas, and limitations on development and grading. The RPO regulations are only applicable to the steep slopes and biologically sensitive lands within the South Palm Vista VTM portion of the project site.

1) Issue

Is the proposed intensity and location of development consistent with the Otay Mesa Community Plan? Is the project consistent with the environmental goals of the community plan and development regulations of the Resource Protection Ordinance and Hillside Review Overlay Zone?

Impacts

a) Precise Plan

The precise plan proposes single- and multi-family residential, neighborhood commercial, educational, recreational, and open space uses. The distribution of the proposed land uses is shown in Figure 4 and Table 1, while Figure 12 depicts the land use designations as shown in the Otay Mesa Community Plan. Table 5 compares the land uses and intensity of development for the project site in relation to the community plan allocations and the proposed precise plan.

Four small areas (totaling 94.0 acres) within the precise plan are under a different ownership. These parcels are owned by several different individuals who have had varying degrees of participation in the planning process. Three of these parcels are contiguous and are located along the eastern boundary of the precise plan. The fourth parcel is located immediately north of the western elementary school next to the junior high school (see Figure 2). These areas are not included in either of the currently

TABLE 5
LAND USE COMPARISON

	Otay Mesa Community Plan			California Terraces Precise Plan		
Land Use	Acres	Percent	DUs	Acres	Percent	DUs
Residential						
Very Low	81.3	12.2	406	0	0	0
Low	78.1	11.7	781	197.2	29.6	1,089
Low-Medium	153.1	23.0	2,296	24.1	3.6	289
Medium	96.6	14.5	2,898	50.6	7.6	1,356
High-Medium	0	0	0	61.4	9.2	2,641
Subtotal	409.1	61.4	6,381	333.3	50.0	5,375
du/acre	18.2			16.1		
Commercial	55.1	8.2	-	24.4	3.6	-
Community Park	24.1	3.6	-	13.0	1.9	-
Neighborhood Park	5.2	1.0	-	12.7	2.0	N/A
Elementary Schools	21.1	3.2	-	34.0	5.1	-
Junior High School	25.5	3.8	N/A	20.7	3.1	N/A
Open Space	51.6	7.7	-	153.4	23.0	-
Streets	73.1	10.9	-	47.7	7.1	-
Freeway right-of-way	26.6	4.0	-	25.6	3.8	-
TOTALS	664.8	100.0	6,381	664.8	100.0	5,375

*The community plan does not distinguish between natural open space and open space which has been revegetated. However, of this 153.4 acres of precise plan open space, 132.5 (86%) would be natural open space.

proposed California Terraces and South Palm Vista VTMs. Future environmental review of these parcels would be required for development of these parcels as subsequent tentative maps.

Residential

The precise plan proposes redistributed residential densities, fewer residential units, and a slightly different housing mix. Whereas the community plan emphasizes low-medium density housing for the precise plan area, the precise plan emphasizes medium density housing. The community plan indicates approximately 6,381 dwelling units for the precise plan, which results in a residential density of 19.1 du/acre. The project proposes 5,375 dwelling units for an overall density of 16.1 du/acre. In comparison to the community plan designations, the precise plan proposes lower residential densities to the south of SR-905, to the north of Del Sol Boulevard, and to the northwest of the future town center site. Higher densities are proposed in the north of the plan area and to the north of the future town center. The proposed residential development generally conforms with the configuration shown in the community plan.

As required by the Otay Mesa Community Plan, PRDs would be used within the portions of the precise plan. PRDs would ensure that mitigation for potential noise and brush management impacts would be implemented. The precise plan would also utilize the CPIOZ at other residential planning areas (Planning Areas 1, 4-8, and portions of 13, 15, 16, and 25). The CPIOZ permit process would take into account all of the PRD requirements and also ensure that potential indirect noise and brush management impacts would be mitigated.

Educational

The precise plan provides three elementary school sites and one junior high school site. All site locations generally are consistent with those designated in the community plan. Elementary schools would be provided in the northern, western, and eastern portions of the project site, while the junior high would be located in the center of the project area. The proximity of the junior high school to the community park allows the school acreage to be reduced from that shown in the community plan. Alternative school sites to those currently proposed are discussed in Chapter 6, Project Alternatives.

Open Space

The precise plan provides for the retention of open space areas in the same general locations as those specified in the community plan. Approximately 132.5 acres of natural open space are proposed in the precise plan. An additional 20.9 acres of open space are proposed as manufactured slopes. As mentioned previously, the proposed precise plan is in conformance with the draft agreement of open space and planning issues for northwestern Otay Mesa (see Figure 5).

Parkland

California Terraces proposes three parks within its project boundaries (see Figure 14). Each is adjacent to a school and will benefit from the additional playfields on the school sites. One neighborhood park is proposed in the northern portion of the property, while another is located in the east. A community park is proposed to the south of future Del Sol Boulevard. Overall, the precise plan proposes 3.6 fewer acres of parkland.

Commercial

The precise plan proposes five sites (totaling 24.4 acres) for commercial use (see Figure 4). Four of the five sites are located along Otay Mesa Road east of the future town center. The fifth is located adjacent to the northern boundary of the future town center. At the northeast corner of the intersection of Otay Mesa Road and Palm Avenue would be a 1.3-acre commercial site, while a 16-acre site would be located at the southeast corner. A one-acre site and a 3.5-acre site would be located one block to the east. A 2.9-acre site would be north of the future town center. The proposed California Terraces Precise Plan eliminates the 16.6-acre site at the northern boundary. The applicant considers this site no longer necessary because of a community plan amendment which redesignated as commercial 31 acres at the intersection of Palm Avenue and I-805. This site is known as the Gateway Fair.

Circulation

The precise plan proposes 47.7 acres of the project site for roadways, and designates Palm Avenue running northwest/south-east through the precise plan area. This alignment for Palm Avenue will require a community plan amendment.

Landform and Grading

Development of the California Terraces Precise Plan would not achieve the goals and objectives of the Otay Mesa Community Plan related to landform alteration and grading, nor aims of the Hillside Review Overlay Zone. Both the Otay Mesa Community Plan and Hillside Review encourage hillside development that conforms to the natural terrain and minimizes disturbance of steep slopes through the utilization of split building pads, split streets, and split-level homes. As discussed in detail under the landform alteration analysis, approximately 138 acres (57 percent) of the 243 acres in HR are proposed to be graded. The mass grading combined with large, level development units would not reflect the intent of the Otay Mesa Community Plan nor the Hillside Review policies. Thus, the project is inconsistent with the community plan related to hillside development as well as being inconsistent with the provisions of the Hillside Review Overlay Zone.

Remainder Parcels

Four small areas (totaling 94.0 acres) within the precise plan are not included in the two currently proposed VTMs. These parcels are owned by several different individuals who have varying degrees of participation in the planning process, and future environmental review of subsequent tentative maps for these parcels would be required.

b) California Terraces VTM

The California Terraces VTM includes 543.5 acres of the 664.8 acres of the precise plan area owned by Pardee Construction Company. The VTM (see Figure 6) proposes the same land use mix and location as the precise plan. As described in the Project Description, the VTM proposes 1,029 single-family residential units, 28 multi-family lots, 5 commercial lots, and 89 acres of natural open space. An additional 20 acres of open space would be provided as fuel management zones 2 and 3 and eight acres would be manufactured slopes.

The California Terraces VTM application does not include PRDs for all the areas of residential development, as required by the community plan for residential projects with significant noise and other impacts. This lack of PRDs is a potentially significant impact.

As was identified for the precise plan, the VTM is not consistent with the goals and policies of the community plan and Hillside Review. The VTM proposes to grade approximately 133.8 acres of 196.4 acres within the HR Overlay Zone. The failure to utilize split building pads, split streets, split grading and other development techniques favored by the HR guidelines, coupled with mass grading and level developments causes the proposed VTM to be inconsistent with the Hillside Review guidelines and policies.

c) South Palm Vista PRD/VTM

This PRD/VTM includes 27.3 acres of the 664.8-acre precise plan. The PRD/VTM would have a density of 2.34 du/gross acre for a total of 68 single-family detached dwelling units. This density is in conformance with the Otay Mesa Community Plan and the precise plan.

The PRD/VTM has 14.0 acres (56 percent) in sensitive hillsides and 27.3 acres (100 percent) of sensitive biological lands. Under RPO, the allowable encroachment would be 5.0 acres (20 percent) allocated as 1.8 acres into sensitive hillsides and 3.2 acres into biologically sensitive lands. An additional 3.7 acres (15 percent) may be allowed for development of public streets and facilities.

The project proposes to encroach into 1.3 acres of sensitive hillsides which is within the allowance provided by the ordinance. The project would impact 13.7 acres of biologically sensitive habitat, including 7.1 acres of the 14.5 acres of maritime succulent scrub on-site and 6.6 acres of the 8.6 acres of Diegan coastal sage scrub, which exceeds the encroachment allowance. The project would also impact seven vernal pools, for which there is no allowed encroachment. The loss of habitat would also impact sensitive species, such as California gnatcatcher, San Diego cactus wren, coast barrel cactus, snake cholla, and San Diego bur-sage.

The South Palm Vista PRD/TM does not implement HR guidelines and does not comply with the project's encroachment allowance under RPO. Refer to the Landform Alteration and Biological Resources section for detailed analysis of these impacts.

Significance of the Impacts

a) Precise Plan

Overall, the proposed land use intensities and locations generally are consistent with the community plan. The rearranging of land use densities and relocating of park, school, and commercial sites does not constitute a significant environmental impact. Landform alteration for the project is not consistent with the environmental goals and policies of the Otay Mesa Community Plan, Hillside Review guidelines, and RPO Guidelines. These inconsistencies are a significant land use impact.

b) California Terraces VTM

The proposed land use intensities and locations do not constitute a significant environmental impact. The potentially significant effects associated with the California Terraces VTM for which a PRD could have assured mitigation can also have mitigation assured through the Mitigation, Monitoring, and Reporting Program. This is described in each issue analyzed with potentially significant effects.

The grading proposed for the VTM is not consistent with the Hillside Review Overlay Zone guidelines with regard to providing sensitive development within steeply sloping areas. Significant land use impacts would occur as a result of the VTM's inconsistency with Hillside Review guidelines.

c) South Palm Vista PRD/VTM

The proposed PRD/VTM would not be consistent with development regulations regarding encroachment allowances into sensitive biological lands in conformance with the Resource Protection Ordinance. This is considered a significant land use impact.

Mitigation, Monitoring, and Reporting Program

a) Precise Plan

A reduction in the impact associated with the precise plan inconsistency with the environmental goals of the community plan could be achieved by the Reduced Grading alternative, the Increased Open Space alternative, or the Alternative Grading/Product Type alternative (discussed in the Alternatives section). Those alternatives could reduce the land use impact, but not to below a level of significance.

b) California Terraces VTM

A reduction in the impact associated with the precise plan inconsistency with the environmental goals of the community plan could be achieved by the Reduced Grading alternative, the Increased Open Space alternative, or the Alternative Grading/Product Type alternative (discussed in the Alternatives section). Those alternatives could reduce the land use impact, but not to below a level of significance.

c) South Palm Vista PRD/VTM

Feasible mitigation for the RPO land use impact (e.g., loss of RPO sensitive resources) is not provided within the project as proposed. The Increased Open Space alternative noted above could reduce the impact to below a level of significance.

2) Issue

Does the precise plan provide adequate buffers between different land uses and at major intersections?

Impacts

Potential land use conflicts are present in two general locations within the precise plan project site: between the future town center and the surrounding residential areas, and at major intersections. The precise plan shows high-medium density residential housing across "A" Street to the west of the future town center, commercial land use immediately adjacent to the north, and medium density residential across Palm Avenue to the north. Across Palm Avenue to the east is proposed open space, a neighborhood park, high-medium density residential and commercial. The California Terraces VTM proposes these same uses. The precise plan incorporates several design features such as landscaping, grade separation, and roadway and parking area siting which would serve as buffers in these areas. The precise plan landscape concept is shown in Figure 15. The buffer designs would be incorporated into the California Terraces Master Landscape Plan

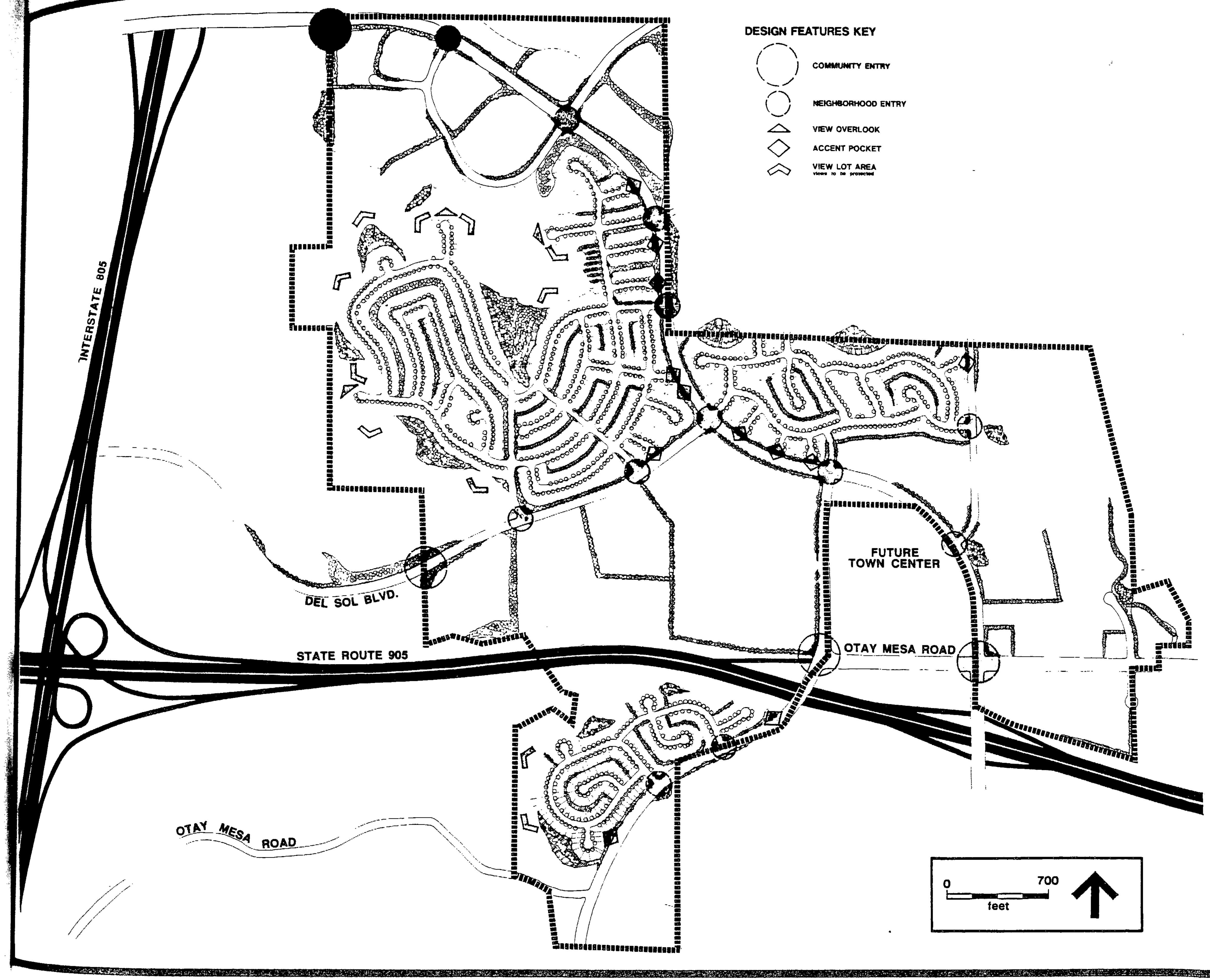


FIGURE 15. PRECISE PLAN LANDSCAPE CONCEPT

3) Issue

Are the proposed uses compatible with the surrounding areas?

Impacts

Numerous precise plan areas are within the vicinity of California Terraces. The following discussion addresses the site's compatibility with the precise plans and other planned developments within the area.

a) Otay Valley Regional Park

A Draft Conceptual Master Plan for the proposed Otay Valley Regional Park was prepared in August 1990 by the City of San Diego Planning Department. It provides a Focused Planning Area which extends approximately 11 miles from south San Diego Bay along the Otay River valley corridor to the Otay Lakes and Bureau of Land Management property boundaries. The finger canyon of Dennery Canyon on the eastern portion of the precise plan area is located within this Focused Planning Area. Only a small portion (approximately six acres) of this area is included within the boundary of the California Terraces VTM. Proposed VTM uses adjacent to the branch of Dennery Canyon within the Focused Planning Area are open space lots, an elementary school, and neighborhood park. The Focused Planning Area also encompasses the entire northern portion of both the precise plan and California Terraces VTM, including the other finger canyons of Dennery Canyon. These areas are proposed for residential development, an elementary school, and open space lots. However, the Dennery Ranch and Hidden Trails precise plan developments are proposed adjacent to the project to the north and are also within the Focused Planning Area. None of the South Palm Vista VTM appears to be included in the Focused Planning Area boundary.

The Draft Master Plan also identifies a concept planning area, which encompasses a larger area and is intended to identify those areas within the City of San Diego jurisdictional boundaries. The entire precise plan area is located within the eastern concept planning area. The policy committee for the park, consisting of representatives of the City and County of San Diego and the City of Chula Vista, has accepted the study area boundaries.

Preliminary concept plans for the park identify the southerly extension of Dennery Canyon as open space with a trail linking the canyon to the Otay River valley. This proposed open space borders the easterly extent of the precise plan. The concept plan also recommends incorporation of recreation and additional open space into proposed surrounding development (including the project) to link with Dennery Canyon. An updated, and more detailed plan, is expected to be prepared by fall of 1993, with and implemented through subsequent tentative maps. The future town center is buffered on the south by Otay Mesa Road, on the north by Palm Avenue, and on the west by an unnamed road. The adjacent area south of Otay Mesa Road is not yet proposed for development. The roads would provide a significant barrier and separation between these land uses.

Land use buffering occurs at all of the major intersections of the precise plan. The intersection of Otay Mesa Road and Palm Avenue has no land use conflict because the three corners proposed for development are commercial lots. To the north of Palm Avenue and west of the unnamed road, medium density (30 du/acre) units are proposed. These land uses are compatible with the future town center. Additionally, the roads adjacent to the future town center site would function as a buffer to the surrounding uses.

At the intersection of Del Sol Boulevard and Palm Avenue there is no conflict in land use. The intersection contains three corners of low density housing and one community park. Medium density housing along SR-117 is not considered a land use conflict. Potential conflicts associated with noise impacts at this medium density area are addressed in the Noise section of this EIR. Briefly, noise levels exceeding the City standard would occur in several locations of the precise plan. The distances these unacceptable levels encroach on the precise plan land use areas vary from not at all to approximately 350 feet within the development area. Adequate mitigation is feasible for all areas with potential noise impacts, as described in the Noise section. The Mitigation, Monitoring, and Reporting Program is intended to ensure implementation of these measures as part of the PRD and CPIOZ permits.

Both the California Terraces and South Palm Vista VTMs implement the Precise Plan according to the land use designations and locations. The same potential land use conflict exists for these two VTMs as discussed for the precise plan. The landscape and buffering measures provided for the precise plan would be implemented by the VTMs and reduce this potential conflict.

Significance of the Impacts

No significant land use impacts associated with the proposed uses have been identified.

Mitigation, Monitoring, and Reporting Program

No mitigation other than implementation of the Mitigation, Monitoring, and Reporting Program is required.

subsequent environmental review and public comment following completion of the environmental review (Greenstein, City of San Diego, 7/31/92). Planning and implementation of the plan is the responsibility of a multijurisdictional committee composed of the County of San Diego, City of San Diego, and City of Chula Vista.

The California Terraces precise plan open space configuration preserves the major canyon areas on-site, linking with the southerly extension of Dennery Canyon, and proposes a school and park on uplands above the canyon. These uses and the open space proposed would be consistent with the concept plan for the regional park. It does not, however, preserve all of the area identified in the Focused Planning Area, especially in the northern areas of the precise plan and VTM. Future development within the Hidden Trails and Dennery Ranch project areas is proposed surrounding this portion of the project. Although the park plan has not been adopted, it appears that the California Terraces open space system would respect the preliminary regional park plan. This would be further explored when a formal regional park plan is established or recommended. No impacts regarding the California Terraces precise plan's consistency with the regional park concepts are identified.

b) Gateway Fair

This approved 31-acre planned commercial development is located to the northwest of the project site, across Palm Avenue. The California Terraces proposed multi-family residential uses are compatible with the approved commercial development.

c) Dennery Ranch

This proposed precise plan is located adjacent to the northern boundary of California Terraces. It includes low density residential uses, a school/park site, and open space. The land use proposed by the California Terraces Precise Plan would not conflict with this precise plan.

d) Hidden Trails (previously named Riverview)

Along the northeastern boundary of the project site lies Hidden Trails, a precise plan which includes approximately 900 low density residential uses and a school/park site. Along the common boundary between these two plan areas, California Terraces and Hidden Trails both propose the same types of land uses: low density residential uses and open space.

e) Robinhood Ridge (RR)

This 273-acre precise plan area is located to the northeast of California Terraces. No portion of RR borders California Terraces. The proposed uses in RR are within the same range of uses as those proposed by California Terraces (single- and multi-family residential, commercial, educational, recreational, and open space). In the area closest to California Terraces, RR proposes open space within Dennery Canyon. The California Terraces Precise Plan proposes an open space system which is consistent with that of the open space system of RR.

f) South Palm

This precise plan area is adjacent to the western boundary of California Terraces. The community plan designates this area for very low density residential use. Proposed uses appear to be consistent with the low density residential uses and open space which California Terraces proposes within the vicinity.

g) Otay Corporate Center North

This vesting tentative map covers approximately 178 acres and proposes 118.5 acres of industrial uses, with the remainder either natural open space or vernal pool preserve. The medium density residential and the school site located near the eastern border of California Terraces will be separated from the industrial uses by a canyon open space corridor varying in width from 300 to 600 feet. This corridor would effectively separate the proposed uses in California Terraces from the uses in the Otay Corporate Center North.

Significance of the Impacts

The California Terraces Precise Plan is compatible with the surrounding planned land uses and the Otay Valley Regional Park preliminary plans; therefore, significant impacts are not anticipated.

Mitigation, Monitoring, and Reporting Program

No mitigation is required.

B. Landform Alteration/Visual Quality

Existing Conditions

a) Site Topography

The California Terraces precise plan area is located within the northwestern portion of Otay Mesa. The topography of the project site is characterized by a large, flat mesa top about 500 feet in elevation, interrupted by steep canyons on the north, west, and south which generally drain northward to Otay Valley or westward. The northern boundary of Otay Mesa is formed by the Otay River valley. The major on-site canyon is Dennery Canyon, which drains in a north-northwest direction. Dennery Canyon forms the eastern boundary of the project area. Elevations on the project site range from 240 feet above MSL in the northern portion of the site to 530 feet above MSL near Otay Mesa Road.

To implement the proposed project, approval of a HR permit would be required. The topographic features and the City of San Diego's Hillside Review Overlay Zone areas for the project site are shown on Figure 16. The total area of the precise plan within the HR zone is 243 acres (36 percent). The California Terraces VTM contains 196.4 acres within the HR zone while the South Palm Vista VTM has 10.4 acres. The remaining HR acreage (36.2 acres) is within the other ownerships for which tentative maps are not proposed. The freeway right-of-way is not a part of the project. The Hillside Review Overlay Zone is generally applied to areas that have slopes exceeding 25 percent and a minimal elevation differential of 50 feet. Development within this zone requires the issuance of an HR permit. Development guidelines within this zone include:

1. Design structures to fit into the hillside rather than altering the hillside to fit the structure.

2. Development shall be sited on the least sensitive portion of the site to preserve the natural landforms, geological features, and vegetation (City of San Diego 1984:23-26).

A large portion of the project site has been disturbed. Numerous roads and trails are present as a result of unauthorized use of off-road vehicles. Further, unauthorized dumping of trash has occurred. As a result of these activities, debris is scattered throughout the project site.

Development of California Terraces is guided by the Otay Mesa Community Plan. The plan contains guidelines which apply when altering the landform within the plan area. These guidelines are referred to as "grading guidelines" and suggest that proposed development be designed to fit the landform rather than altering the landform to fit the

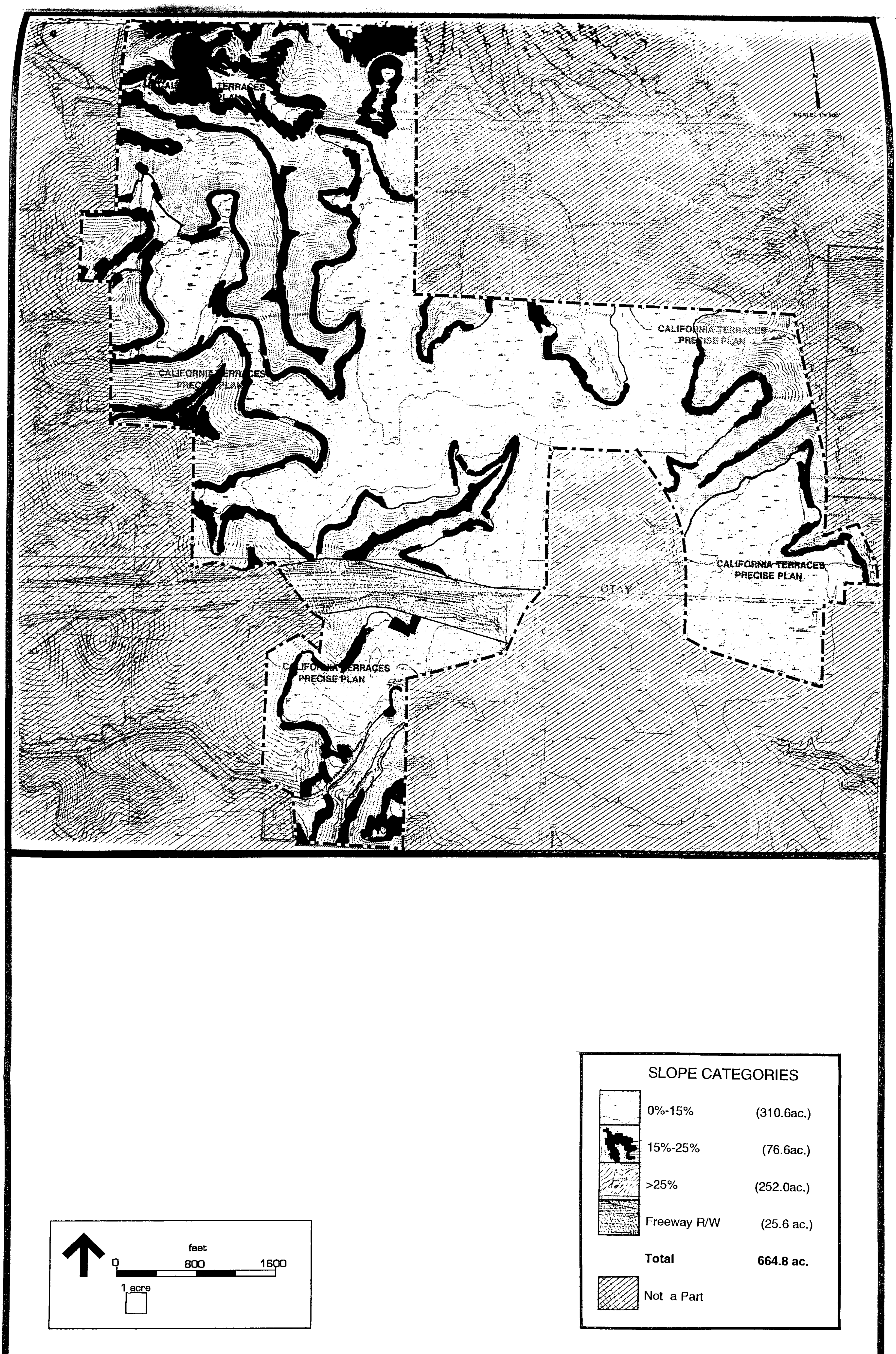


FIGURE 16. SLOPE ANALYSIS

development. Also, in identified areas of geological hazard, full geological reports should be required, and landscaping, irrigation, and maintenance should be required on all manufactured slopes (City of San Diego 1981:143).

b) Visual Quality

The mesa tops of the precise plan area site offer off-site views, especially near the canyon rims. Mixed urban uses (residential, commercial, and industrial) in Chula Vista and San Ysidro are visible towards the west and northwest of the site. Skyline views of Imperial Beach, downtown San Diego, and the Pacific Ocean also exist in these directions. To the north are views of Otay Valley, Chula Vista, and mountain peaks. Skylines to the northeastern, eastern, and southeastern directions are dominated by Otay Mountain and other peaks. Closer to the project site are views of the undeveloped mesa top and foothills. Views off-site also include abandoned bentonite mines, a landfill to the north of the project site, and an automobile salvage yard to the northeast. To the south and southwest are views of the Tijuana River valley and the hills of Tijuana.

The major roadways which have views to the project site are Otay Mesa Road, SR-905, Otay Valley Road, and I-805. Northbound travelers on Otay Mesa Road, south of SR-905, have views of the southwestern portion of the project site, which include the mesa and associated canyons. Travelers on SR-905 and Otay Mesa Road also view this portion of the project site as they travel both westerly and easterly. Figure 17 shows the observer locations from these areas, the view directions, and their spatial relationship to the California Terraces project for the photographs referenced below.

The optimal view of Dennery Canyon from Otay Mesa Road is shown in Photograph 1. SR-905 and Otay Mesa Road intersect near the south-central portion of the project site, adjacent to the future town center site. In the vicinity of this intersection, the project site is a flat mesa almost denuded of vegetation by off-road-vehicle activity (Photograph 2). Photograph 3 illustrates the view of the site from the westbound SR-905 transition ramp to northbound I-805. This area has a more hilly topography and is less disturbed, albeit off-road trails do exist.

Vehicular travelers on southbound I-805 have a view of the northern end of the project site. Photograph 4 illustrates the view from southbound I-805 near the Orange Avenue overpass. Photograph 5 is a view of the project site from eastbound Palm Avenue at the junction with I-805. Viewers from this location can see the eastern and northern edges of the California Terraces project site.

Travelers on Otay Valley Road (approximately 3,600 feet to the east of the site) have an oblique view of the project area. Views are to the edge of the mesa top above Dennery Canyon and the smaller north-trending canyons. Views of the project are primarily associated with westbound vehicular travelers on Otay Valley Road. These views can be

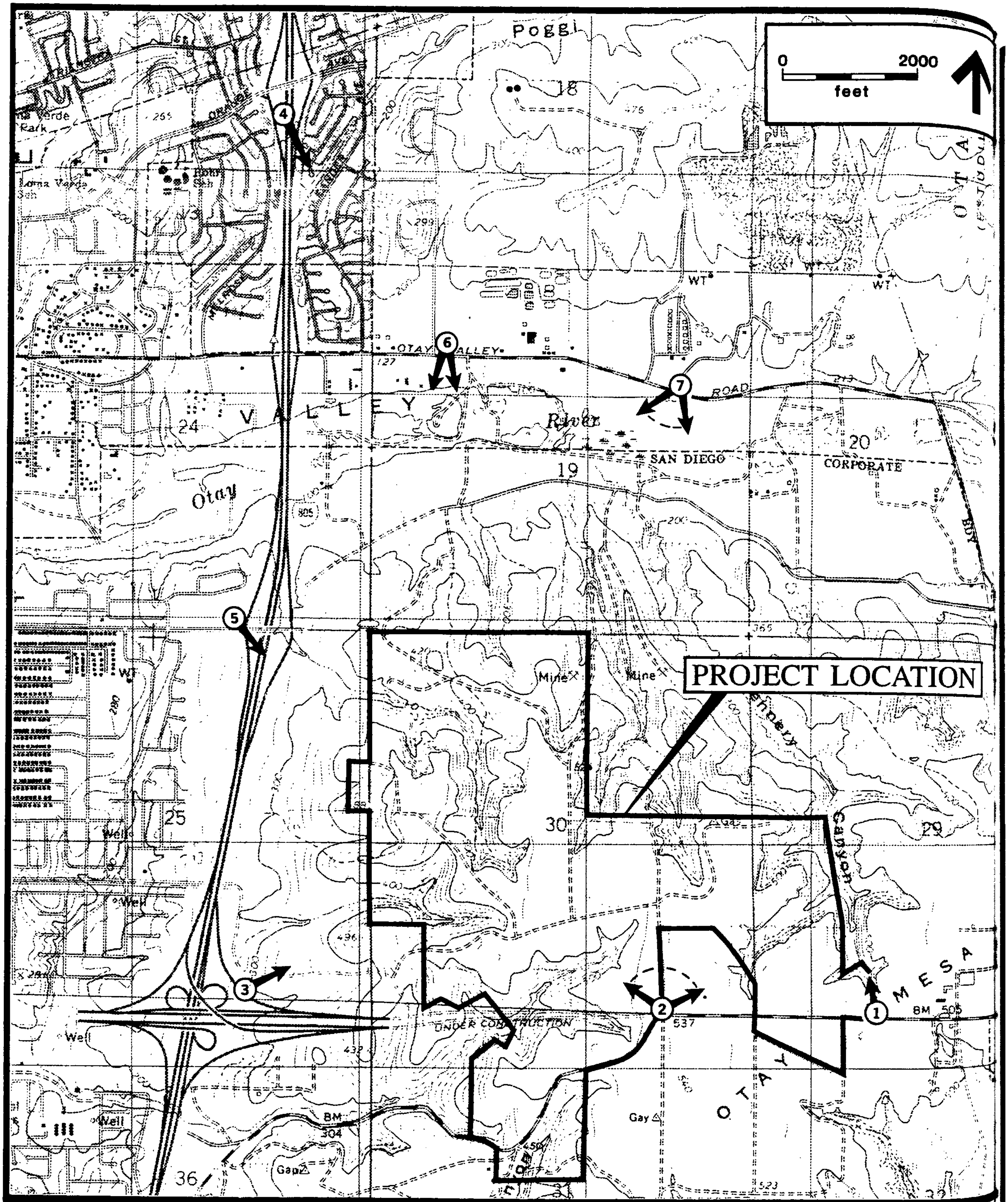
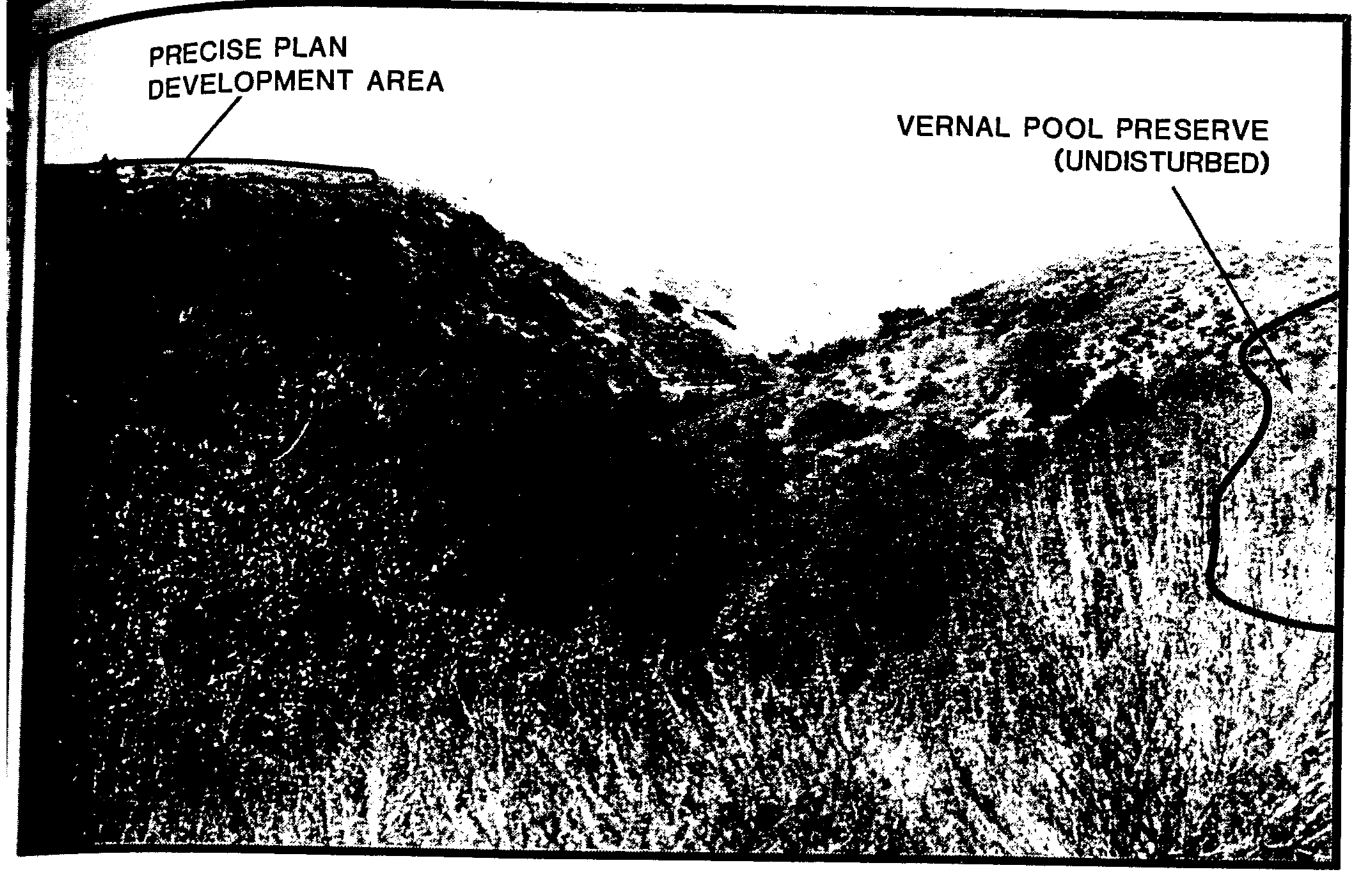
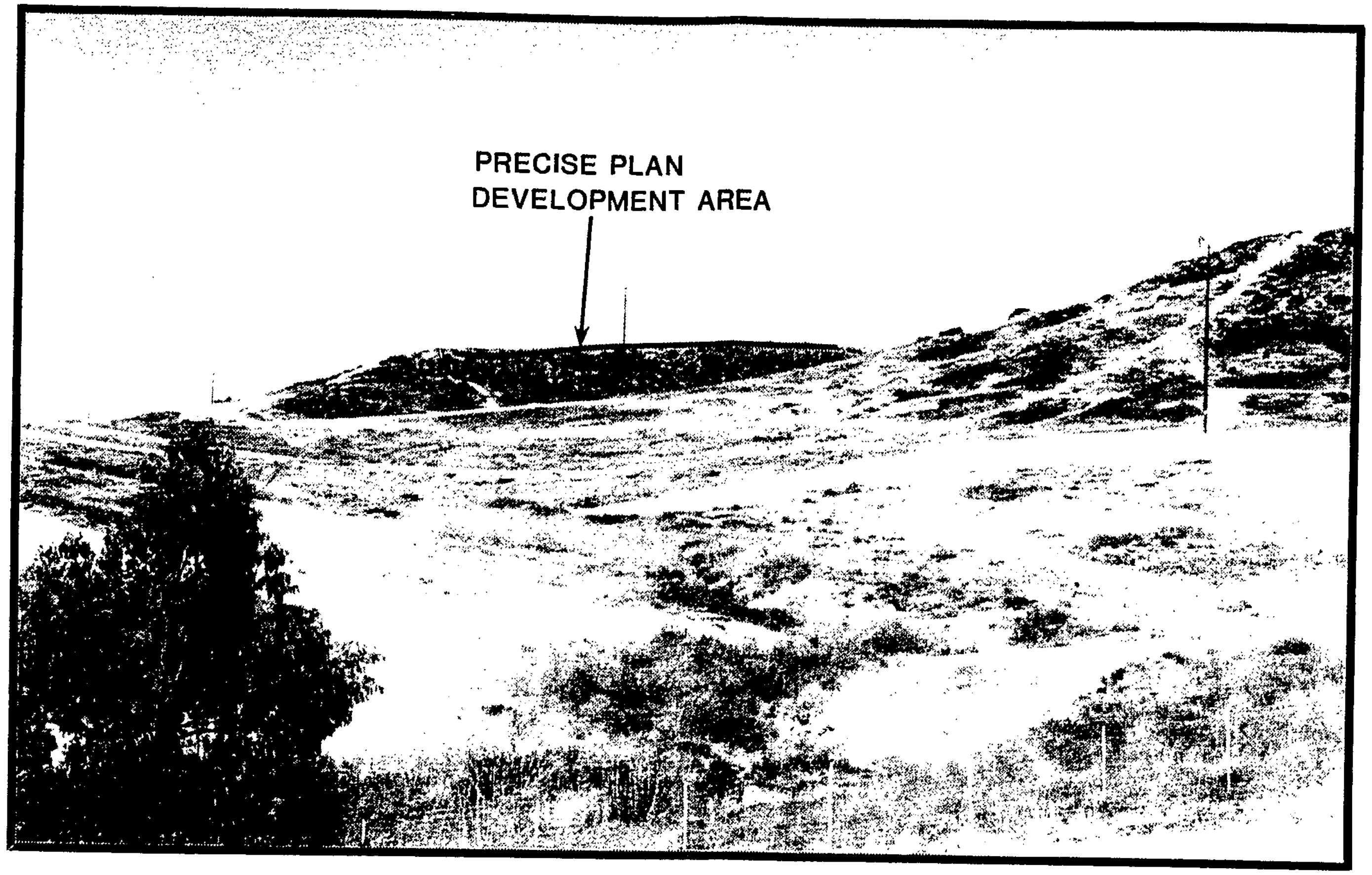


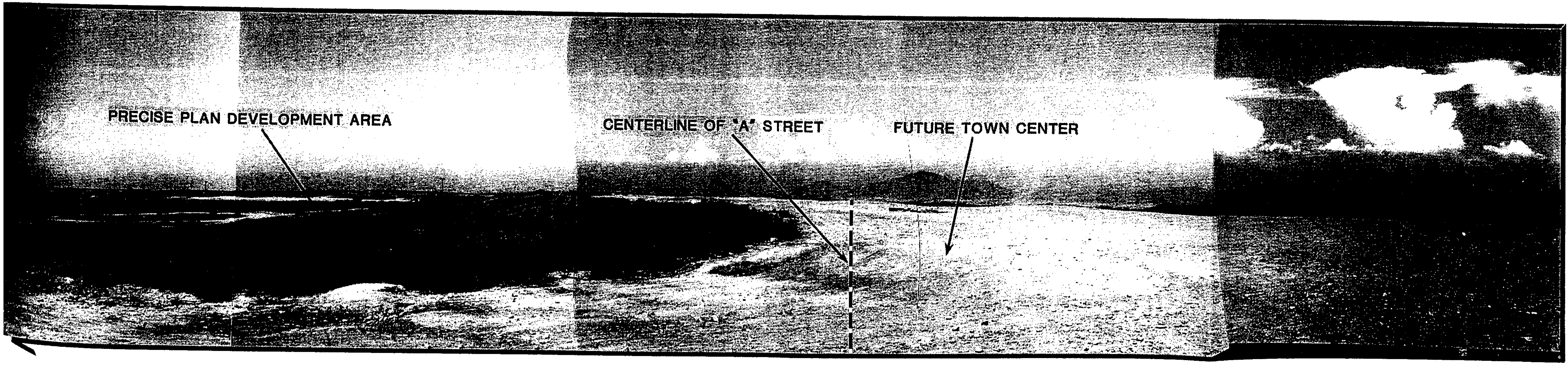
FIGURE 17. PHOTOGRAPH LOCATIONS



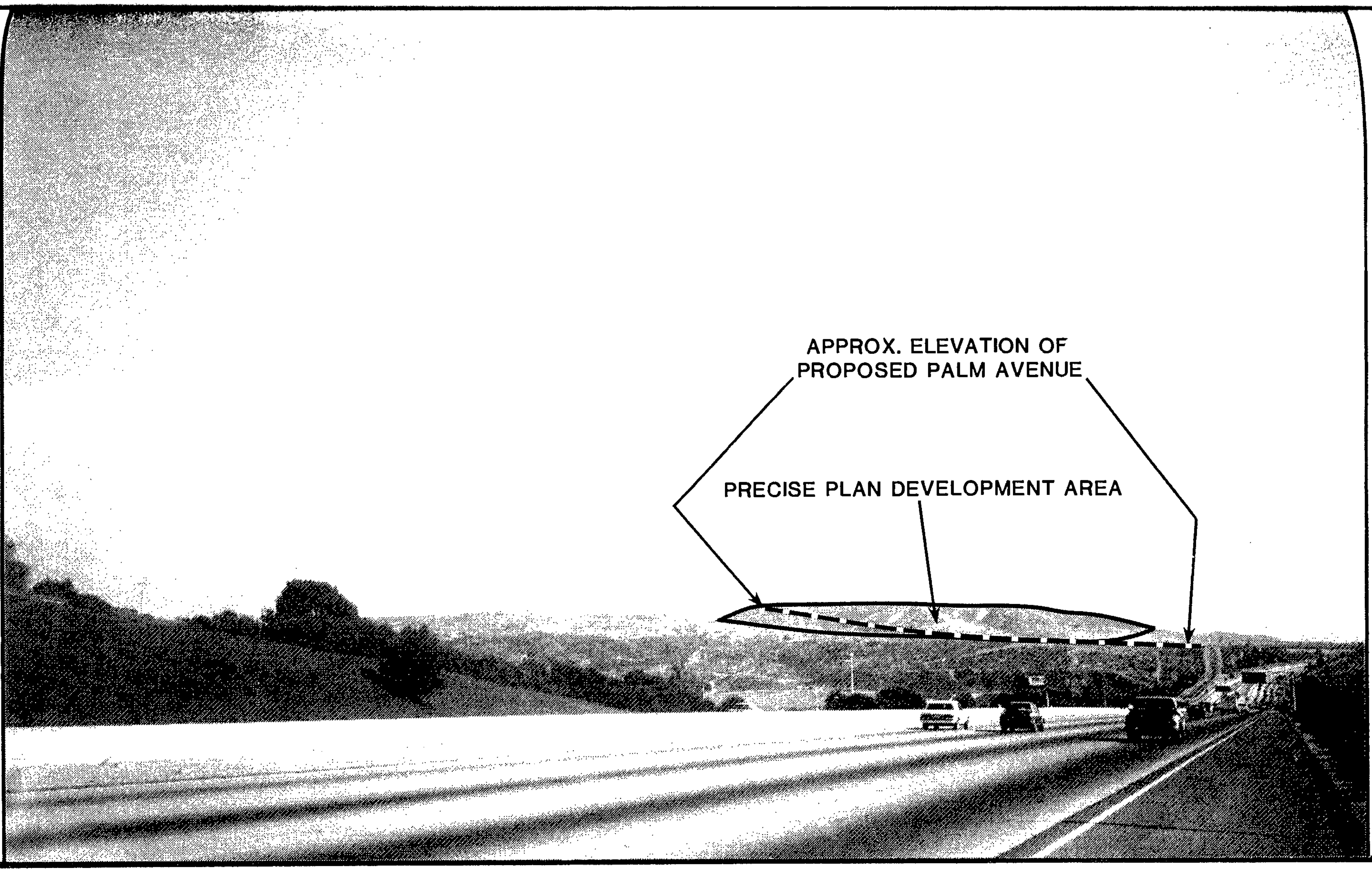
PHOTOGRAPH 1. NORTHERLY VIEW OF DENNERY CANYON FROM OTAY MESA ROAD



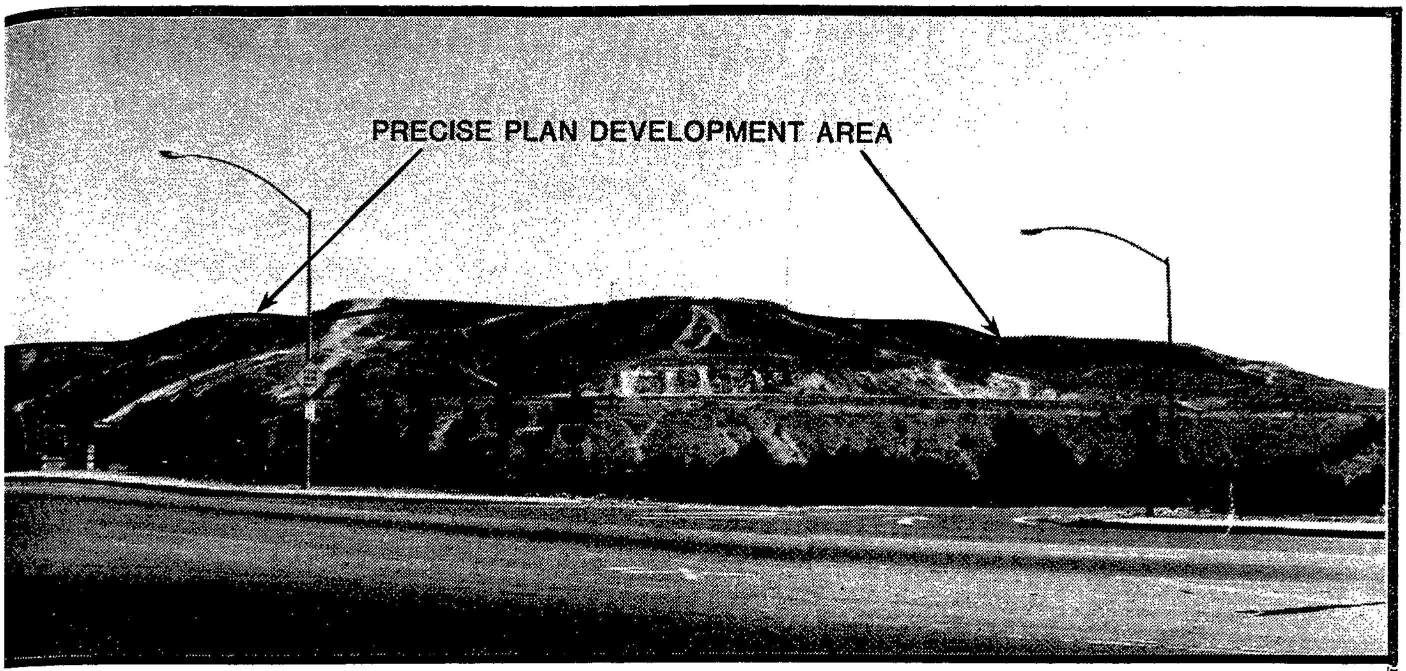
PHOTOGRAPH 3. NORTHEASTERLY VIEW FROM I-805 NORTHBOUND RAMP



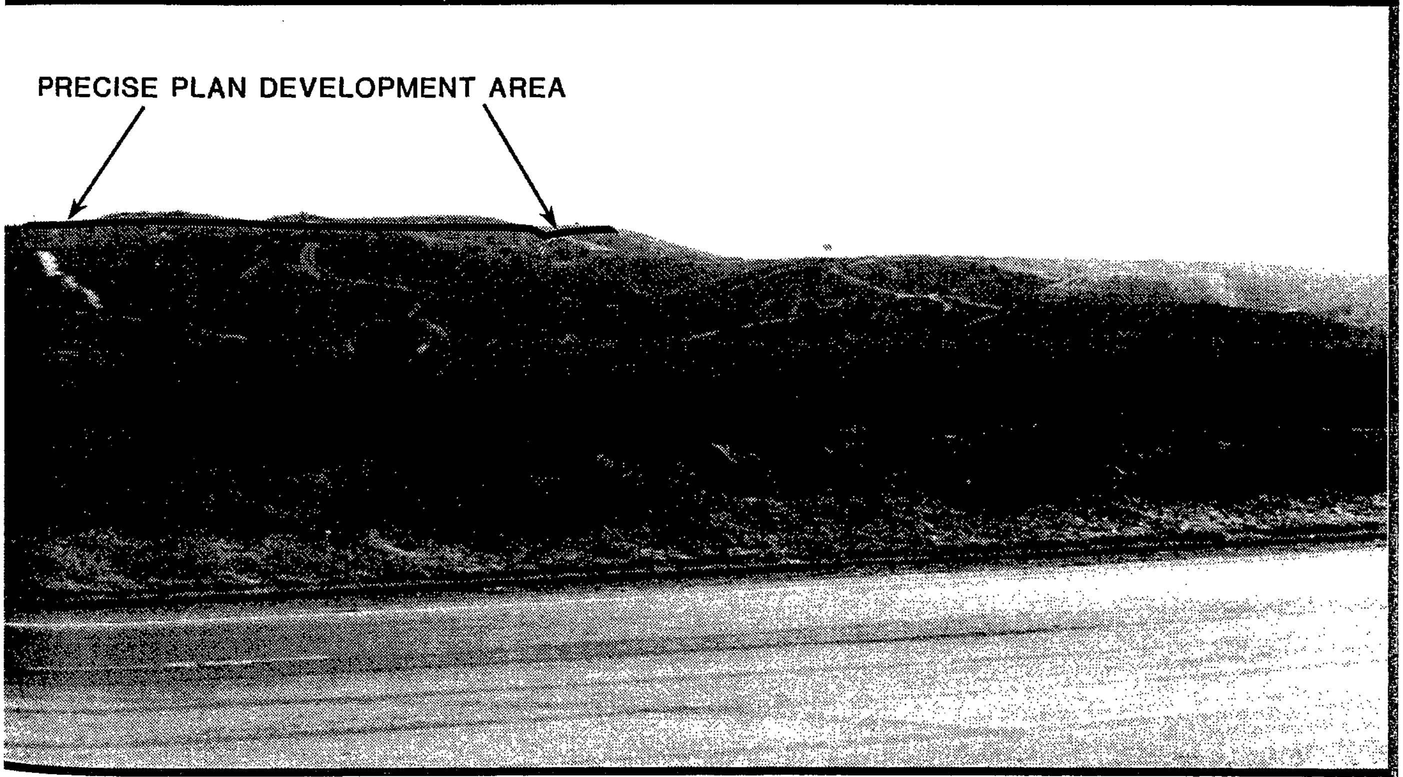
PHOTOGRAPH 2. VIEW FROM OTAY MESA ROAD AT THE SOUTHWEST CORNER OF THE FUTURE TOWN CENTER



PHOTOGRAPH 4. SOUTHERLY VIEW FROM SOUTHBOUND I-805 NEAR ORANGE AVENUE



PHOTOGRAPH 5. SOUTHEASTERLY VIEW FROM PALM AVENUE AT I-805



PHOTOGRAPH 6. SOUTHERLY VIEW FROM OTAY VALLEY ROAD NEAR ROMA COURT

characterized as background skyline views. Only the extreme northern portion of the California Terraces project area is visible from Otay Valley Road. Photograph 6 is a view of the site from Otay Valley Road at the intersection of Roma Court. The final observation point (Photograph 7) is located further to the east than I-805 at Otay Valley Road/Nirvana Avenue intersection.

Surrounding residential areas also have views of the project site. While some areas within San Ysidro (to the west) and Chula Vista (to the northwest) have views which are interrupted by intervening topography, other areas within these communities have views of the mesa top and associated canyons within the project area.

As stated in the community plan, ". . . views of and from hillsides should be retained to the extent possible. . . Site planning should provide views across the community from external vantage points and should assure that important community statements are visible and lesser ones become obscured in the total scene. . . . Placement of homes upon residential lots should be staggered in a way to protect the view of canyons and other open space areas, . . . and building height and bulk should be varied to provide views (City of San Diego 1981:92-95)."

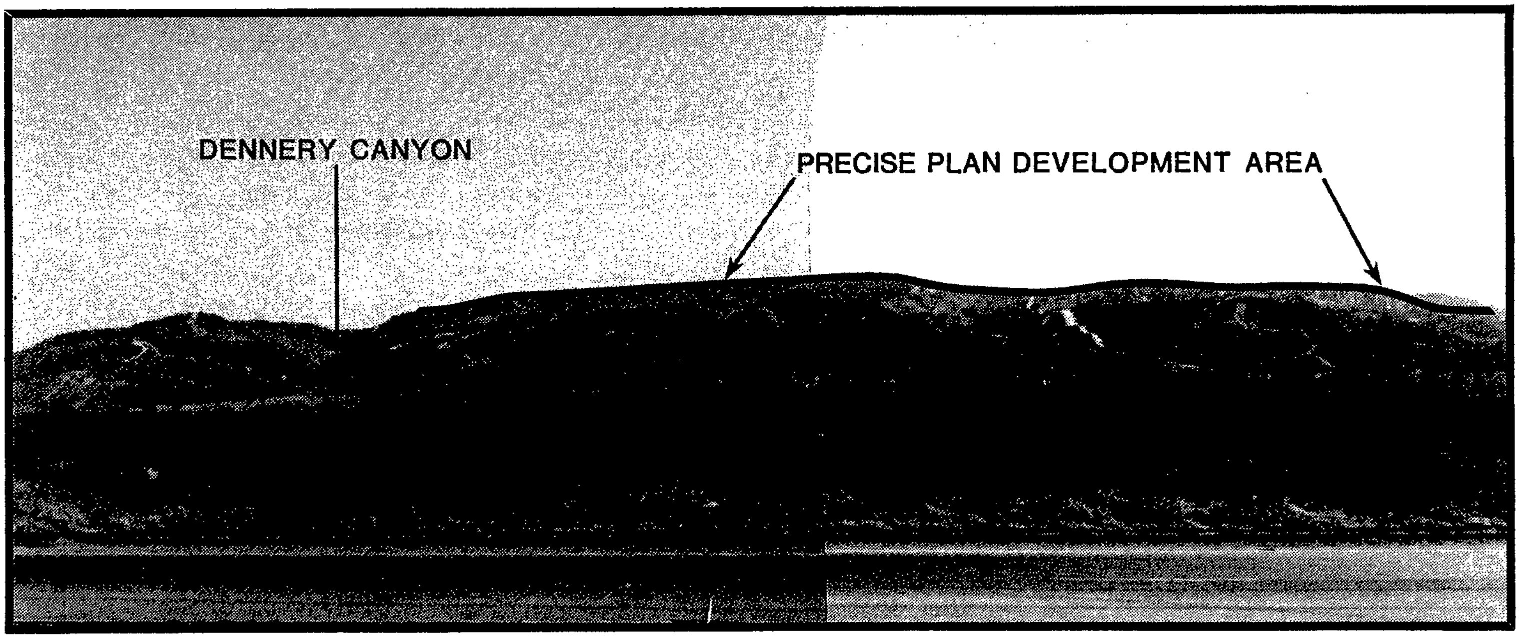
c) Brush Management

A variety of vegetation is present on the project site. On the mesa, there is currently a sparse mixture of annual grasses and weeds (ranging from a few inches tall to approximately three feet in height) on previously cultivated and grazed land. The western portion of the mesa also contains coastal sage scrub, which occurs in clusters and ranges from two to three feet in height in this area. The only trees on the site are eucalyptus. These trees are present as single species in scattered areas on the mesa top.

The canyons within the precise plan contain predominantly coastal sage scrub and maritime succulent scrub vegetation. The prevalent vegetation on canyon slopes and floors is low shrub (coastal sage scrub and maritime succulent scrub species of two to three feet in height), interspersed with taller shrubs (coastal sage scrub species of six to eight feet in height).

A large portion of the vegetation on the site has been disturbed due to off-road-vehicle activity. The result of this activity is the creation of numerous trails, roads, and large expanses of bare dirt, which are apparent in Figure 3. These roads and dirt areas are visible from the surrounding public streets.

The precise plan would not be subject to the requirements of the City's Landscape Ordinance because the submittal preceded the adoption of the ordinance. However, development of the precise plan would be required to implement the California Public Resources Code in a manner which balances the need to reduce the fire hazard to an



PHOTOGRAPH 7. SOUTHERLY VIEW FROM OTAY VALLEY ROAD NEAR NIRVANA AVENUE

acceptable level of risk without creating or aggravating other hazards such as soil erosion and slope failures.

1) Issue

How would development of the proposed project alter the existing topography?

Impacts

a) Precise Plan

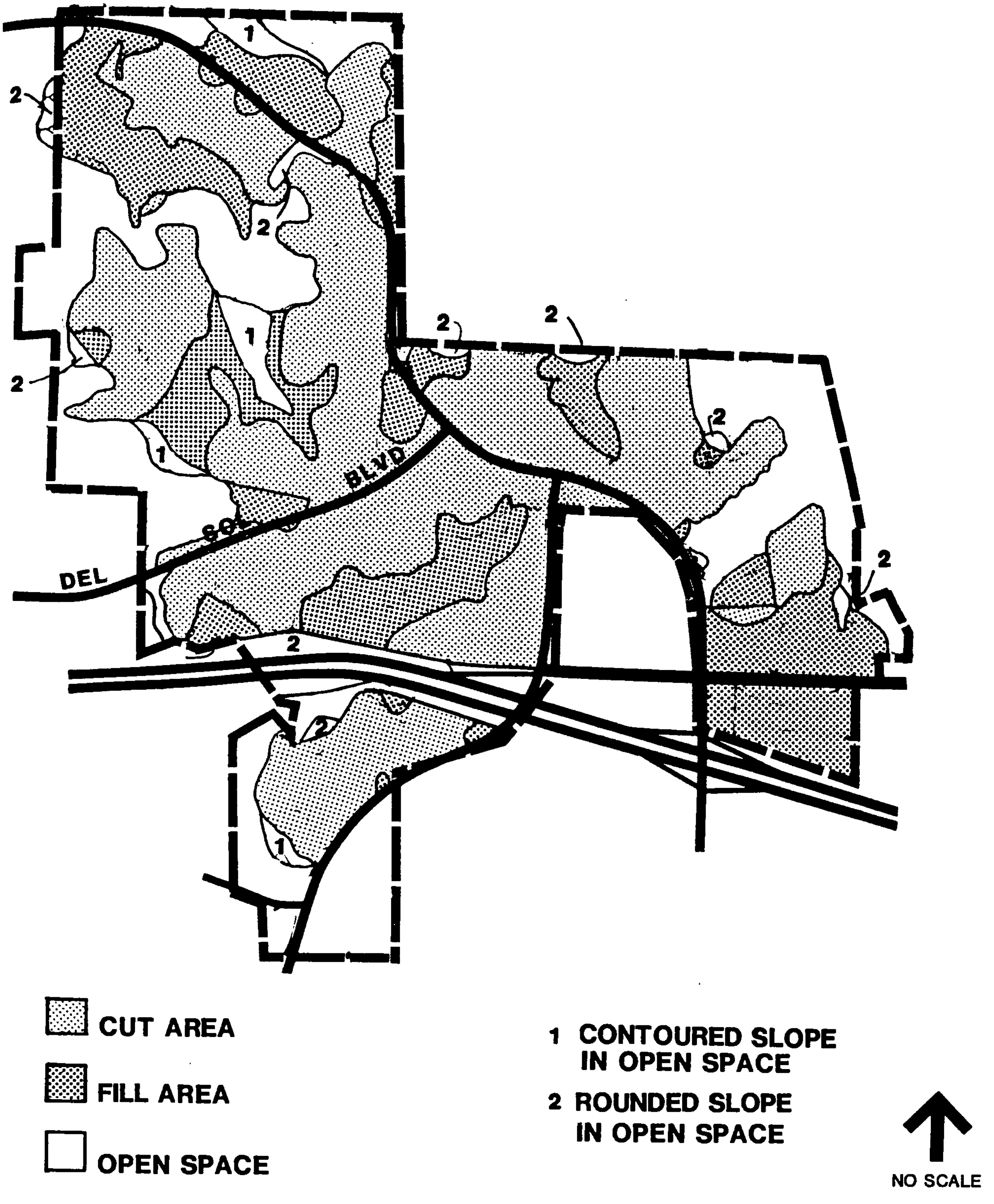
The grading approach for the entire precise plan area (664.8 acres) is shown in Figure 18. Four small areas (totaling 94.0 acres) within the precise plan are under a different ownership. These parcels are owned by several different individuals who have had varying degrees of participation in the planning process, and future environmental review of these parcels would be required. The implementation of the grading in the four smaller areas is presently unknown; although no grading is currently proposed in these areas, conceptual grading is indicated for future development.

The precise plan proposes to grade approximately 516 of the total 664.8 acres (78 percent). The total grading quantity proposed is 6.7 million cubic yards of cut and 6.13 million cubic yards of fill. This quantity results in an average of 12,984 cubic yards per graded acre. As illustrated in Figure 19, the maximum slope height would be 136 feet. Of the 243 acres within the HR zone, 138 acres (57 percent) would be graded within the precise plan. Figure 20 illustrates the relationship of the precise plan to the HR zone.

b) California Terraces VTM

The proposed VTM (543.5 acres) makes up approximately 82 percent of the proposed precise plan (664.8 acres). The total quantity of cut and fill, 6.0 million cubic yards, would be balanced within the area shown on the VTM. This amounts to approximately 13,200 cubic yards of cut and fill per graded acre. Mesa top cutting would provide the fill dirt for proposed building areas and roadways. The proposed grading would reduce the height of the mesa top by approximately 30 feet in the northwest corner and by 0 to 10 feet over most of the project site. Within the multi-family residential areas, building pads would be terraced for separation and view enhancement.

Grading for the California Terraces VTM would require 10 slopes which would reach heights over 60 feet (Figure 21). The maximum height of the tallest manufactured slope would be 136 feet. Manufactured open space areas would be maintained by a homeowner's association or a Landscape Maintenance District.~~through utilizing landscaping and an open space maintenance district.~~



SOURCE: PDC, 1991

FIGURE 18. PRECISE PLAN GRADING

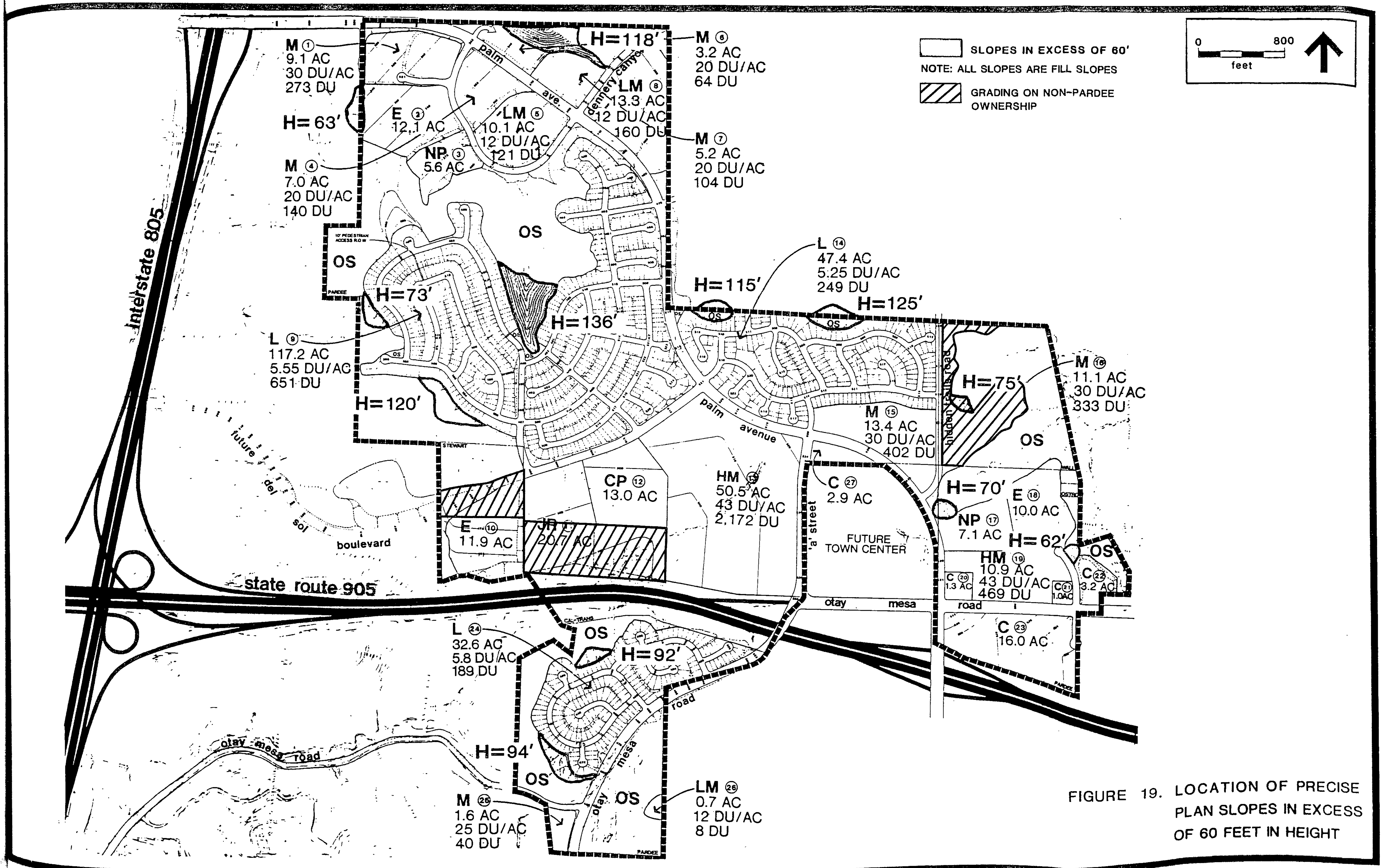


FIGURE 19. LOCATION OF PRECISE PLAN SLOPES IN EXCESS OF 60 FEET IN HEIGHT

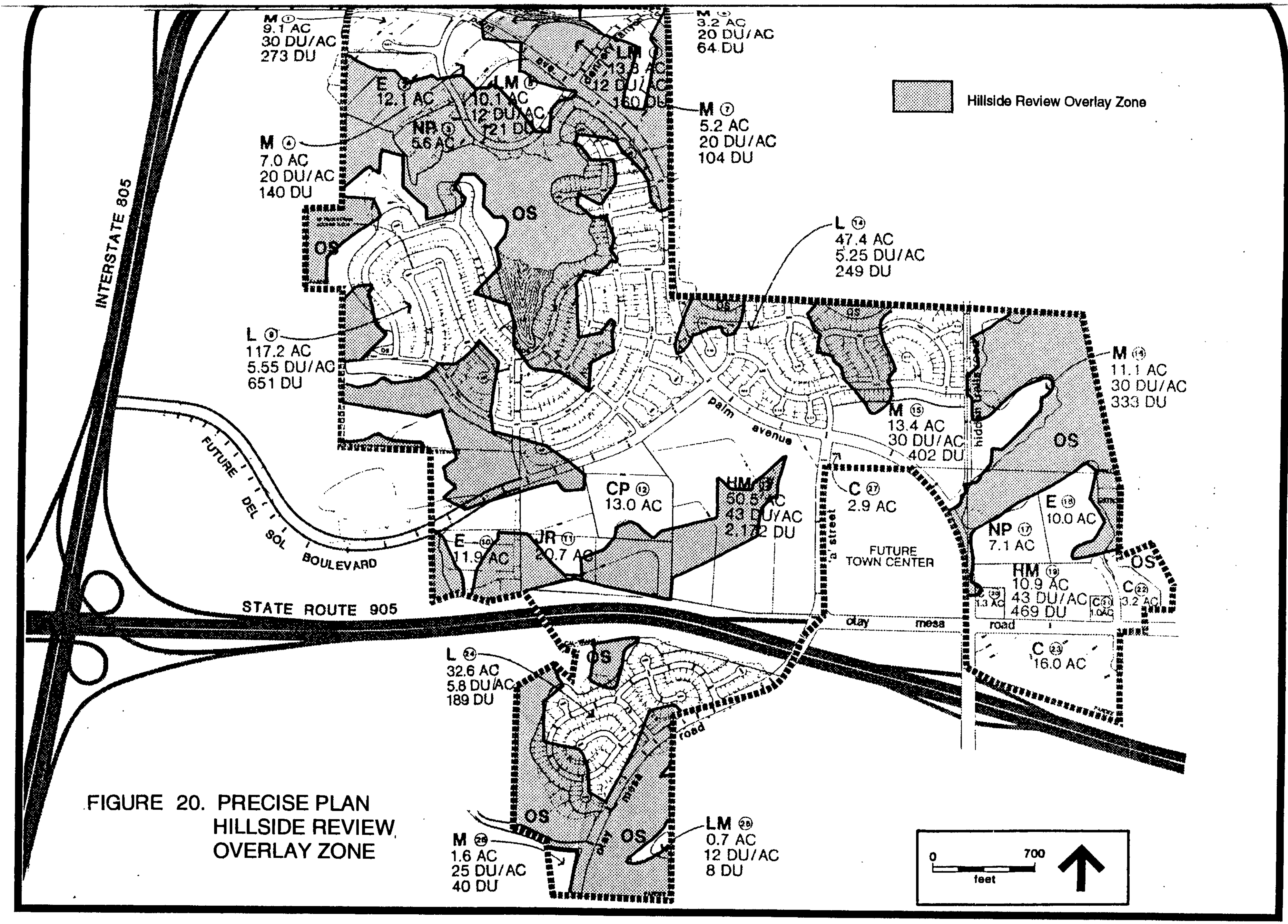


FIGURE 20. PRECISE PLAN HILLSIDE REVIEW OVERLAY ZONE

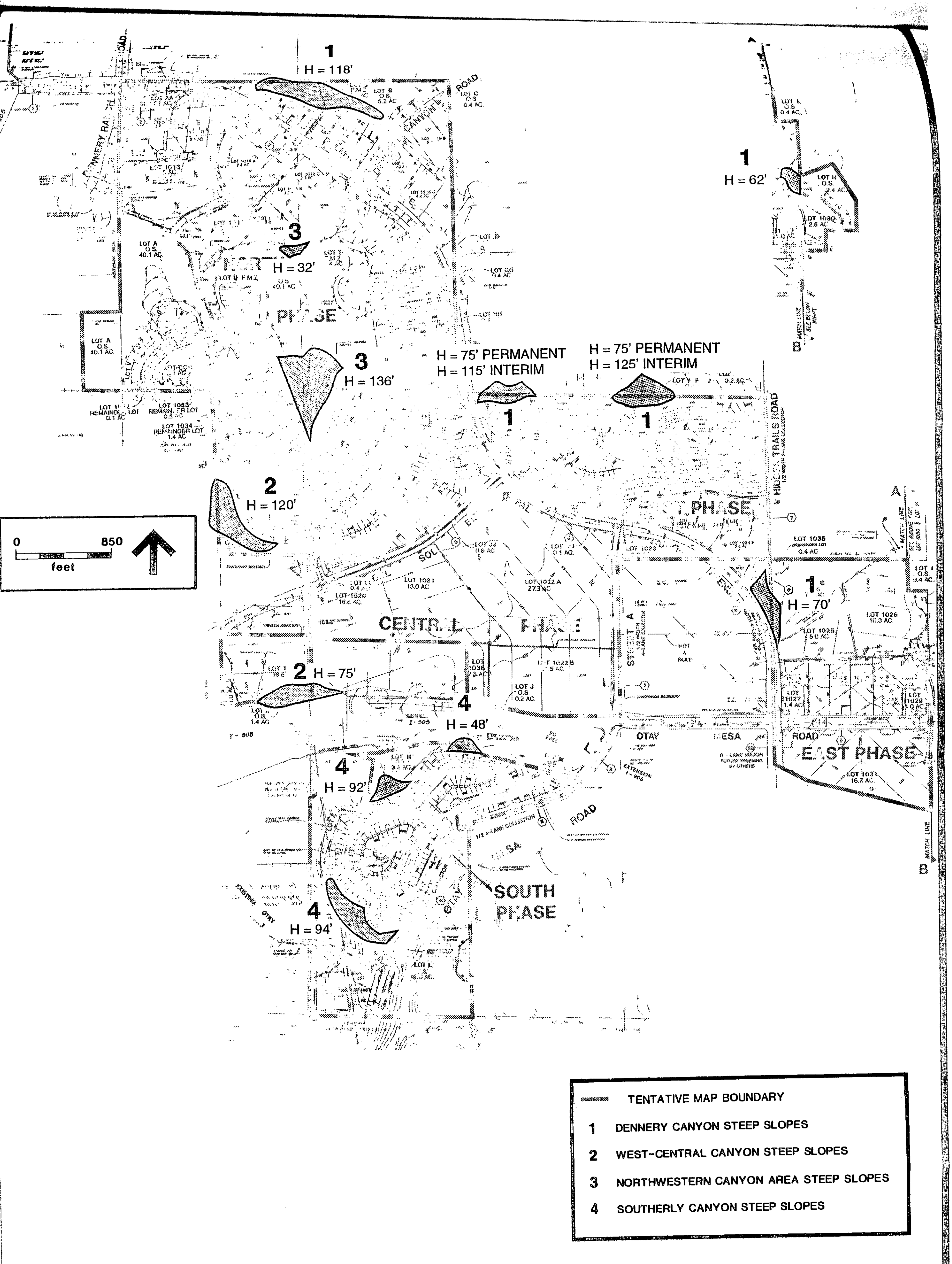


FIGURE 21. CALIFORNIA TERRACES VTM GRADING OF CANYONS

The VTM would preserve approximately 40 percent of the steep slopes in open space. The open space system for the VTM as well as for the entire precise plan is based upon the "Draft Agreement of Open Space and Planning Issues" formulated by City staff and property owners in the area through a series of design workshops (see Figure 5). The following steep areas would be graded:

1. The upper portions of the finger canyons within Dennery Canyon. These areas would be filled for low and medium density residential uses.

2. A portion of the west-central canyon area. This area would be filled to provide an area for medium density residential uses plus school and park sites.

3. A portion of the canyon in the northwestern corner of the project site. This area would be graded for residential, neighborhood park, and elementary school uses.

4. A portion of a canyon in the southerly extension of the project site. This area would be filled for low density residential uses.

c) South Palm Vista PRD/VTM

The South Palm Vista PRD/VTM is located in the central/western portion of the precise plan area. The grading associated with South Palm is illustrated in Figure 22.

The proposed grading for the South Palm Vista VTM would involve approximately 214,300 cubic yards of cut and 17,200 cubic yards of fill resulting in the export of 197,100 cubic yards of dirt. Grading would create development sites and would provide local residential streets on the ridge top.

The grading plan indicates that 8.78 acres, or 35 percent, of this 24.9-acre site would be graded. The project site includes 10.4 acres within the Hillside Review Overlay Zone, of which 1.2 acres, or 12 percent, would be graded. Prior to grading, 24 percent of the site has a slope gradient of 0-10 percent, 20 percent has a gradient of 11-25 percent, and 56 percent of the site has a gradient of greater than 25 percent. After grading, 37 percent of the site would have a gradient of 0-10 percent, 13 percent of the site would have slopes of 11-25 percent gradient, and 50 percent of the site would contain slopes of greater than 25 percent.

Manufactured slopes would range from 14 to 55 feet in height. All manufactured slopes would be landscaped and maintained through a homeowner's association or a Landscape Maintenance District.~~an open space maintenance district.~~ Graded slopes would be contour graded (undulated) to produce a natural slope appearance.

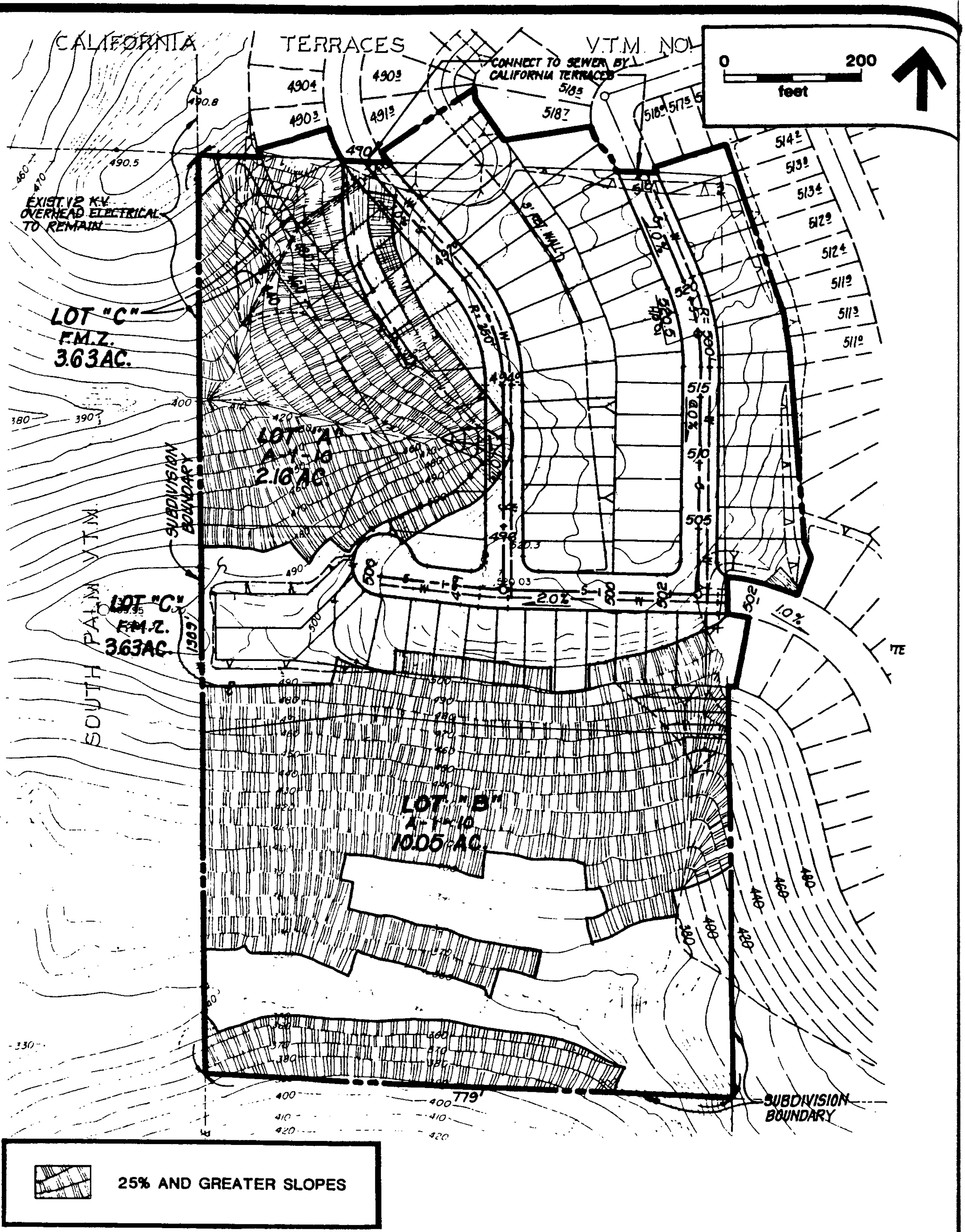


FIGURE 22. SOUTH PALM VISTA VTM GRADING PLAN

Significance of the Impacts

The proposed grading quantities and height and number of manufactured slopes would significantly alter the existing landform. In addition, as described in the Land Use section, the grading would not implement the guidelines established in the Otay Mesa Community Plan and the Hillside Review Overlay Zone. Thus, implementation of the proposed grading would constitute a significant impact.

Mitigation, Monitoring, and Reporting Program

The precise plan and both VTMs as proposed would have significant unmitigated landform alteration impacts. A number of measures have been incorporated into the project design to lessen the impacts associated with the proposed grading. These measures include the use of slope rounding and contour grading. Implementation of these measures would reduce the grading impacts of the project. However, the landform alteration impacts would remain significant. Substantial mitigation of landform alteration impacts could be achieved by adoption of a project redesign alternative.

The impacts could be further reduced by the adoption of one of the alternatives described in this EIR. To varying degrees, each of these alternatives would limit the extent of grading. These project redesign alternatives are fully discussed in Chapter 6.

Implementation of the grading techniques (slope contouring and undulation) shown on each of the tentative maps would occur through the approval of the final grading plans. The applicant shall clearly indicate on the grading plans slopes that are to be contour graded. A note shall be included on the grading plans requiring the applicant to notify the Planning Department two weeks before grading begins and for the follow-up inspection after grading is complete. Prior to the issuance of grading permits, EAS shall review the grading and landscape plans to ensure that grading techniques are being utilized and that manufactured slopes are landscaped in conformance with the conceptual landscape plan. Areas shown as open space shall be flagged by a biologist in the field and confirmed by EAS. The applicant shall retain a soils engineer to monitor the grading, construction, and revegetation of the project and submit in writing to the City Engineer and EAS certification that the project has complied with the required mitigation measures on the grading plans. Only after the Planning Director and City Engineer approve the grading, a recommendation shall be made to the City Council for the release of the subdivision bond.

2) Issue

How would the project affect the visual quality of the area, particularly with respect to views from major roadways?

Impacts

The proposed grading and development of the precise plan area would significantly alter the visual character of the property. Implementation of the VTM and precise plan grading described above under issue 1 would alter the skyline, mesa top, and canyon views. The presently disturbed vacant mesa top would be developed with streets, houses, parks, schools, and commercial areas. The canyons would be altered since many of the canyon heads would be filled and subsequently incorporated into development pads.

From the west and north, viewsheds of the California Terraces skyline and mesa top would be altered. Skyline views would primarily be composed of low density detached housing. The overall site design primarily consists of medium density housing lots. Attached housing is proposed near commercial areas and major roadways, while detached housing is proposed near the edges of the mesa top. Views of residential structures would be interspersed with views of commercial, recreational, and institutional land uses.

Portions of the developed site would be visible from four major off-site roadways: I-805, SR-905, Otay Mesa Road, and Otay Valley Road. Major on-site roads would also permit views of the project site. These roads include Palm Avenue and Del Sol Boulevard.

The California Terraces Precise Plan and VTM would retain Dennery Canyon, which may be visible from I-805 and Otay Valley Road, as open space. The South Palm Vista PRD/VTM portion of the precise plan is located on a ridge top overlooking the South Palm Precise Plan to the west and I-805. Homes and manufactured slopes located along the outer edge of the development would be visible from certain view points below (including portions of I-805), representing a visual impact. A majority of the steep slopes (11.25 acres, or 80 percent) on the South Palm Vista VTM would be preserved as natural open space.

There would also be skyline views from I-805 (approximately one-quarter mile in the distance) of the medium density (15-30 du/acre) development on the mesa top and manufactured slopes within the California Terraces VTM. Developing the project site would create a significant visual impact to I-805.

From SR-905, Otay Mesa Road, Caliente Boulevard, Del Sol Boulevard, and portions of Palm Avenue, one would have mid- and short-range views of the development on the mesa top. From these roads, there would be views of residential, educational, recreational, and commercial land uses. From all roads (including I-805 and Otay Valley Road), one would have long- and mid-range views of canyons.

The creation of large, manufactured slopes (those over 60 feet in height), especially in on-site canyons, represents the most significant visual impact. Figure 19 shows the locations and heights of these slopes.

Linear manufactured slopes would be used at locations of moderate visibility within internal areas and where slope heights do not exceed 30 feet. All slopes over 30 feet in height would be contour graded and rounded. The maximum gradient would be 2:1 (horizontal to vertical).

Noise mitigation, including the use of noise attenuation barriers, is discussed in detail in the noise section of this EIR. Wherever possible, grading and architectural design would reduce the need for noise attenuation walls. Noise attenuation barriers may be constructed of a combination of materials including an earthen berm base and varying-height solid wood, masonry, or clear Plexiglas materials. Where these walls are determined to be necessary, landscaping is proposed between the walls and the street to "soften" the visual impacts. The precise plan design guidelines require walls or fences to be designed as integral elements of building architecture complementary to landscape character. The walls should maintain consistent color and materials to reinforce the common theme of the community.

Noise attenuation walls would be necessary along portions of Palm Avenue, Del Sol Boulevard, and "A" Street. These areas are internal portions of the precise plan and California Terraces VTM. The noise attenuation walls along these roadways would vary between three and six feet in height and would be constructed in accordance with the precise plan design review guidelines for walls and fences within the project.

Noise attenuation barriers would also be required along the external boundaries of the project which front Otay Mesa Road and future SR-905. Areas along the southern boundary of the junior high/elementary school site fronting SR-905 would be four to six feet in height, assuming a building setback of 120 feet from the noise barrier. East of the school site is an area proposed for high-medium density residential development. A 10-foot-high noise wall may be required for a distance of approximately 550 feet. For residential areas south of SR-905, a continuous wall of six to eight feet in height would be necessary at the edge of lots fronting SR-905. Along Otay Mesa Road, three- to four-foot-high walls would be necessary.

Significance of the Impacts

Implementing the precise plan via the two VTMs would create significant visual quality impacts due to the proposed development and creation of major manufactured slopes visible from major roadways and from proposed public open space areas associated with the Otay Valley Regional Park. Noise attenuation barriers in excess of six feet in height would be required for noise mitigation along future SR-905, which would result in significant visual impacts along a major public highway.

Mitigation, Monitoring, and Reporting Program

The areas proposed as natural open space would reduce the visual quality impacts by retaining a portion of the natural character of the site. The precise plan incorporates the following design objectives which attempt to reduce the impacts which would result from implementation of the project. The design objectives of the precise plan include grading guidelines, landscaping concepts, and streetscape treatment. These measures would provide partial mitigation for the significant visual quality impact resulting from the project grading.

a. In areas of manufactured slopes, techniques such as rounding the toe and top of manufactured slopes would be utilized to lessen the visual impact. Although these slopes would initially cause a dramatic change in the visual environment, as the landscaping on these slopes matures, the visual contrast would diminish. Contour grading techniques would be utilized as required by the Hillside Review Guidelines.

b. Slopes with lesser visibility but adjacent to natural open space would be rounded and contoured to blend with the open space areas.

c. All manufactured slopes would be landscaped. A mix of native drought-tolerant plant species would be used. Landscaping would follow the City Landscape Ordinance and Technical Manual. A landscape concept plan (see Figure 15) has been prepared for the precise plan. These concepts have been incorporated into the detailed landscape plans for each of the tentative maps.

Implementation of these mitigation measures would occur through the approval of the final grading plans. The applicant shall clearly indicate on the grading plans slopes that are to be contour graded and rounded. A note shall be included on the grading plans requiring the applicant to notify the Planning Department two weeks before grading begins and for the follow-up inspection after grading is complete. Prior to the issuance of grading permits, EAS shall review the grading and landscape plans to ensure that grading techniques are being utilized and that manufactured slopes are landscaped in conformance with the approved landscape plans for the California Terraces and South Palm Vista VTMs. The applicant shall retain a soils engineer and biologist to monitor the grading, construction, and revegetation of the project and submit in writing to the City Engineer and EAS certification that the project has complied with the required mitigation measures on the grading plans.

Additionally, it shall be a condition of approval for all tentative maps that the developer provide maintenance of all landscaping of the manufactured slopes along major streets and adjacent to natural open space. The developer is responsible for maintaining the landscaping until such time that either homeowner's associations (HOAs) or other City-approved mechanisms can assume long-term responsibility. If maintenance responsibility is accepted by a Landscape Maintenance District, the minimum maintenance period would be two years.

The applicant shall enter into a long-term maintenance agreement with the City, which shall be recorded with all final maps. The agreement shall stipulate that the developer shall be responsible for the landscape maintenance of the manufactured slopes until such time that either the HOAs or other mechanisms can assume responsibility. Any areas which are proposed to be deeded over to the City and require landscape maintenance are likewise the obligation of the developer until such time that the City has agreed to assume responsibility.

Areas covered by the Community Plan Implementation Overlay Zone which contain manufactured slopes must have either HOAs or other mechanisms (which must be approved by the Planning Department and Park and Recreation Department) established prior to the issuance of building permits. The HOAs and/or other approved mechanisms are required to provide permanent landscape maintenance of the manufactured slopes.

Partial mitigation for visual impacts from noise attenuation barriers along SR-905 would be achieved through a combination of architectural design features to vary the setback and relief of the face of the walls, utilization of design and colors to be compatible with the theme of the surrounding development, and landscaping to break up the length of continuous hardscape surface apparent from the highway. The precise plan contains design guidelines which would ensure that any noise walls necessary along SR-905 at the school site, park site, high-medium density residential, and low density residential areas would be designed to be compatible with the surrounding development. The need for noise walls at these locations is described in the Noise section of this EIR. The visual quality impact associated with noise walls in excess of six feet in height could be further reduced through the use of setbacks and berm/wall combinations which would reduce the wall height to below six feet.

3) Issue

Would compliance with the precise plan's brush management program result in visual impacts?

Impacts

Due to San Diego's topography, climate, minimal rainfall, and frequent winds, any building with native vegetation (e.g., chaparral) growing around or near it is subject to brush fire. As noted previously, the project is not subject to the requirements of the Landscape Technical Manual under the City's Landscape Ordinance. The precise plan proposes to implement a comprehensive brush management program which is similar to that required by the City's Landscape Technical Manual for Brush Management. The conceptual brush management plan included in the California Terraces Precise Plan is depicted in Figure 23. The more detailed landscaping plans for the California Terraces and South Palm Vista VTMs also depict the brush management zones (Figures 24 and 25). A detailed description of the acreage of native vegetation affected by each brush management zone is provided in Chapter 4.D., Biological Resources.

California Terraces is located within a native coastal sage scrub plant community. Coastal sage scrub can be a fire hazard because it is a flammable plant community, that can generate a tremendous amount of potential fuel. Therefore, in areas where structures are situated near native plant communities, brush management techniques, as required by the Public Resources Code, would be applied. The California Terraces Precise Plan contains a landscape master plan which provides guidelines for how brush management would be applied to the site. Approximately 28.8 acres of the precise plan would be affected by brush management zone 2 and 21 acres would be affected by brush management zone 3. Homeowner's associations will be formed to maintain the brush management zones, as brush management zones 2 and 3 have been placed in a separate linear lot designated for common ownership. The selective thinning of native vegetation and planting with retardant and low-volume plantings within the brush management zones would change the composition of the existing native vegetation.

Significance of the Impacts

While the selective thinning of native vegetation caused by implementation of a brush management program would alter the appearance of slopes adjacent to development, the direct and cumulative effect of brush management would not represent a significant visual impact.

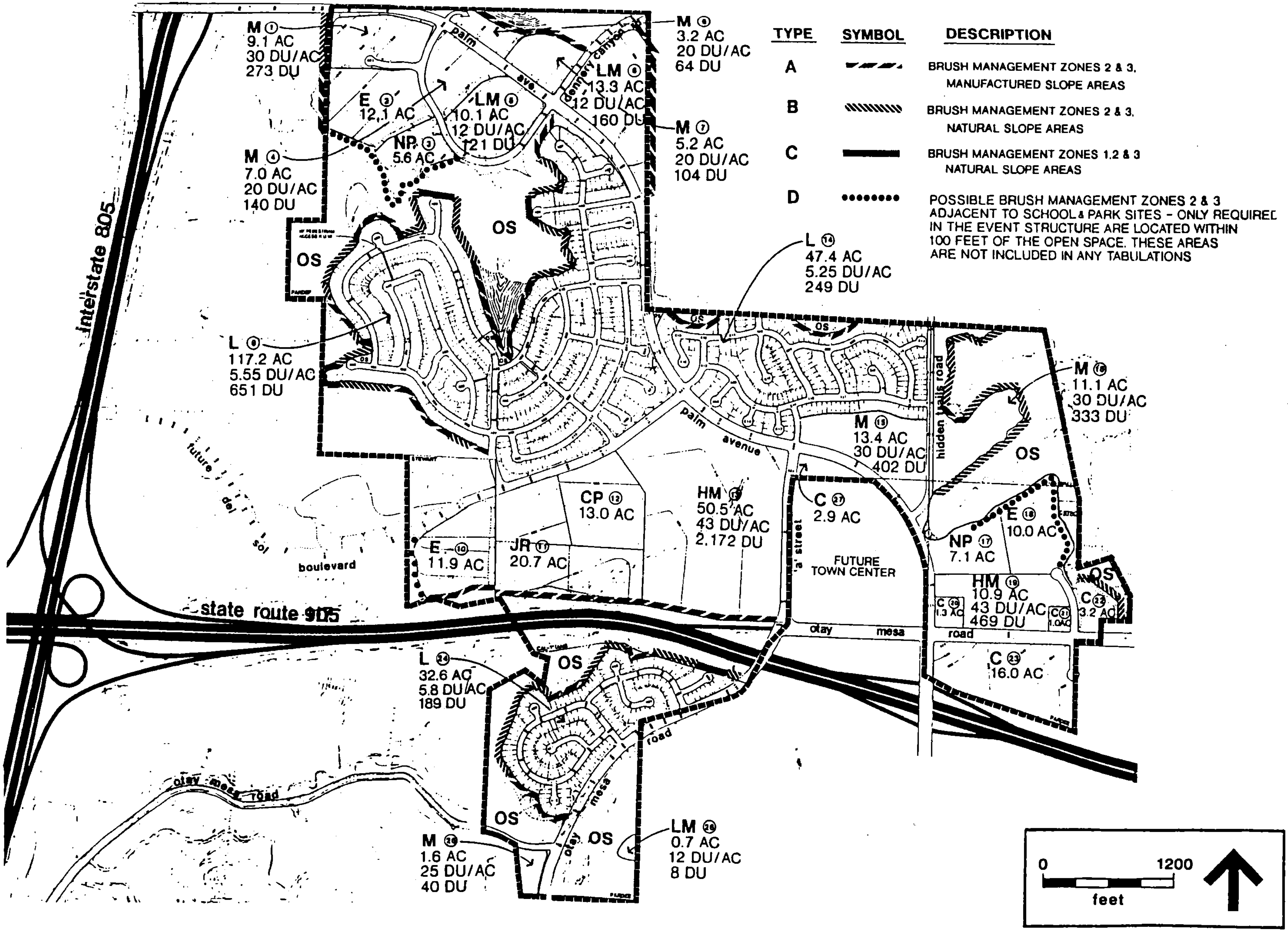


FIGURE 23. PRECISE PLAN BRUSH MANAGEMENT PLAN

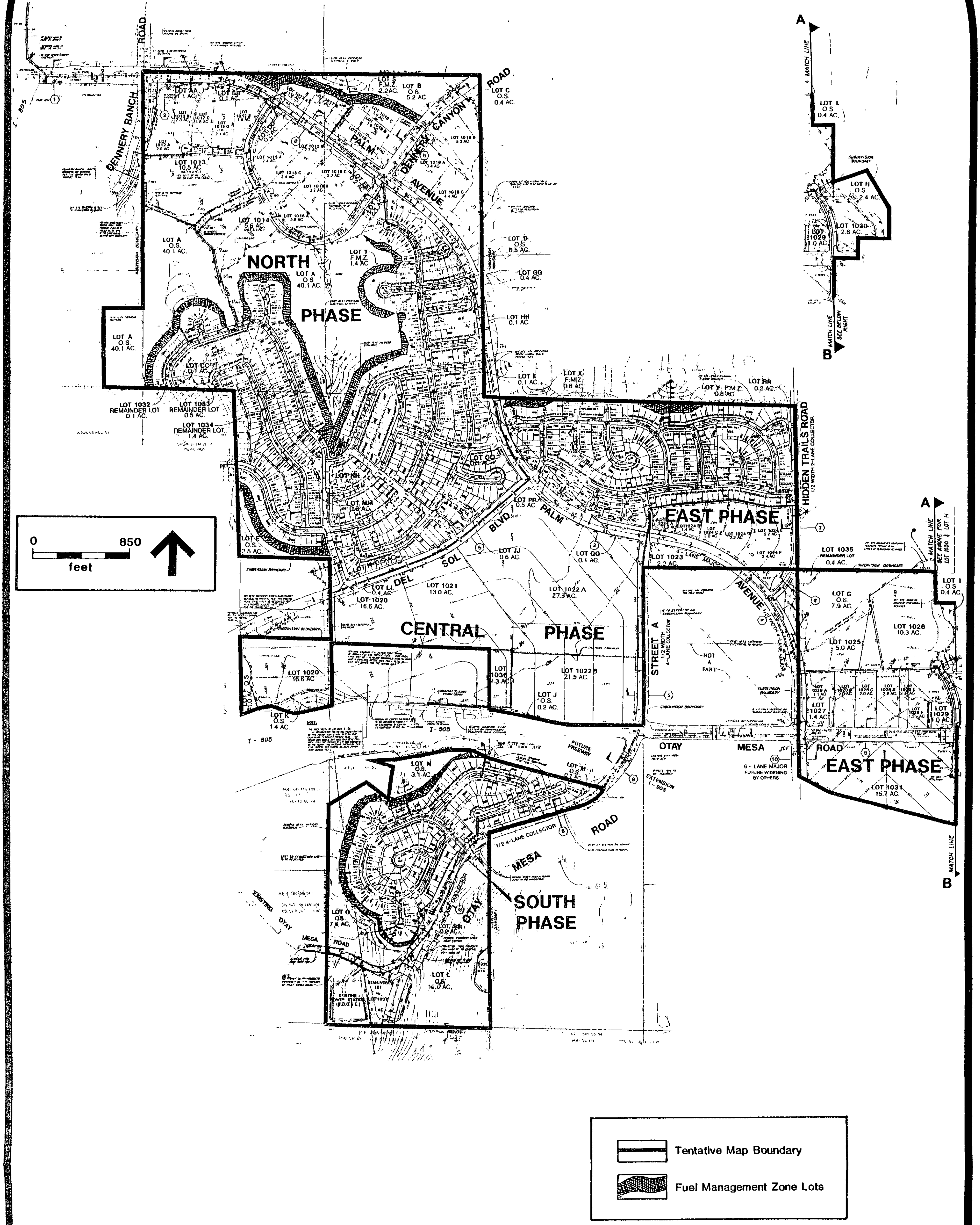


FIGURE 24. CALIFORNIA TERRACES VESTING TENTATIVE MAP AND FUEL MANAGEMENT ZONES

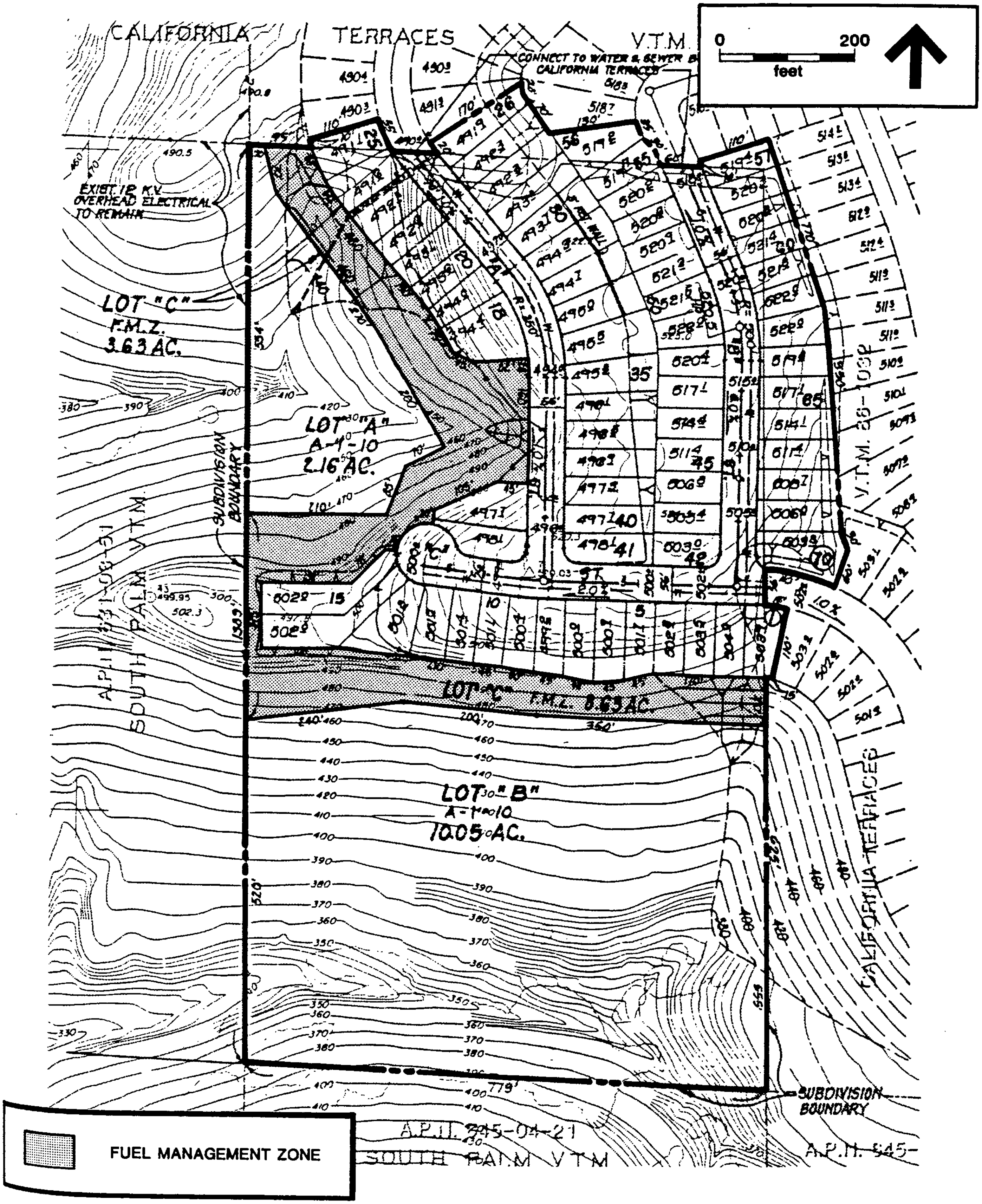


FIGURE 25. SOUTH PALM VISTA BRUSH MANAGEMENT PLAN

Mitigation, Monitoring, and Reporting Program

It shall be a condition of approval for all tentative maps that the developer provide maintenance of all brush management. The developer is responsible for maintaining the brush management until such time that either HOAs or other City-approved mechanisms can assume long-term responsibility. The brush management maintenance responsibility shall include brush management zones 2 and 3.

The applicant shall enter into a long-term maintenance agreement with the City, which shall be recorded with all final maps. The agreement shall stipulate that the developer shall be responsible for brush management until such time that either the HOAs or other mechanisms can assume responsibility. Any areas which are proposed to be deeded over to the City and require brush management are likewise the obligation of the developer until such time that the City has agreed to assume responsibility.

Areas covered by the CPIOZ, which contain brush management zones 2 and 3, must have either HOAs or other mechanisms (which must be approved by the Planning Department and Park and Recreation Department) established prior to the issuance of building permits. The HOAs and/or other approved mechanisms are required to provide permanent maintenance of the brush management areas.

C. Geology/Soils and Erosion/Water Quality

The following discussions are based on a geotechnical reconnaissance report prepared for the South Palm Vista portion of the precise plan by GEOCON Inc. in 1990 and a report prepared for the remainder of the precise plan by GEOCON Inc. in 1984, which are included as Appendix A to this EIR (GEOCON 1990 and 1984).

Existing Conditions

Reconnaissance of the site was conducted by GEOCON Inc. in 1984. The scope of the study consisted of a review of published geotechnical literature, maps, and aerial photographs, the preparation of a 200-scale soils and geologic map, and the geotechnical analysis of the site, which included exploratory excavations. The purpose of the investigation was to evaluate soil-related and geologic hazards which may affect future development of the site.

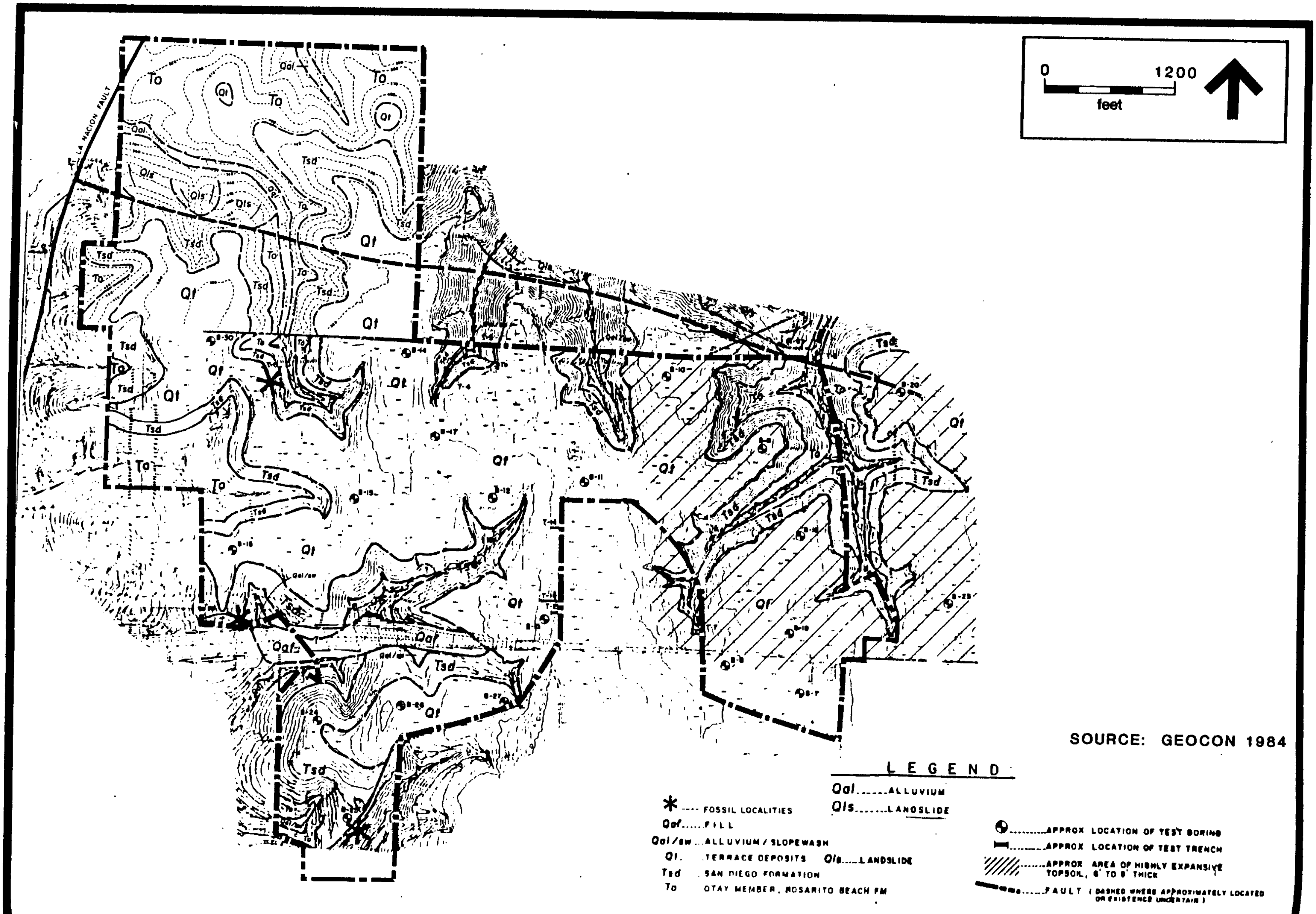
The California Terraces Precise Plan area on Otay Mesa is situated on the Coastal Plains physiographic province of San Diego County on wave-cut terraces with incised canyons that form the San Diego embayment. The embayment extends approximately 20 miles inland from the coast in the southern part of San Diego County and is composed of a series of relatively flat-lying marine and nonmarine sedimentary deposits.

Site topography is characterized by broad expanses of relatively flat-lying mesas. These mesas are transected by a number of northerly and westerly trending deep, steep-walled canyons and ravines. Elevations of these mesas generally range between 500 feet above MSL to 530 feet above MSL. The lowest point on the property, near the northwestern property boundary, lies at approximately 240 feet above MSL.

Three geologic units or formations and three surficial soil types are found within the California Terraces Precise Plan area. Formational units encountered during the field investigations include Pleistocene terrace deposits, the Pleistocene/Pliocene San Diego Formation, and the Miocene Otay Member of the Rosarito Beach Formation. The locations of these formations are illustrated in Figure 26. The surficial soil types include fill, topsoils, and alluvium/slope wash. Each of the geological formations and soil types are discussed below.

a) Terrace Deposits

Quaternary terrace deposits (Qt) consisting of fine to very coarse sandy gravels overlie the majority of the mesa tops. These deposits are characterized by loose to medium dense sandy and cobbly gravels with rounded and angular cobbles up to 24 inches in diameter. Local cohesionless zones were also encountered within this formation. In



SOURCE: GEOCON 1984

FIGURE 26. GEOLOGICAL FORMATIONS

general, the thickness of the terrace deposits decreases towards the west and south and the deposits are locally absent in the westernmost portions of the site where the San Diego Formation and associated topsoils are located at the ground surface.

b) San Diego Formation

The Pliocene San Diego Formation (Tsd) immediately underlies the terrace deposits. The lithology of the San Diego Formation is locally similar to that of the marine terrace deposits, being characterized by silty, fine to medium sand with local gravel layers. However, strata with relatively clean silty sands typical of more northerly exposures of the San Diego Formation are interbedded with cobbly materials usually found in more southern exposures. Some very clayey sands were encountered in the weathered upper zone of the formation.

c) Otay Member, Rosarito Beach Formation

The Otay Member of the Rosarito Beach Formation (To) outcrops at lower elevations underlying the San Diego Formation and terrace deposits within the deeper canyons at the site. This unit is identified by its interbedded sandstones, hard siltstones, and very hard claystones with local bentonite clay layers. Bedding attitudes within the Otay Member typically dip from two to five degrees toward the southwest. The presence of bentonitic layers could affect the stability of cut slopes where the bentonite layers are exposed. Aerial photographs strongly suggest that ancient landslides have occurred within these materials. The large area of ancient landslide deposits along the south flank of the major westerly trending drainage course is shown in Figure 27. Other smaller landslides which may be present at other locations are also shown.

d) Fill

Existing fill (Qaf) is present near the southeast corner of the site in an area where sludge is presently dumped on property owned by the City of San Diego. Other areas where fill has been placed include numerous locations in the eastern half of the site and at the head of a southerly trending tributary drainage course in the southeast.

e) Topsoil

Topsoil consisting of highly to critically expansive clay overlies the area lying generally east of the major northerly trending drainage course at the site. The thickness of the topsoil varies from approximately six to nine feet, and generally decreases in depth towards the west. In the South Palm Vista tentative map area, topsoil is present over the majority of the project area ranging from one to four feet in thickness. Removal and recompaction of the topsoil will be necessary in areas to receive fill or structures. The areas where the topsoils are thickest are delineated on Figure 26 by diagonal lines.

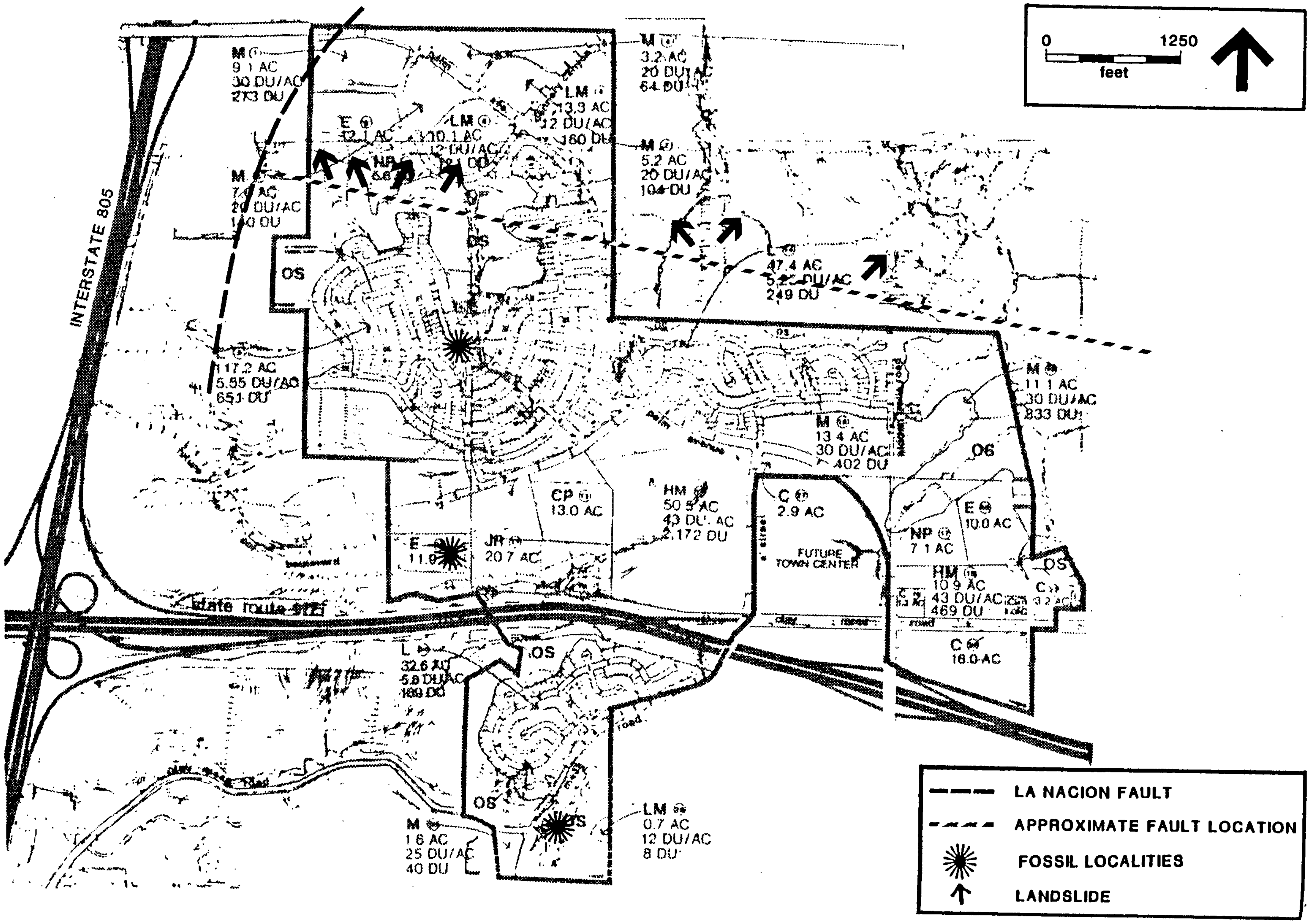


FIGURE 27. GEOLOGICAL CONSTRAINTS

f) Alluvium/Slope Wash

For the California Terrace Precise Plan and tentative map, relatively thick alluvium/slope wash deposits (Qal/sw) occur along the bottoms of the significant drainage courses at the site. The slope wash deposits extend a considerable distance up the flanks of the deeper canyons. The alluvial deposits and slope wash exceed 13 feet in thickness at some locations. In the South Palm Vista tentative map area, alluvial soils occur in the canyon bottoms in the northwest and southern portions of the site. Maximum depth of alluvium encountered within the South Palm Vista tentative map area ranged from three to four feet. Slope wash occurs along the canyonside slopes and at the bases of natural slopes. These materials are compressible and would require removal and/or recompaction prior to placement of any fills or construction on slope wash or alluvium deposit sites.

g) Geologic Hazards

The formational units found on-site afford no specific geologic hazards with the exception of the landslide potential along several of the canyons with associated bentonite clay deposits and the potential compressibility of the slope wash and alluvial materials.

Seismic hazards associated with the California Terraces Precise Plan area are essentially the same as those for the majority of the San Diego metropolitan area. A trace of the La Nacion fault zone lies approximately 750 feet west of the South Palm Vista tentative map boundary (Kennedy and Peterson 1975). In addition, an east/west-trending minor fault trace has been mapped near the northern boundary and extends onto the site. The locations of the referenced faults are indicated in Figure 27. Criteria established by the California Division of Mines and Geology classify the La Nacion fault as "potentially active," as no movement along the fault zone within Holocene time (11,000 years before present) has been demonstrated. These two mentioned faults are not considered to be of concern to development. No other major fault systems are located in the immediate vicinity. The nearest known active faults are the San Miguel fault, approximately 20-25 miles south-southeast of the site; the Elsinore fault, approximately 43 miles to the northeast; and the San Jacinto fault, approximately 64 miles to the northeast.

The site could be subjected to moderate to severe ground shaking in the event of a major earthquake along any of the above-mentioned faults. This does not take into account recent studies of offshore fault systems (Greene et al. 1979). This work suggests that the offshore fault systems may be as active, if not more so, as the onshore systems and may pose an equal or greater risk to San Diego. However, the site is not considered to be subject to any greater seismic risk than that of development within the San Diego metropolitan area in general.

h) Groundwater

Minor groundwater was encountered in several of the exploratory trenches along the canyon bottoms. No large-scale groundwater table was encountered at higher elevations and the groundwater is not considered to be a geologic hazard to the site. Although no springs, seeps, or groundwater occurrences were observed or are known to occur on the South Palm Vista tentative map site, perched water conditions are likely to develop during the rainy season beneath the two relatively deep fills to be placed in conjunction with the California Terraces development. Liquefaction is the phenomenon in which poorly consolidated soil loses strength during an earthquake and assumes a somewhat liquid form, thereby permitting movement of soils and any overlying structures. Liquefaction is not likely to occur at the site, due to the relatively high density of soils underlying the site and the absence of a permanent groundwater table.

i) Brush Management and Erosion Control

Because much of San Diego's development exists within steep brush-covered canyon slopes, urban encroachment poses a serious fire threat to property and life if not managed properly. The City of San Diego recently adopted Section 6 (Brush Management), Landscape Technical Manual (October 1989), which is a fuel management program that will ensure that property owners are aware of and are removing fire hazards from their property.

Wherever the proposed development is adjacent to slopes covered with native scrub or to manufactured slopes revegetated with native plant communities, the brush management plan of the City of San Diego requires a fire buffer area made up of three zones (see Figure 23). The depth of each zone is determined by the fire hazard severity classification. The California Terraces Precise Plan area is classified in a "high" fire hazard area because it is located east of I-805. Descriptions of each zone, as required by the City's brush management plan, are presented in detail in the Landform Alteration/Visual Quality section of this EIR.

Although cleared firebreaks greatly reduce the fire hazard, clearing of brush can result in increased soil erosion. It is especially important that erosion-control measures be a major consideration for property owners. There are numerous ways to remove brush to reduce subsequent environmental impacts. The preferred method is the use of hand tools, axes, and chain saws for cutting back, trimming, thinning, and pruning. Some areas may need heavier brush removal equipment, such as the use of bulldozers. Extreme care should be taken when removing brush in this manner, as the existing root systems of the natural brush are critical in the control of erosion and accidental undercutting of the toe of a slope can cause slope failure.

1) Issue

Are there unstable geologic or soil conditions on the site which would represent a constraint to development?

Impacts

The site is considered "suitable for the proposed development" (GEOCON 1984:11). No significant impact on development is anticipated at this time due to the geologic or soil conditions, provided that stated mitigation and/or corrective measures are implemented. However, without specific mitigation, the following conditions could prove to be potentially significant:

a. Cuts deeper than 10 feet into the cohesionless zones of the terrace deposits overlying the eastern portion of the site.

b. Presence of relatively deep alluvium and slope wash along canyon bottoms and flanks.

c. Ancient landslide areas, particularly those associated with bentonite clay deposits in the northwest portion of the property.

The potential for the occurrence of a major seismic event has not been included as a potentially significant impact for a number of reasons. No known active faults lie in the immediate vicinity of the project. However, it is possible that the active faults within the San Diego region will produce a major earthquake during the design life of the project. The timing and duration of such an event and its magnitude are unknown, but a major earthquake could cause widespread damage throughout the entire San Diego region. The three geologic formations underlying the California Terraces Precise Plan area pose no greater risk of damage than for most other sites within the metropolitan area. No mitigation measures (other than adherence to the design standards specified in the Uniform Building Code) are available at the local or regional level.

Significance of the Impacts

In implementing the proposed precise plan, the potential for geologic impacts exists. However, these potentially significant impacts can be reduced to below a level of significance by implementing various mitigation measures cited below.

Mitigation, Monitoring, and Reporting Program

a) California Terraces Precise Plan

The City of San Diego Engineering and Development Department mandates specific engineering geological requirements for tentative maps. Specific mitigation of potential geological constraints would be based on detailed field data conducted for grading and improvement plan approvals through the Engineering and Development Department and would be implemented by the project applicant.

The City of San Diego Environmental Analysis Section and City of San Diego Engineering and Development Department shall ensure that the following mitigation measures are a condition of approval of future tentative maps within the precise plan boundary. This shall be a condition of approval of the precise plan and shall be verified prior to precise plan approval. These measures are specified in detail in Appendix A of this report.

1. Removing the expansive materials to a depth of approximately four feet below the proposed finished grade, or using highly reinforced foundations and/or posttensioned slabs where the deposit is too thick for removal.

2. Removing and recompacting existing fill sites.

3. Removing and recompacting cohesionless zones encountered within the terrace deposits. Any slopes cut into this material would require stability fills to reduce the potential for excessive rilling, erosion, and surficial sloughing.

4. Removing and recompacting alluvium or slope wash wherever fill is to be placed in canyons. Canyon subdrains may be required if fill is placed in canyons.

5. Using stability fills in cut slopes wherever bentonite clay deposits are exposed. The buttresses would consist of a uniform 20-foot-thick fill placed at the face of overcut cut slopes. The material used in the stability fill should consist of granular material, which could be obtained from the nearby terrace deposits and San Diego Formation.

6. Buttressing the major landslide along the southern flank of the westerly trending drainage course at the site by construction of a buttress fill independent of the pad elevations or by increasing pad elevations to 340 to 390 MSL along the toe of the landslide. All loose slide debris should be removed from the area underlying any proposed structural developments including streets and the area extending outside the development equal to the depth of the landslide debris at the edge of the proposed structural improvements.

7. Including setbacks or redesign of components in a site plan, should future testing indicate a need in the vicinity of the La Nacion fault.

b) California Terraces and South Palm Vista Vesting Tentative Maps

Specific measures to reduce potentially significant impacts to below a level of significance for the California Terraces and South Palm Vista VTMs as made a condition of approval include the following:

1. Removing the expansive materials to a depth of approximately four feet below the proposed finished grade, or using highly reinforced foundations and/or posttensioned slabs where the deposit is too thick for removal.

2. Removing and recompacting existing fill sites.

3. Removing and recompacting cohesionless zones encountered within the terrace deposits. Any slopes cut into this material would require stability fills to reduce the potential for excessive rilling, erosion, and surficial sloughing.

4. Removing and recompacting alluvium or slope wash wherever fill is to be placed in canyons. Canyon subdrains may be required if fill is placed in canyons.

5. Using stability fills in cut slopes wherever bentonite clay deposits are exposed. The buttresses would consist of a uniform 20-foot-thick fill placed at the face of overcut cut slopes. The material used in the stability fill should consist of granular material, which could be obtained from the nearby terrace deposits and San Diego Formation.

6. Buttressing the major landslide along the southern flank of the westerly trending drainage course at the site by construction of a buttress fill independent of the pad elevations or by increasing pad elevations to 340 to 390 MSL along the toe of the landslide. All loose slide debris should be removed from the area underlying any proposed structural developments including streets and the area extending outside the development equal to the depth of the landslide debris at the edge of the proposed structural improvements.

7. Including setbacks or redesign of components in a site plan, should future testing indicate a need in the vicinity of the La Nacion fault.

A note shall be included on the grading plans that these measures are conditions of approval of the tentative maps. The City of San Diego Environmental Analysis Section and City of San Diego Engineering and Development Department shall ensure these measures are conditions of the tentative map prior to approval of the tentative map. Prior to the issuance of grading permits, EAS and the Engineering and Development Department (EDD) shall review the grading plans to ensure that these measures are on the plans. The applicant shall retain a soils engineer to monitor the grading and construction. At its discretion, the Planning Department shall conduct field inspections during grading. Only after the Planning Director and the City Engineer approve the grading and other appropriate improvements, a recommendation may be made to the City Council for the release of the subdivision bond.

c) South Palm Vista Vesting Tentative Map

Other specific measures to reduce potentially significant impacts to below a level of significance identified in the geology report for the South Palm Vista VTM include the following:

1. Removing all potentially compressible topsoil, slopewash, and alluvium to firm natural ground in areas of proposed development and replacing with suitable, properly compacted fill prior to placement of additional fill or construction of structures or other improvements.

2. Scarifying areas to receive fill to a depth of 12 inches and recompacting to a minimum relative compaction of 90 percent.

3. Undercutting the cut portion of cut-fill transition lots at least three feet and replacing with properly compacted "very low" to "low" expansive fill soils.

4. Providing a subdrain within the canyon drainage areas to reduce the potential for groundwater buildup.

A note shall be included on the grading plans that these measures are conditions of approval of the tentative map. The City of San Diego Environmental Analysis Section and City of San Diego Engineering and Development Department shall ensure these measures are conditions of the tentative map prior to approval of the tentative map. Prior to the issuance of grading permits, EAS and EDD shall review the grading plans to ensure that these measures are on the plans. The applicant shall retain a soils engineer to monitor the grading and construction. At its discretion, the Planning Department shall conduct field inspections during grading. Only after the Planning Director and the City Engineer approve the grading and other appropriate improvements, a recommendation may be made to the City Council for the release of the subdivision bond.

2) Issue

Would development of the project site increase the potential for erosion?

Impacts

The disruption of natural soil profiles by grading operations would result in the exposure of subsoils to the erosive forces of wind and water, thereby temporarily increasing susceptibility to erosion. This temporary condition would exist during the grading and development process. Implementation of the mitigation measures immediately after grading would lessen this impact. The geologic units found within the California Terraces Precise Plan area (San Diego Formation; Otay Member, Rosarito Formation; and the terrace deposits) are moderately to highly erosive. Cut and fill operations could result in significant erosion if proper grading techniques are not utilized.

Significance of the Impacts

The potential for short-term impacts from soil erosion, both on- and off-site, are considered significant. These impacts can be reduced to below a level of significance by grading and erosion-control techniques proposed in the precise plan and California Terraces and South Palm Vista VTM, as described below.

Mitigation, Monitoring and Reporting Program

a) California Terrace Precise Plan

The following mitigation measures shall be a condition of approval of future tentative maps within the precise plan boundary.

1. Limiting grading to only what is permitted so that spillovers into natural areas are avoided, and native vegetation to be preserved is not trampled.

2. Watering and capping final earth surfaces to form a hardened cap.

3. Sandbagging roadbeds until paved, in order to minimize erosion and prevent sediment transport. This may need to occur on portions of Palm Avenue and Dennery Canyon Road adjacent to sideslopes of Dennery Canyon.

4. Controlling sediment production from graded building pads with low perimeter berms, sandbags, bladed ditches, or other appropriate methods.

5. Construction of on-site interim and ultimate storm drain systems to reduce the off-site impact due to construction activities and ultimate development. Drainage facilities would include channels, inlets, storm drain piping, detention basins, and outlet structures to reduce impacts to the downstream receiving waters.

6. Native areas not to be disturbed by grading shall be flagged to delineate the extent of the grading.

It shall be a condition of approval of the precise plan that the above mitigation measures be conditions of all subsequent tentative maps within the precise plan. The City of San Diego Environmental Analysis Section and City of San Diego Engineering and Development Department shall verify this is a condition of the precise plan approval prior to approval of the precise plan.

b) California Terraces and South Palm Vista Vesting Tentative Maps

Specific measures to reduce potentially significant impacts to below a level of significance for the California Terraces and South Palm Vista VTMs as made a condition of approval include the following:

1. Limiting grading to only what is permitted so that spillovers into natural areas are avoided, and native vegetation to be preserved is not trampled.

2. Watering and capping final earth surfaces to form a hardened cap.

3. Sandbagging roadbeds (where necessary) until paved, in order to minimize erosion and prevent sediment transport. This may need to occur on portions of Palm Avenue.

4. Controlling sediment production from graded building pads with low perimeter berms, sandbags, bladed ditches, or other appropriate methods.

5. Construction of on-site interim and ultimate storm drain systems to reduce the off-site impact due to construction activities and ultimate development. Drainage facilities would include channels, inlets, storm drain piping, detention basins, and outlet structures to reduce impacts to the downstream receiving waters.

6. Native areas not to be disturbed by grading shall be flagged to delineate the extent of the grading.

Implementation Schedule. A note shall be included on the grading plans that these measures are conditions of approval of the tentative maps. The City of San Diego

Environmental Analysis Section and City of San Diego Engineering and Development Department shall ensure these measures are conditions of the tentative map prior to approval of the tentative map. Prior to the issuance of grading permits, EAS and EDD shall review the grading plans to ensure that these measures are on the plans. The applicant shall retain a soils engineer to monitor the grading and construction. At its discretion, the Planning Department shall conduct field inspections during grading. Only after the Planning Director and the City Engineer approve the grading and other appropriate improvements, a recommendation may be made to the City Council for the release of the subdivision bond.

3) Issue

Would compliance with the City's brush management program result in increased erosion?

Impacts

The proposed brush management programs and their consistency with the City's Landscape Technical Manual are discussed in the Landform Alteration/Visual Quality section of this EIR. Potential impacts related to the clearing of a firebreak include increased soil erosion, slope failure, and downstream sedimentation. The conceptual brush management plan for the California Terraces Precise Plan is shown as Figure 23. The brush management plans for the California Terraces and South Palm VTM are shown as Figures 24 and 25, respectively.

When grading for house pads and firebreaks, sensitive grading techniques would take into account the potential for soil erosion. Grading would be limited to the minimum area necessary. Further, an effective landscape maintenance plan requiring weed- and debris-free planting areas would be implemented as a requirement of the HR permit and subsequent VTMs. These measures, in addition to the mitigation measures outlined below, would effectively reduce the potential for increased erosion resulting from compliance with the City's brush management program.

Significance of the Impacts

Potentially significant impacts relating to erosion could result from implementation of the brush management and irrigation plan for the California Terraces Precise Plan, California Terraces VTM, and the South Palm Vista VTM.

Mitigation, Monitoring, and Reporting Program

a) California Terraces Precise Plan

It shall be a condition of all tentative maps within the precise plan area to prepare a detailed brush management program consistent with the guidelines of the City's Landscape Technical Manual. The plans shall address the plant fuel load clearance required for fire safety. While clearance and plant fuel load reduction is necessary for fire safety, erosion-control measures are included in the brush management program and the California Terraces Precise Plan. These control measures shall be a condition of future tentative maps within the precise plan area. These measures include the limitations on brush removal as noted in the brush management program, sensitive grading techniques, the planting of fire-resistant native ground covers in and around the natural chaparral after grading, a landscape maintenance program, and brush removal methods that do not disturb existing root systems. The applicant shall clearly indicate on the grading and landscape plans the areas that are to receive brush management treatment and maintenance. These measures and programs for the proposed VTMs are discussed in more detail in the Landform Alteration/Visual Quality section. These measures offer adequate safety precautions against erosion and subsequent downstream sedimentation. Brush management zones 2 and 3 would be linear zones placed under common ownership and maintained by a homeowner's association to insure long-term compliance with the brush management program. Clearing and thinning of these zones shall be done on a regular schedule by a professional contractor. Therefore, compliance with the City's brush management program would not result in increased erosion.

Implementation Schedule. It shall be a condition of approval of the precise plan that the above mitigation measures be conditions of all subsequent tentative maps within the precise plan. The City of San Diego Planning Department and City of San Diego Fire Department shall verify this is a condition of the precise plan approval prior to approval of the precise plan.

b) California Terraces and South Palm Vista Vesting Tentative Maps

Specific measures to reduce potentially significant erosional impacts to below a level of significance for the California Terraces and South Palm Vista VTMs shall be a condition of approval of the VTMs. Approval of the VTMs shall require a detailed brush management program consistent with the guidelines of the City's Landscape Technical Manual.

A note shall be included on the grading and landscape plans requiring the applicant to notify the City of San Diego Environmental Analysis Section two weeks before grading begins and for the follow-up inspection after grading is complete. Prior to the issuance of grading permits; EAS shall review the grading plans to ensure that measures regarding geotechnical, landscaping, irrigation, and soils issues are on the plans. The applicant shall retain a soils engineer to monitor the grading and construction. At its discretion, the Planning Department shall conduct field inspections during grading to verify the brush management program is being implemented according to the plan. Only after the Planning Director and the City Engineer approve the final grading and other appropriate improvements, a recommendation may be made to the City Council for the release of the subdivision bond.

D. Biological Resources

Biological and zoological field surveys of the precise plan project site, excluding the South Palm Vista VTM area, were performed in 1980 by RBR and Associates and on April 14, 15, and 29 and May 2, 1988, by RECON. The South Palm Vista VTM portion of the project was surveyed by RECON on July 3, November 29, and November 30 of 1989 and March 12 of 1990. Additional vernal pool surveys were conducted April 2 and 9, 1991. The biological report compiling the information gathered during these surveys is included as Appendix B to this EIR and is summarized below. An update to the biology report was prepared based on field surveys conducted on August 10, 1992. The results of this update are provided in Attachment 1 to Appendix B. Additionally, the biological impact acreages have changed since the time of the survey report due to changes in the project design, and the correct acreages are provided in the following discussions.

Existing Conditions

a) Vegetation and Wildlife

California Terraces Precise Plan Area

Five plant communities as classified by the California Department of Fish and Game (CDFG) (Holland 1986) are present; Diegan coastal sage scrub, maritime succulent scrub, southern mixed chaparral, nonnative grassland, and San Diego mesa claypan vernal pools (included in coastal sage scrub and disturbed areas). Vegetation is shown on Figures 28 and 29 for the precise plan area.

The Diegan coastal sage scrub is dominated by coastal sagebrush (*Artemisia californica*), with lemonadeberry (*Rhus integrifolia*) and toyon (*Heteromeles arbutifolia*) as common constituents on the steep slopes of the canyons. Within the precise plan area, this community occupies 286 acres (43 percent). On the mesas, coastal sage scrub occurs where there has been little or no disturbance and is often interspersed among native and nonnative grasslands. Much of the nonnative grassland which currently exists was likely once coastal sage scrub.

Maritime succulent scrub occupies 65.7 acres (10 percent) of the precise plan area, occurring on many of the steep canyon slopes and along the mesa rims. This low-growing scrub is dominated by drought-deciduous shrubs with a mixture of succulents, including cactus. Characteristic species are coastal sagebrush, cliff spurge (*Euphorbia misera*), coast barrel cactus (*Ferocactus viridescens*), jojoba (*Simmondsia chinensis*), coast cholla (*Opuntia prolifera*), fishhook cactus (*Mammillaria dioica*), San Diego bur-sage (*Ambrosia chenopodiifolia*), and San Diego sunflower (*Viguiera laciniata*).

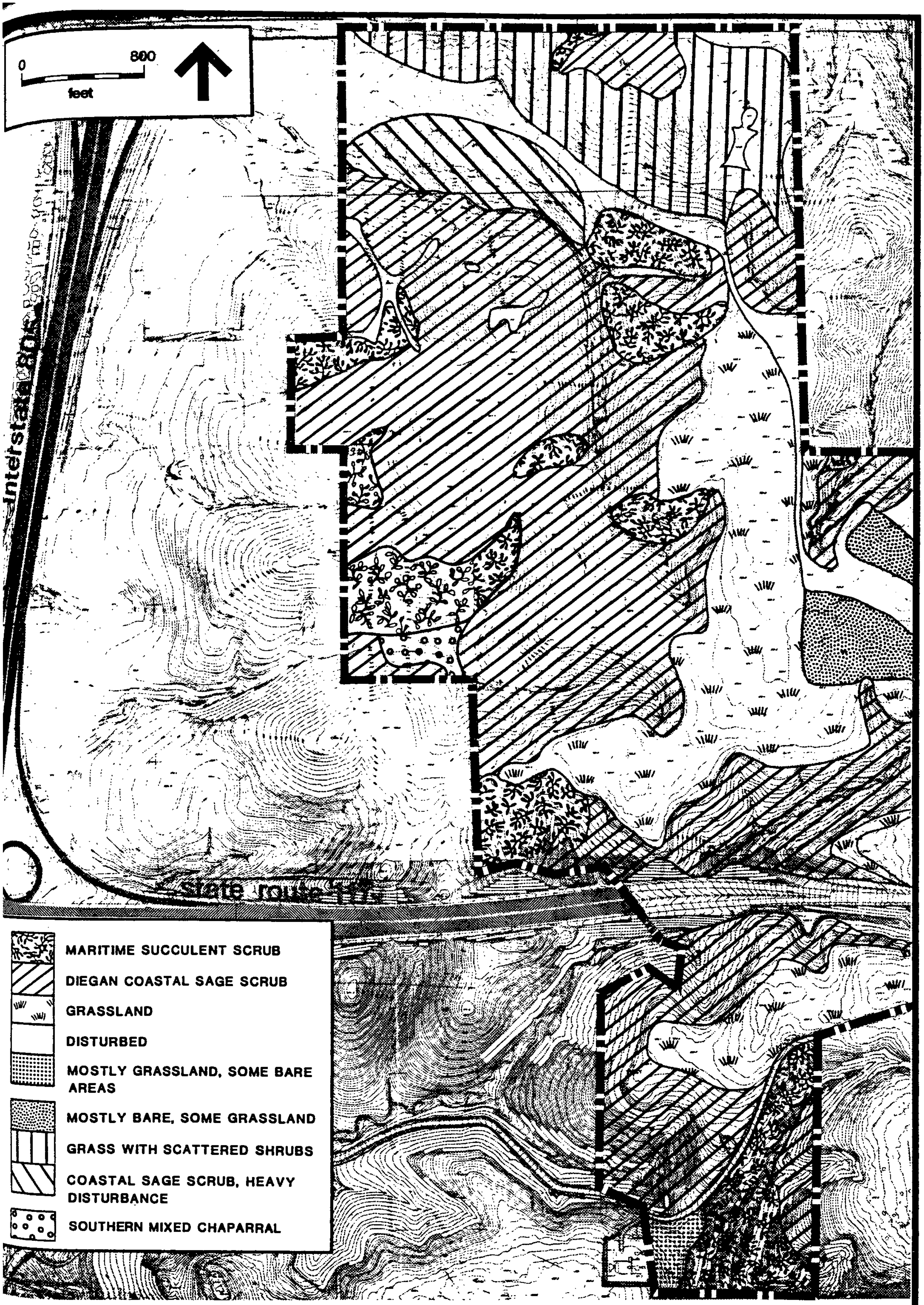


FIGURE 28. PRECISE PLAN VEGETATION MAP, WEST PORTION

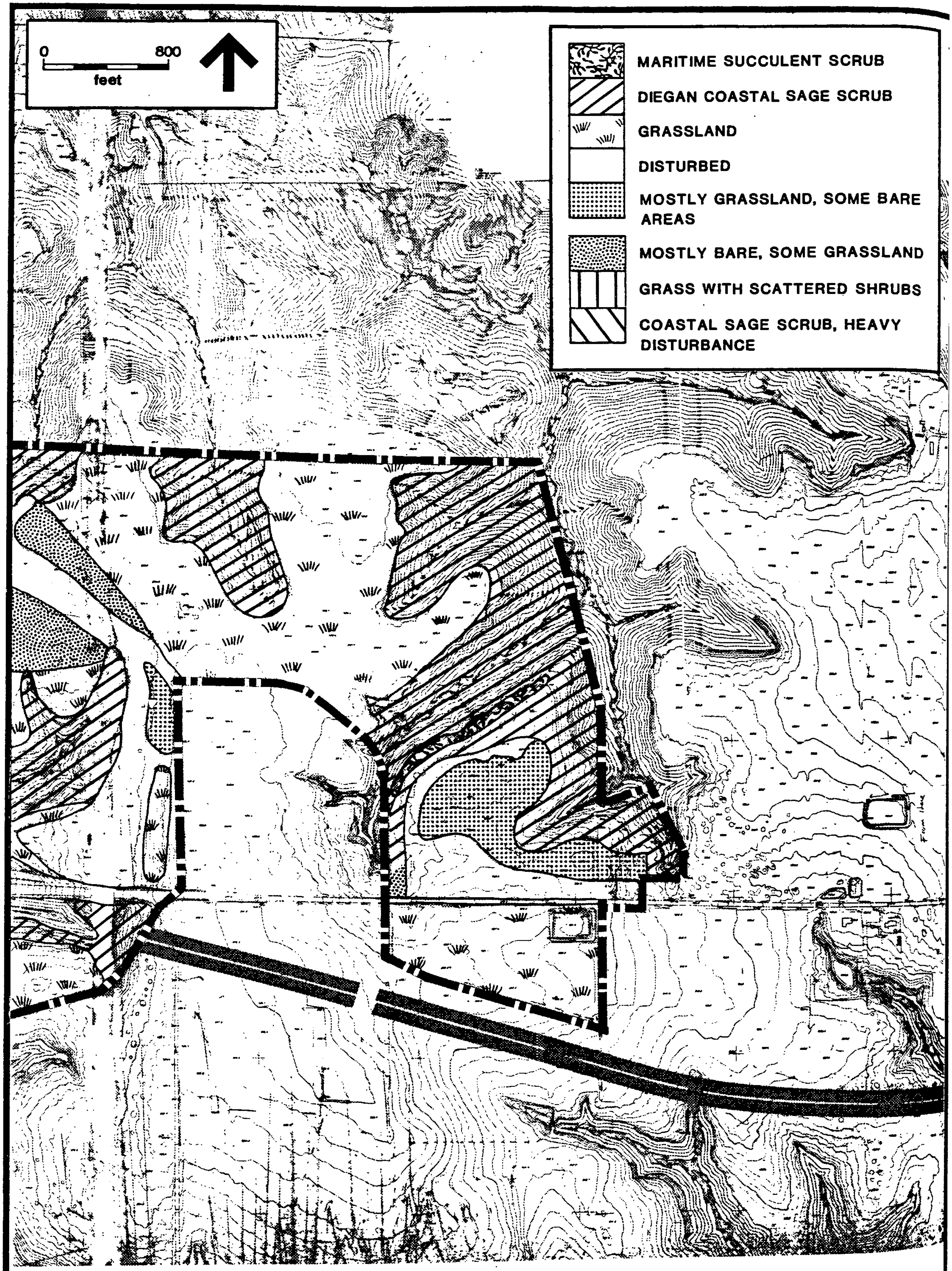


FIGURE 29. PRECISE PLAN VEGETATION MAP, EAST PORTION

Southern mixed chaparral occupies 1.8 acres (0.3 percent) and is dominated by evergreen, sclerophyllous shrub species such as toyon, lemonadeberry, and scrub oak (*Quercus dumosa*). The southern mixed chaparral is located exclusively within the South Palm Vista VTM area.

Nonnative grassland covers the majority of the mesas within the precise plan (244 acres, 37 percent). Dominant species include slender wild oat (*Avena barbata*), ripgut grass (*Bromus diandrus*), foxtail fescue (*Festuca megalura*), rat-tailed fescue (*Festuca myuros*), Italian ryegrass (*Lolium perenne* ssp. *multiflorum*), and foxtail (*Hordeum jubatum*). Many weedy species mix with the grasses, including black mustard (*Brassica nigra*), Australian saltbush (*Atriplex semibaccata*), and tocolote (*Centaurea melitensis*). The grasslands cover areas that have been used for agriculture in the past. In some areas where the grassland and the coastal sage scrub adjoin, coastal sagebrush is reestablishing as scattered individuals. Large areas of the grassland have been denuded by intense off-road-vehicle activity.

Thirty-two vernal pools representing approximately 11,342 square feet of surface area exist in six locations on the mesa within the boundaries of the precise plan. Total estimated watershed for the six areas is 3.1 acres. These pools are part of the San Diego mesa claypan vernal pool community complex which occurs on marine terraces between San Diego and Ensenada. This community is comprised of both the pool basins and associated mima mound topography where still intact. Species representative of vernal pools on Otay Mesa and observed in the pools in the precise plan and California Terraces tentative map include San Diego button celery (*Eryngium aristulatum* var. *parishii*), woollyheads (*Psilocarphus brevissimus*), and toad-rush (*Juncus bufonius*).

Sampling of the vernal pools within the California Terraces Precise Plan for the presence of fairy shrimp was done in June 1992. Dry soil samples were collected both from basins which contained dried vegetation typical of vernal pools (woollyheads) and from those which were devoid of vegetation. Hydration of these soil samples indicated that the San Diego fairy shrimp (*Branchinecta sandiegense*) were present only in the vernal pools within the South Palm Vista TM area. Fairy shrimp were not present in the remainder of the pools within the precise plan.

Other vernal pools are present off-site, to the east of the subject property. In contrast to on-site pools, these support little mousetail (*Myosurus minimus* var. *apus*) and prostrate navarretia (*Navarretia fossalis*). Vernal pools on the property, and Otay Mesa in general, have been studied for many years (see Appendix B).

The canyons on the property show a relatively high diversity of wildlife when compared to the mesas, which have been subjected to disturbance for a number of years. Several species of mammals were identified. Ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus auduboni*), San Diego black-tailed jackrabbit (*Lepus californicus* *bennettii*), valley pocket gopher (*Thomomys bottae*), and mouse (*Perognathus* spp. and *Peromyscus* spp.) are common on the mesa in sparse shrub habitat and on the upper canyon slopes. Bobcat (*Lynx rufus*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), rabbits, and various rodent species are present in the canyons.

Rattlesnakes (*Crotalus* sp.) were observed on the mesas and in the canyons. Pacific tree frogs (*Hyla regilla*) were found in areas of standing water and one San Diego horned lizard (*Phrynosoma coronatum blainvillei*) was seen near a canyon rim. Another horned lizard was observed within the southwestern portion of the project. Horned lizards would be expected in sandy areas, such as the bottom of the canyon on the south side of SR-905.

Birds observed during surveys of the property include meadowlark (*Sturnella neglecta*), house finch (*Carpodacus mexicanus frontalis*), and California horned lark (*Eremophila alpestris actia*) and are common on the mesas. The canyons support a variety of birds including wrentit (*Chamaea fasciata henshawi*), coastal California gnatcatcher (*Polioptila californica californica*), Bewick's wren (*Thyromanes bewickii*), and California towhee (*Pipilo crissalis*). Several raptors were observed on the site, including black-shouldered kite (*Elanus caeruleus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*).

California Terraces VTM Area

Four of the five plant communities within the precise plan area are located within the California Terraces VTM area: Diegan coastal sage scrub (218.9 acres, 40 percent), maritime succulent scrub (50.3 acres, 9 percent), San Diego mesa claypan vernal pools (25 pools encompassing 8,692 square feet of pool surface area and 2.8 acres of watershed), and nonnative grassland (227.5 acres, 42 percent). Plant community composition and structure for coastal sage scrub, maritime succulent scrub, and nonnative grassland are similar to that described for the precise plan.

Wildlife use of this site was similar to that observed within the California Terraces Precise Plan area.

South Palm Vista VTM Area

Four of the five plant communities located within the precise plan area are found within the 27.3-acre South Palm Vista VTM area: Diegan coastal sage scrub (9.5 acres, 34.8 percent), maritime succulent scrub (15.4 acres, 56.4 percent), San Diego mesa claypan vernal pools (7 pools encompassing approximately 2,650 square feet of surface area with an estimated watershed of 0.3 acre), and southern mixed chaparral (2.4 acres, 8.8 percent). This is the only location of southern mixed chaparral within the precise plan area. Plant community composition and structure for coastal sage scrub and maritime succulent scrub are similar to that described for the precise plan. Southern mixed chaparral is composed of evergreen sclerophyllous shrub species such as lemonadeberry, toyon, and scrub oak.

The mesa top has slight depressions surrounded by mima mound topography. One depression contained a plant species indicative of vernal pools, woollyheads, although no standing water was evident at the time of the survey. Additional surveys were performed on April 2, 1991, after the onset of spring rains. A follow-up survey was performed on April 9 to confirm or locate and map vernal pools within the boundaries of this VTM. During the April surveys, seven depressions were confirmed as vernal pools based upon ponding of water and presence of floral indicator species such as woollyheads and flowering quillwort (*Lillea scilloides*).

Wildlife use of this site also was similar to that discussed in the previous existing conditions section.

b) Sensitive Resources

In the past several years, a number of animal and plant species have been added to both the state and federal candidate lists. While these species were not the subject of specific searches in 1988, some were observed. The majority are mentioned herein, listed in Tables 6 and 7, and are discussed in greater detail in the biological technical report.

California Terraces Precise Plan and VTM Area

Identified sensitive resources are shown on Figures 30 and 31 and discussed below.

Habitats. The San Diego claypan vernal pool community is considered a high-priority community by the California Natural Diversity Data Base (Holland 1986), a program within the Nongame-Heritage Program of CDFG, and sensitive by the City of San Diego, the U.S. Fish and Wildlife Service (USFWS), and a number of southern California conservation organizations. In addition, the U.S. Army Corps of Engineers regulates vernal pools as isolated waters of the United States. As temporal wetland systems, vernal pools support a unique assemblage of plant and animal species, many of which cannot persist outside of this environment. A few of these species are endemic, occurring only in a very restricted geographical range (Zedler 1987). In southern California, vernal pools are found on coastal terraces that are flat and very desirable for both development and agriculture, which has led to losses which exceed 90 percent for this habitat type county-wide in the last century. From an estimated 28,595 acres of vernal pool habitat (which included the basins and associated mima mound topography) existing in the 1880s, only 3,699 acres of pools remained by 1979. An additional 28 percent of these pools were lost in the following eight years, leaving 2,657 acres of pools (9.3 percent) in 1986 (Bauder 1986). It is estimated that only 5 percent of the vernal pool acreage which once existed in San Diego County is present today (Oberbauer and Vanderwier 1991).

TABLE 6
SENSITIVE WILDLIFE SPECIES OBSERVED (†) OR EXPECTED TO OCCUR

Species	State/ Federal	Other Status	Comments
<u>Invertebrates</u>			
Vernal pool fairy shrimp *Branchinecta lynchi*	--/C1		Vernal pools.
San Diego fairy shrimp *Brachinecta sandiegense*	--/--	*	Vernal pools.
Checkerspot butterfly *Euphydryas editha quino*	--/C2		Open, dry areas in low foothills, mesas, lake margins. Larval host plant *Plantago erecta,* adult emergence mid-January through April.
<u>Amphibians</u>			
Western spadefoot toad *Scaphiopus hammondii*		CSC	Vernal pools.
<u>Reptiles</u>			
San Diego horned lizard† *Phrynosoma coronatum blainvillii*	--/C2	CSC	Chaparral, coastal sage scrub with fine loose soil. Dependent on harvester ants for forage.
Orange-throated whiptail† *Cnemidophorus hyperythrus beldingi*	--/C2	CSC	Chaparral, coastal sage scrub with coarse sandy soils.
Coastal western whiptail *Cnemidophorus tigris multiscutatus*	--/C2	CSC	Chaparral, coastal sage scrub with coarse sandy soils.
Two-striped garter snake *Thamnophis hammondii*	--/C2	HT,SDC	Permanent freshwater streams with rocky bottoms, riparian vegetation.

TABLE 6
SENSITIVE WILDLIFE SPECIES OBSERVED (†) OR EXPECTED TO OCCUR
(continued)

Species	State/ Federal	Other Status	Comments
Reptiles (cont.)			
Northern red diamond rattlesnake *Crotalus ruber ruber*	--/C2		
Birds			
Turkey vulture† *Cathartes aura*	--/--	SDC	Open fields, grasslands, rocky cliffs. Spring and fall migrant, winter visitor, rare summer resident.
Black-shouldered kite (breeding)† *Elanus caeruleus*	--/--	*,CFP SDC	Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.
Bald eagle *Haliaeetus leucocephalus*	SE/FE	CFP BEPA	Rivers, lakes. Feed mainly on fish. Rare winter visitor, rare fall migrant.
Northern harrier (breeding)† *Circus cyaneus*	--/--	CSC	Coastal lowland, marshes, grassland, agricultural fields. Migrant and winter resident, rare summer resident.
California horned lark† *Eremophila alpestris actia*	--/C2		Open fields, grasslands. Resident.
Sharp-shinned hawk (breeding)† *Accipiter striatus*	--/--	CSC	Open deciduous woodlands, forests, edges, parks, residential areas. Migrant and winter visitor.
Cooper's hawk (breeding)† *Accipiter cooperi*	--/--	CSC	Mature forest, open woodlands, wood edges, river groves. Also parks and residential areas. Migrant and winter visitor.
Golden eagle *Aquila chrysaetos*	--/--	CSC,CFP, BEPA	Require vast foraging areas in grassland, broken chaparral or sage scrub. Nest in cliffs and boulders. Uncommon resident.

TABLE 6
SENSITIVE WILDLIFE SPECIES OBSERVED (†) OR EXPECTED TO OCCUR
(continued)

Species	State/ Federal	Other Status	Comments
Birds (cont.)			
Peregrine falcon *Falco peregrinus anatum*	SE/FE	CFP	Coastline areas, mudflats, shores, ponds, open country. Rare inland. Rare fall and winter resident, casual in late spring and early summer. Local breeding populations extirpated.
Prairie falcon (breeding) *Falco mexicanus*	--/--	CSC	Grassland, agricultural fields, desert scrub. Uncommon winter resident, rare breeding resident.
Greater roadrunner† *Geococcyx californianus*	--/--	SDC	Desert scrub, coastal sage scrub, chaparral. Resident.
Lesser nighthawk *Chordeiles acutipennis*	--/--	SDC	Open, bare ground, desert scrub, coastal sage scrub, chaparral, agricultural areas. Summer resident and migrant, casual in winter.
Coastal California gnatcatcher† *Polioptila californica californica*	--/FPE	CSC	Coastal sage scrub, maritime succulent scrub. Resident.
Loggerhead shrike *Lanius ludovicianus*	--/C2		
Southern California rufous-crowned sparrow† *Aimophila ruficeps canescens*	--/C2		Coastal sage scrub, grassland. Resident.
Bell's sage sparrow† *Amphispiza belli belli*	--/C2	SDC	Chaparral, coastal sage scrub. Localized resident.
Grasshopper sparrow† *Ammodramus savannarum*	--/--	SDC	Tall grass areas. Localized summer resident, rare in winter.

TABLE 6
SENSITIVE WILDLIFE SPECIES OBSERVED (†) OR EXPECTED TO OCCUR
(continued)

Species	State/ Federal	Other Status	Comments
Birds (cont.)			
San Diego cactus wren (coastal population)† *Campylorhynchus brunneicapillus couesi*	--/C2		Maritime succulent scrub, coastal sage scrub with *Opuntia* thickets. Rare resident.
Mammals			
San Diego black-tailed jackrabbit† *Lepus californicus bennettii*	--/C2		
Pacific pocket mouse *Perognathus longimembris pacificus*	--/C2	CSC	Open coastal sage scrub; fine, alluvial sands near ocean.
White-eared pocket mouse *Perognathus alticola alticola*	--/C2		
Pallid San Diego pocket mouse *Chaetodipus fallux pallidus*	--/C2		
Southern grasshopper mouse *Onychomys torridus ramona*	--/C2		
San Diego desert woodrat *Neotoma lepida intermedia*	--/C2		

TABLE 6
SENSITIVE WILDLIFE SPECIES OBSERVED (†) OR EXPECTED TO OCCUR
(continued)

Status Codes

BEPA = Bald Eagle Protection Act
C1 = Category 1 candidate for federal listing (taxa for which the U.S. Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened)
C2 = Category 2 candidate for federal listing (taxa which existing information indicates may warrant listing, but for which substantial biological information to support a proposed rule is lacking)
CFP = California fully protected species
CSC = California Department of Fish and Game species of special concern
FE = Listed as endangered by the federal government
FPE = Federally proposed endangered or threatened
HT = San Diego Herpetological Society (1980) threatened
SDC = City of San Diego Resource Protection Ordinance "Sensitive Species"
SE = Listed as endangered by the state of California
* = Taxa listed with an asterisk fall into one or more of the following categories:

- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines.
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range.
- Population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation within California.
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands).

TABLE 7
SENSITIVE PLANT SPECIES
OBSERVED (†) OR WITH THE POTENTIAL FOR OCCURRENCE

Species	State/Federal Status	CNPS List	CNPS Code	Comments
Acanthomintha ilicifolia San Diego thornmint	CE/C1	1B	2-3-2	Chaparral, coastal sage scrub, valley and foothill grassland/clay
Ambrosia chenopodiifolia† San Diego bur-sage	--/--	2	2-2-1	Coastal sage scrub
Artemisia palmeri San Diego sagewort	--/--	2	2-2-1	Coastal sage scrub, streams
Brodiaea orcuttii Orcutt's brodiaea	--/C2	1B	1-3-2	Closed-cone coniferous forest, meadows, cismontane woodland, valley and foothill grassland, vernal pools
Dudleya attenuata ssp. *orcuttii* Orcutt's dudleya	--/C2	2	3-3-1	Coastal sage scrub
Dudleya variegata Variegated dudleya	--/C2	4	1-2-2	Chaparral, coastal sage scrub, clay soils
Ericameria palmeri ssp. *palmeri* Palmer's ericameria	--/C2	2	2-2-1	Coastal sage scrub
Eryngium aristulatum var. *parishii*† San Diego button celery	CE/FPE	1B	1-3-2	Vernal pools
Euphorbia misera† Cliff spurge	--/--	2	2-2-1	Coastal sage scrub, maritime succulent scrub
Ferocactus viridescens† Coast barrel cactus	--/C2	2	1-3-1	Chaparral, coastal sage scrub, valley and foothill grassland
Hemizonia conjugens† Otay tarplant	CE/C2	1B	3-3-2	Coastal sage scrub, grassland
Myosurus minimus ssp. *apus* Little mousetail	--/C2	3	2-3-2	Vernal pools
Navarretia fossalis Prostrate navarretia	--/C2	1B	2-3-2	Vernal pools
Opuntia parryi var. *serpentina*† Snake cholla	--/C2	1B	3-3-2	Chaparral, coastal sage scrub, maritime succulent scrub

TABLE 7
SENSITIVE PLANT SPECIES
OBSERVED (†) OR WITH THE POTENTIAL FOR OCCURRENCE
(continued)

Species	State/Federal Status	CNPS List	CNPS Code	Comments
Pogogyne nudiuscula Otay mesa mint	CE/FPE	1B	3-3-2	Vernal pools
Rosa minutifolia† Small-leaved rose	CE/--	2	3-3-1	Coastal sage scrub
Selaginella cinerascens† Ashy spikemoss	--/--	4	1-2-1	Chaparral, coastal sage scrub
Stipa diegoensis San Diego County needle grass	--/--	2	3-1-1	Vernal streams, chaparral
Viguiera laciniata† San Diego sunflower	--/--	2	1-2-1	Chaparral, coastal sage scrub

NOTE: See Table 8 for explanation of sensitivity codes.

TABLE 8
SENSITIVITY CODES

FEDERAL CANDIDATES AND LISTED PLANTS

FE = Federally listed, endangered
FT = Federally listed, threatened
C1 = Enough data are on file to support a proposal for the federal listing
C1* = Enough data are on file to support a proposal for federal listing, but the plant is presumed extinct
C2 = Threat and/or distribution data are insufficient to support federal listing
C2* = Threat and/or distribution data are insufficient to support federal listing; plant presumed extinct
C3a = Extinct
C3b = Taxonomically invalid
C3c = Too widespread and/or not threatened

STATE LISTED PLANTS

CE = State listed, endangered
CR = State listed, rare
CT = State listed, threatened

CALIFORNIA NATIVE PLANT SOCIETY

LISTS

1A = Species presumed extinct.

1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.

2 = Species rare, threatened, or endangered in California but which are more common elsewhere. These species are eligible for state listing.

3 = Species for which more information is needed. Distribution, endangerment, and/or taxonomic information is needed.

4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.

R-E-D CODES

R (Rarity)

1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.

2 = Occurrence confined to several populations or to one extended population.

3 = Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)

1 = Not endangered
2 = Endangered in a portion of its range
3 = Endangered throughout its range

D (Distribution)

1 = More or less widespread outside California
2 = Rare outside California
3 = Endemic to California

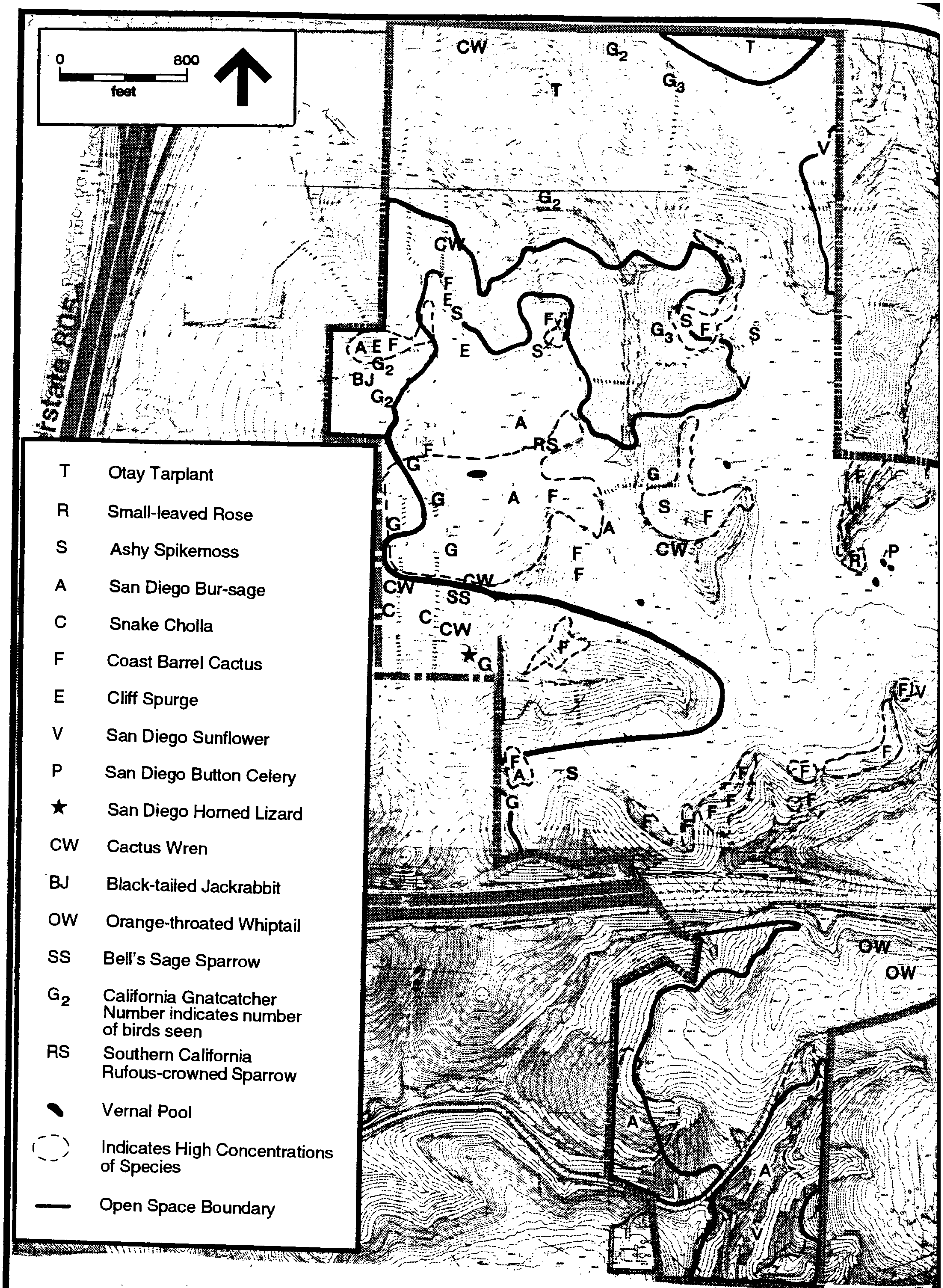


FIGURE 30. PRECISE PLAN SENSITIVE BIOLOGICAL RESOURCES, WEST PORTION

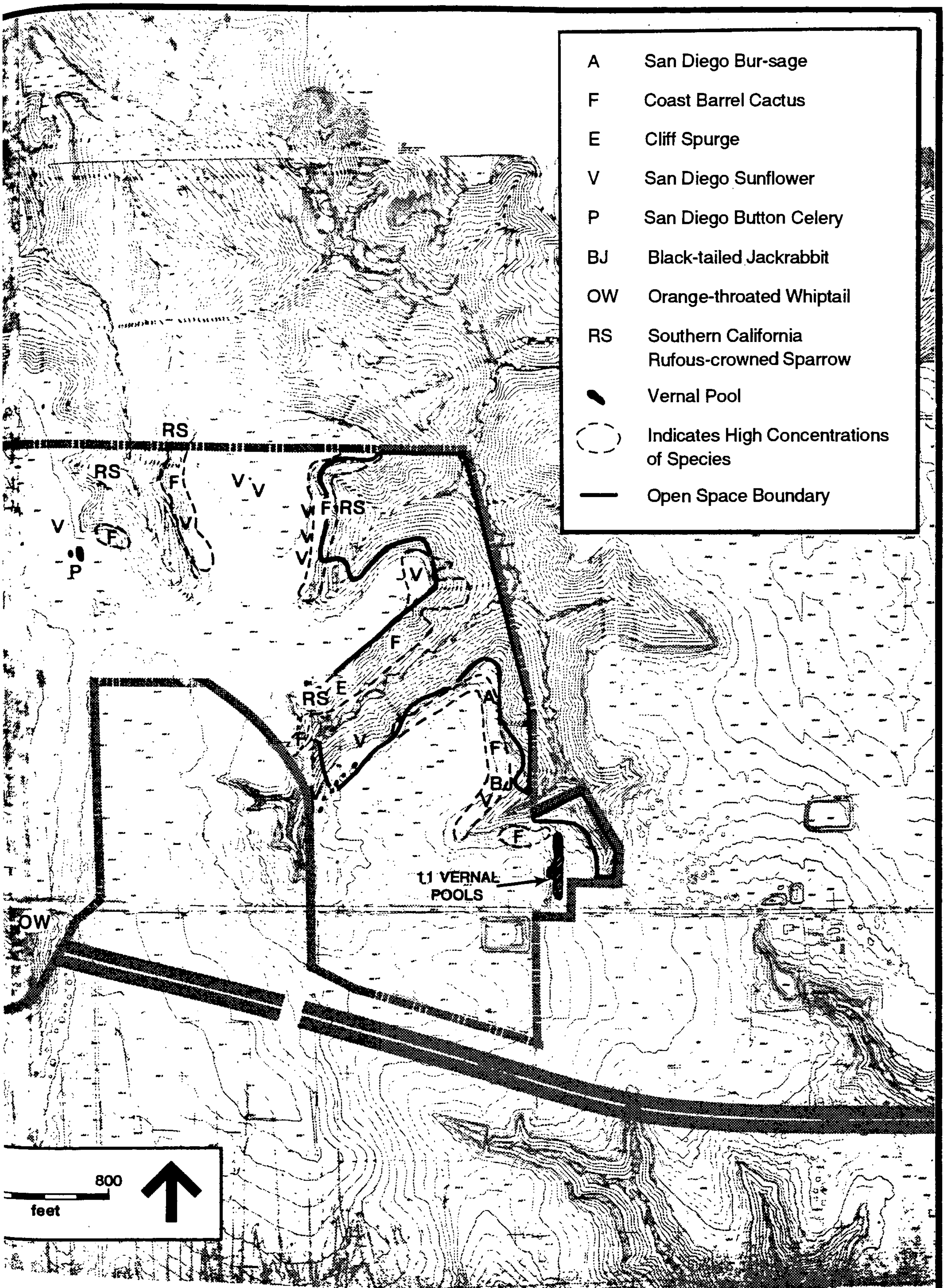


FIGURE 31. PRECISE PLAN SENSITIVE BIOLOGICAL RESOURCES, EAST PORTION

Diegan coastal sage scrub and maritime succulent scrub are also considered a high-priority vegetation type by the California Natural Diversity Data Base and sensitive by the City of San Diego, the USFWS, and a number of conservation organizations. Westman, a renowned researcher of southern California sage scrub communities, considers coastal sage scrub to be endangered because as little as 10 to 15 percent of its former acreage remains (Westman 1987). Once widespread on the coastal plains and shallow slopes of southern California, coastal sage scrub communities are rapidly being lost as a result of clearing for agriculture and urbanization. Maritime succulent scrub is similarly affected by agricultural activities and urbanization.

Animal Species. No wildlife species listed as rare and endangered by the state or federal governments were observed during surveys of the property. Sensitive wildlife observed or with the potential to occur on-site are shown in Table 6.

The coastal California gnatcatcher, a bird currently proposed for listing as federally endangered, was observed. In addition to being proposed for federal listing, the coastal California gnatcatcher is a CDFG species of special concern. Everett (1979) considers the bird declining in San Diego County, and Remsen (1979) lists it as declining throughout California. As a result, it is also considered to be sensitive by the City of San Diego. The range of the coastal California gnatcatcher encompasses the coastal plains of southern California and the most northern part of Baja California, Mexico. Sage scrub dominated by coastal sagebrush is the habitat most commonly used by the gnatcatcher although areas dominated by other sage scrub species, and chaparral and riparian habitats when they are adjacent to sage scrub habitat, can form parts of a home range for this species. Coastal California gnatcatchers were observed in coastal sage and maritime succulent scrub at several locations within the precise plan and California Terraces tentative map areas during the course of the 1988 surveys. ~~Three pairs of these birds were observed during the course of the field surveys.~~ A pair of gnatcatchers may require a territory which ranges in size from 20 to 40 acres, depending on the quality of the habitat and time of year. Approximately five pairs were observed within the California Terraces VTM. During the August 1992 survey, approximately 22 coastal California gnatcatchers were observed at several locations at the northwest and southwest portions of the site.

Seven federal Category 2 candidate species were also observed: the San Diego horned lizard (*Phrynosoma coronatum blainvillii*), orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), California horned lark (*Eremophila alpestris actia*), Bell's sage sparrow (*Amphispiza belli belli*), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), San Diego cactus wren (coastal population) (*Campylorhynchus brunneicapillus couesi*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). These species are briefly described below.

The San Diego horned lizard occurs along coastal southern California to the desert foothills and south into Baja California. In San Diego County, it has a wide range but spotty distribution. This species is often associated with coastal sage scrub. Populations along the coast and inland have been severely reduced by loss of habitat. Where it can be found, the San Diego horned lizard can be locally abundant, with densities near 20 adults per acre. The San Diego horned lizard is also classified as a California species of special concern and is a City of San Diego sensitive species.

The orange-throated whiptail occupies areas of low, scattered brush and grass with loose sandy loam soils. This preferred habitat is usually within coastal sage scrub and mixed chaparral areas. The ongoing threats to these habitat types have coincidentally reduced this species range and resulted in its listing as a California species of special concern and City of San Diego sensitive species. It ranges from southwest San Bernardino County south into lower Baja California.

Although not observed on-site, the sandy substrate in sage and maritime scrub habitats and other areas likely provides habitat for the coastal western whiptail (*Cnemidophorus tigris multiscutatus*), which is also a federal Category 2 candidate and California species of special concern. The red diamond rattlesnake (*Crotalus ruber ruber*), a federal Category 2 candidate and California species of special concern, was also not observed but is likely present on-site; the two-striped garter snake (*Thamnophis couchi hammondii*), which is found in or near fresh water, may occur in the reservoir in the southeast corner of the site when water is present. This garter snake is also a federal Category 2 candidate and a California species of special concern.

The California horned lark is a common breeding resident of San Diego County known to inhabit open areas with little vegetative cover. These larks were commonly observed within the project site in grassland areas.

The Bell's sage sparrow is a resident of chaparral communities, particularly those dominated by chamise (*Adenostoma fasciculatum*); however, chamise is also found within sage scrub communities. Population declines are primarily attributed to urban and agricultural expansion in southern California.

The coastal race of the cactus wren is declining in San Diego County (Everett 1979; Unitt 1984). This large wren species inhabits the coastal lowlands on mesas and slopes of coastal sage scrub where cactus thickets required for nesting are present. Loss of habitat as a result of expanding urbanization is the major cause of the decline for this wren. Cactus wrens were observed on the project site during 1988 surveys.

The Southern California rufous-crowned sparrow ranges from southwestern California (Santa Barbara County south) to northwestern Baja California. Its habitat includes steep, rocky areas of coastal sage scrub and scattered patches of grass within sage scrub.

Widespread destruction of sage scrub habitat for agricultural and urban development has led to the C2 listing of this species.

Several raptors (birds of prey) were observed during the surveys of the property, and all are protected by the State of California. The black-shouldered kite is fully protected, and the Cooper's hawk, sharp-shinned hawk, and northern harrier are species of special concern. Due to the paucity of trees within the precise plan and California Terraces tentative map areas, these raptors probably use the property primarily for foraging, although they may roost or nest in nearby trees off-site. While the northern harrier is a ground nesting species, the amount of disturbance and level of off-road activity would make it unlikely that any nesting activity currently exists.

The burrowing owl, also a CDFG species of special concern, was reported on the property (RECON 1980) but was not observed during subsequent surveys. As this owl is active during the day, it is likely that increased off-road activities within the California Terraces precise plan and tentative map areas have extirpated this species from the site.

The San Diego black-tailed jackrabbit ranges from near Mt. Pinos southward, to the west of the Peninsular range, into Baja California. It inhabits open or semi-open habitats. Thick chaparral is not suitable habitat for this species. Despite its historical familiarity, this subspecies is on the decline due to its association with the rapidly declining coastal sage scrub habitat type.

Plant Species. The six sensitive plant species observed on this property and those with the potential for occurrence based on habitat and soil types present are listed in Table 7; sensitivity codes are explained in Table 8. Observed species include the state-listed and federally proposed San Diego button celery, state-listed small-leaved rose (*Rosa minutifolia*), federal Category 2 and state endangered Otay tarplant (*Hemizonia conjugans*), federal Category 2 candidate coast barrel cactus, and California Native Plant Society-listed San Diego sunflower, San Diego bur-sage, cliff spurge, and ashy spikemoss. San Diego button celery occurs in a limited number of vernal pools, and the state-listed small-leaved rose occurs at the head of a canyon in the central portion of the California Terraces tentative map property. This is the only location in the United States of this species, which is known to commonly occur from near Ensenada to the vicinity of Mission de San Fernando in Baja California, Mexico. Otay tarplant was observed during the August 10, 1992 survey near the northwestern boundary of the property on the lower terrace, adjacent to Otay Valley.

South Palm Vista VTM

Habitats. Diegan coastal sage scrub, maritime succulent scrub, and San Diego mesa claypan vernal pool habitats are all present within the boundaries of this vesting tentative map. These communities and their sensitivity have been discussed previously.

Animal Species. No state or federally listed animal species were identified; however, one federally proposed species, the coastal California gnatcatcher, and two federal Category 2 candidates, the San Diego cactus wren and San Diego horned lizard, were observed. In addition, several species could potentially occur, and these are provided in Table 6.

Plant Species. No state or federally listed plant species were identified in the South Palm Vista VTM project area. Three plant species listed by the California Native Plant Society were identified, however, and these are coast barrel cactus, snake cholla, San Diego bur-sage, and ashy spikemoss. Additional sensitive plant species could be present; these are provided in Table 7.

c) Brush Management

Much of San Diego's existing and proposed development occurs within and adjacent to steep, brush-covered canyon slopes or mesas. As a result, a serious fire threat to property and life exists if urban encroachment into these areas is not managed properly. The City of San Diego Planning Department has developed guidelines intended to reduce the fire hazard to an acceptable level of risk without creating or aggravating other hazards such as soil erosion and slope failure. These guidelines are presented in the City's Landscape Technical Manual for Brush Management (October 1989), available from the Planning Department. The brush management programs proposed for the California Terraces Precise Plan and VTM and South Palm Vista VTM are discussed in detail in the Landform Alteration/Visual Quality section.

Brush management requirements will affect biological resources, particularly in Zones 1 and 2. Guidelines for Zone 1, the width of which can be up to 40 feet, essentially require a type-conversion of chaparral and sage scrub native habitats. This in turn affects the constituent plants and animals found within these communities, some of which are sensitive. Guidelines for Zones 1 and 2 provide for the selective thinning of high-volume plant species and replacement with low-volume vegetation. This makes the habitat less desirable for wildlife by reducing cover and increasing susceptibility to predators. The addition of new species can result in the introduction of nonnative, competitive weedy species to adjacent natural communities. Zone 3, while resulting in the least amount of biological impact, nevertheless reduces cover for wildlife species. These measures reduce the biological integrity and function of wildlife habitat and may significantly reduce sensitive plant and animal populations as well as increase soil erosion. There are methods in which to remove brush to reduce the soil erosion which is often associated with fuel management. The preferred method, and the one recommended in this report, is the use of hand tools, axes, and chain saws for cutting back, trimming, thinning, and pruning. The existing root systems of the natural brush are critical in the control of erosion. This method preserves the root systems of established plants and reduces the amount of destruction to the habitat. It also eliminates the possibility of accidentally undercutting the toe of a slope and causing slope failure. It does require continued maintenance and does little to reduce impacts to biological resources.

1) Issue

What sensitive species or important habitats would be directly or indirectly impacted by the proposed project?

Impacts

a) California Terraces Precise Plan

The amount of acreage to be impacted by the precise plan project development is shown in Table 9. Of the 665 acres currently vegetated, approximately 132.5 acres (20 percent) will remain undisturbed. Three sensitive plant communities, Diegan coastal sage scrub, maritime succulent scrub, and San Diego mesa claypan vernal pools, would be impacted through implementation of the proposed precise plan. Habitat for the California gnatcatcher and San Diego cactus wren would be lost commensurate to losses in Diegan coastal and maritime succulent scrub habitats. Twenty-five (78 percent) of the 32 vernal pools within the project boundaries would be impacted by the precise plan and this would affect the sensitive plant species found within them, including all of the San Diego button celery.

Sensitive plant species such as coast barrel cactus, San Diego sunflower, cliff spurge, San Diego bur-sage, small-leaved rose, Otay tarplant, and ashy spikemoss would also be impacted. In addition, all of the San Diego button celery and small-leaved rose on the property would be impacted by the project as proposed. The federal Category 2 candidate sensitive wildlife species observed on the property—San Diego horned lizard, orange-throated whiptail, California horned lark, Bell's sage sparrow, Southern California rufous-crowned sparrow, San Diego cactus wren (coastal population), and San Diego black-tailed jackrabbit—would also be impacted.

Approximately 202 acres (70 percent) of the high-quality, undisturbed Diegan coastal sage scrub and 40 acres (61 percent) of the maritime succulent scrub would be impacted. All of the disturbed Diegan coastal sage scrub would be impacted. All but 19.5 acres of grassland with scattered shrubs would be developed.

The preserved plant and wildlife community acreage occurs on steep slopes of the canyons within the project area. Open space would occur as five areas of over ten acres in size, and several smaller areas. These areas would be isolated from each other by development, which will affect their viability and usefulness to wildlife in the long term. It is expected that the degradation of these isolated habitat fragments would continue as

TABLE 9
PRECISE PLAN VEGETATION IMPACTS

Habitat Type	Existing Acreage	Impacted Acreage*	Percent Remaining
Maritime succulent scrub	65.7	40.0	39
Diegan coastal sage scrub	286.0	202.0	30
Nonnative grassland	244.0	224.5	8
Southern mixed chaparral	1.8	0.0	100

*Including brush management impacts from Zones 2 and 3.

TABLE 10
CALIFORNIA TERRACES VTM VEGETATION IMPACTS

Habitat Type	Existing Acreage	Impacted Acreage*	Percent Remaining
Maritime succulent scrub	50.3	32.5	35
Diegan coastal sage scrub	218.9	167.1	24
Nonnative grassland	227.5	211.1	1

*Including brush management impacts from Zones 2 and 3.

TABLE 11
SOUTH PALM VISTA VTM VEGETATION IMPACTS

Habitat Type	Existing Acreage	Impacted Acreage	Percent Remaining
Maritime succulent scrub	14.5	7.1	51
Diegan coastal sage scrub	8.6	6.6	23
Southern mixed chaparral	1.8	0.0	100

vegetation could be cleared from the canyon edges for increased fire protection. Additionally, domestic pets, especially cats, hunt the native wildlife in the canyons. Ornamental plantings from yards often propagate in the canyons, displacing the native vegetation upon which native wildlife depend.

Recent studies (Soule et al. 1988) indicate that species diversity in isolated canyons in San Diego County decays over time due to local extirpations in the canyons. Habitat loss, for reasons discussed above, is the major factor resulting in the localized loss of species in isolated canyons. Other contributing factors include environmental variations, predation, and reduction of variability in the local gene pool.

As 20-40 acres of sage scrub habitat may be required for a pair of breeding coastal California gnatcatchers, most of the preserved areas are not large enough to support even one pair of these birds. One area proposed for open space in the northwest portion of the site is over 20 acres and could possibly support a pair, although the area snakes along the steep hillsides and would have a long "edge" adjacent to development. The four larger areas are approximately 10 acres each and very likely would not support pairs of gnatcatchers. Open space areas less than 10 acres in size are not believed to be capable of supporting gnatcatchers.

While raptor perching or nesting areas were not specifically identified and are considered unlikely, development of the site would eliminate foraging areas for black-shouldered kite, Cooper's hawk, sharp-shinned hawk, and northern harrier. The loss of open scrub and grassland areas from the proposed project contributes incrementally to a cumulative regional impact of habitat loss.

b) California Terraces VTM

The vegetation acreages to be impacted by the California Terraces VTM are shown in Table 10.

Three sensitive plant communities, Diegan coastal sage scrub, maritime succulent scrub, and San Diego mesa claypan vernal pools, would be impacted through implementation of the proposed precise plan. The small-leaved rose would be extirpated. Habitat for the California gnatcatcher and San Diego cactus wren would be lost commensurate to losses in Diegan coastal and maritime succulent scrub habitats. Eighteen of the 32 vernal pools within the project boundaries would be impacted and would affect the sensitive plants species found within them.

Approximately 167.1 acres (76 percent) of the high-quality, undisturbed Diegan coastal sage scrub and 32.5 acres (65 percent) of the maritime succulent scrub would be impacted by the VTM.

The VTM essentially implements the precise plan as proposed. Therefore, impacts to the wildlife, including cumulative impact to raptor foraging habitat, would be similar as discussed above for the precise plan area.

c) South Palm Vista VTM

As shown on Table 11, two sensitive plant communities will be impacted by the implementation of the South Palm Vista vesting tentative map: Diegan coastal sage scrub, maritime succulent scrub, and San Diego mesa claypan vernal pools. Of the 8.6 acres of coastal sage scrub in the South Palm VTM, 6.6 acres will be lost. Of the 14.5 acres of maritime succulent scrub present, 7.1 acres will be lost. All seven of the vernal pools present (30 square feet) will be lost.

The South Palm Vista VTM is also subject to RPO. The entire area of the VTM is considered to be biologically sensitive land, and the maximum encroachment allowable into biologically sensitive lands is 3.2 acres of habitat, with no encroachment allowed into wetlands. The project exceeds the allowable encroachment into sensitive habitat by 10.5 acres and would impact seven vernal pools.

This loss of habitat will result in impacts to several Category 2 species including the coastal California gnatcatcher, San Diego cactus wren, San Diego horned lizard, Bell's sage sparrow, coast barrel cactus, snake cholla, and San Diego bur-sage. Approximately 15 acres of California gnatcatcher habitat will be lost. Incremental cumulative loss of raptor foraging area would also result.

Significance of the Impacts

a) Precise Plan

The loss of 70 percent of Diegan coastal sage scrub (coastal California gnatcatcher habitat), approximately 25 of the 32 vernal pools, and 100 percent of both the small-leaved rose and the San Diego button celery is a significant adverse biological impact which will require coordination with the CDFG's Endangered Plant Program. Impacts to the other sensitive plant and wildlife populations and to sensitive plant communities are also considered to be significant; loss of most of the non-native grassland is considered cumulatively significant due to its use as foraging area for raptors.

b) California Terraces VTM

The loss of 76 percent of Diegan coastal sage scrub (coastal California gnatcatcher habitat) results in a significant impact. The loss of approximately 18 of the vernal pools, 100 percent of the San Diego button celery, on the property is a significant impact. The loss of 100 percent of the small-leaved rose is a significant adverse biological impact. Impacts to the other sensitive plant and wildlife populations and to sensitive plant communities are also considered to be cumulatively significant, as is the loss of most of the nonnative grassland.

c) South Palm Vista VTM

The loss of 6.6 acres of Diegan coastal sage scrub and 7.1 acres of maritime succulent scrub and associated plant and wildlife species would be a significant impact. The loss of the 30 square feet (100 percent) of vernal pools on-site and sensitive plant species would also be a significant impact. The project is subject to RPO and exceeds the allowable encroachment into biologically sensitive lands. This would also represent a significant impact.

Mitigation, Monitoring, and Reporting Program

a) Precise Plan

Impacts to biological resources on a precise plan level as well as for the California Terraces, South Palm Vista, and other subsequent TMs are considered significant and unmitigated. The loss of 70 percent of the California gnatcatcher habitat associated with implementation of the precise plan is considered a significant and unmitigated impact to biological resources. Although a total of 132.5 acres of this habitat (consisting of coastal sage scrub and maritime succulent scrub) would be preserved in natural open space, the impact is not considered mitigated to a level below significance because much of the open space will consist of patches that are probably too small and isolated to support viable populations of California gnatcatcher.

Partial mitigation for impacts to vernal pools has been proposed through the Dennery Canyon Vernal Pool Restoration and Preservation Plan, as discussed below for the California Terraces and South Palm Vista VTMs.

Complete mitigation for these impacts along with the loss of other sensitive species and communities from the project site could be accomplished by off-site acquisition of equivalent functional habitat at a ratio of 2:1 of habitat area or redesign of the project to significantly expand the areas reserved for natural open space. Project redesign alternatives are discussed in Chapter 6 of this report. The Increased Open Space alternative and the Reduced Grading alternative would expand the on-site open space system and could reduce the impacts to the small-leaved rose population and other sensitive species.

b) California Terraces and South Palm Vista VTMs

Partial mitigation of the impacts to vernal pool habitat on California Terraces and the South Palm Vista VTMs would result from the implementation of the Dennery Canyon Vernal Pool Restoration and Preservation Plan. This plan is included as Appendix C of this report. The vernal pool preservation/enhancement plan proposes a 12-acre vernal pool preserve with 18 existing pools having a surface area of 13,696 square feet and plans for enhancement of the preserve to support 20 to 49 new pools with 20,200 to 27,500 square feet of surface area (Figure 32). The majority of the preserve would be established on the Otay Corporate Center North project just east of California Terraces. However, the preserve would also include acreage along the northern edge of the neighborhood park in the eastern area of California Terraces. This preserve would result in no net loss of vernal pool surface area or number of basins. Impacted pools would be replaced by the restoration of pool surface area at a minimum ratio of 3:1. The enhancement plan would also result in an overall increase in pool habitat quality due to rehabilitation and management efforts and incorporation of the preserve with the larger regional permanent open space system.

Criteria for success of the preserve include a goal for increase in gross area of habitat and a species-oriented restoration goal. These goals are intended to be met at the end of a five-year period. At least 24 pools supporting 20,200 square feet of habitat must be permanently established, in addition to previously existing pool area within the preserve, at the end of this monitoring period. Success of the program will also be based on the establishment of populations of Otay mesa mint, San Diego button celery, little mousetail, and prostrate navarretia in pools within the preserve. Plant species and abundance will be sampled in the pools to be impacted, and soil of these pools will be sampled for populations of fairy shrimp and other fauna. These data will be analyzed to determine minimum success criteria, to be defined in terms of percent cover for each of these plant taxa, species diversity of pool plant taxa, and species diversity of pool plants and animals ~~fauna~~.

Regular maintenance of the vernal pool preserve areas would be required throughout the establishment of the vegetation including a minimum five-year monitoring period for both uplands and vernal pool areas as described in the plan. The restoration efforts shall be monitored by the subdivider for a minimum five-year period or until the specific success criteria described in the plan have been met. Once the success criteria have been achieved, maintenance of the habitat itself should end as the plant communities mature; however, ongoing maintenance of the barriers and monitoring of trespassing would be required. The following factors should be included in the maintenance contract for the vernal pool preserves:

1. The removal of aggressive nonnative weeds would be necessary during the minimum five-year monitoring periods for the vernal pool and upland habitats.

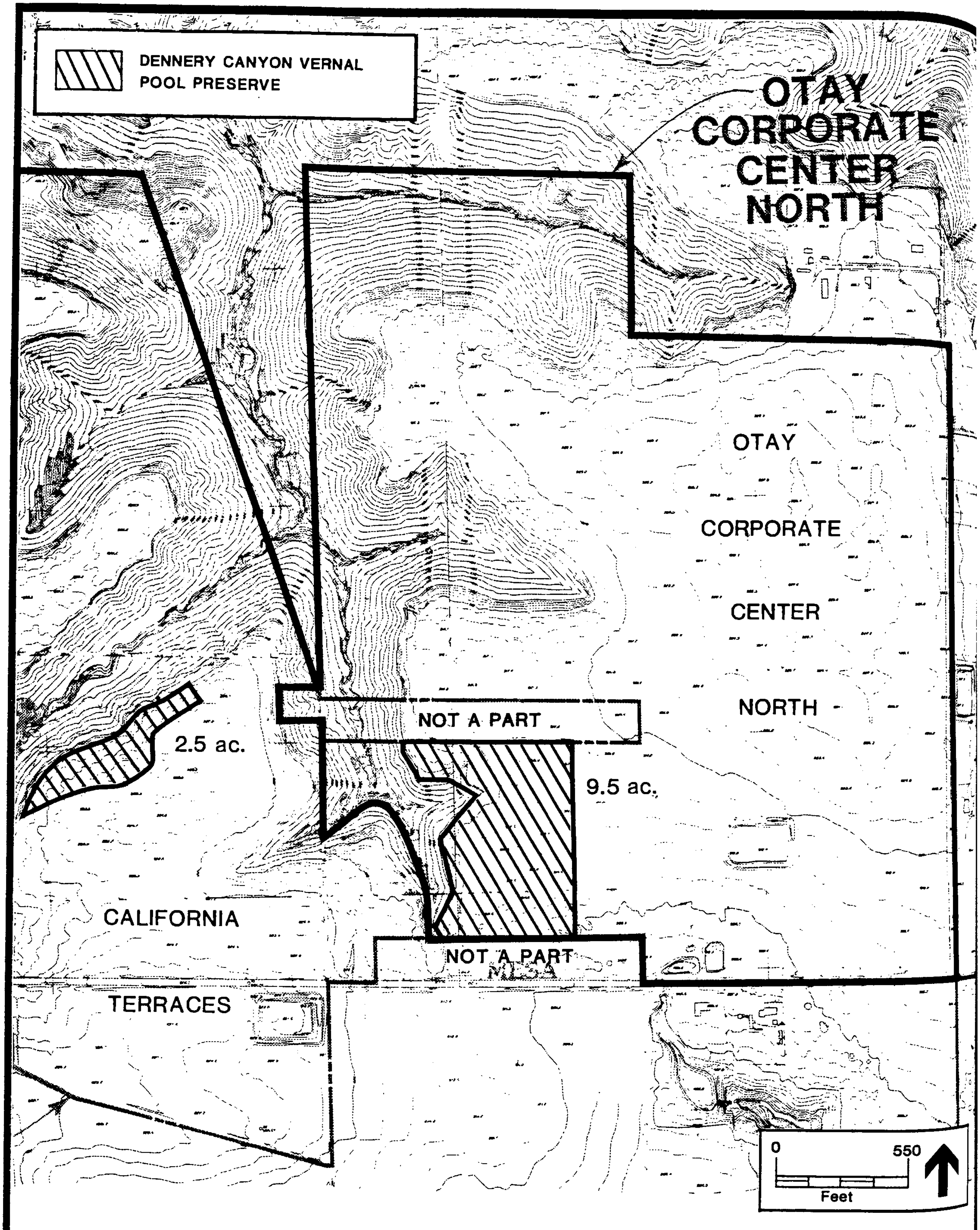


FIGURE 32. VERNAL POOL PRESERVE

All weeding should be done by using hand tools at least twice in the spring when the pools are dry. The monitoring biologist should monitor and notify the landscape contractor when to remove weeds and which plants require control during the monitoring periods. The need for weeding is expected to decrease substantially by the end of the monitoring period and, provided successful habitat restoration has been achieved, no long-term weeding requirements are recommended.

2. All barriers, fencing, and signs should be checked and repaired as necessary once every three months. Monitoring of disturbance and maintenance of the barrier and signs would be the responsibility of Pardee Construction Company for the term of the minimum five-year general monitoring period described below and would pass to the permanent trustee at the end of that period.

3. Trash in the preserve areas should be removed once every three months.

4. Any persons found willfully damaging the habitat within the preserves, including but not restricted to trash dumping, off-road-vehicle activity, illegal alien activity, plant removal, and destruction of barriers, should be prosecuted to the full extent of the law. Signs posted in English and Spanish to inform people of the status of the preserve area should also include a description of applicable laws and codes including fines for causing damage to the preserve.

Pardee Construction Company would retain responsibility for maintenance and management of the Dennery Canyon vernal pool preserve for a minimum five-year period or until the success criteria described in the plan have been met for the vernal pool and upland habitats. Ownership of the preserve will be transferred to the City of San Diego as a permanent steward. Pardee Construction Company would be responsible for employing an approved biological consultant to implement the monitoring programs. Other than the above-mentioned initial period, management of the preserve would be the responsibility of the City of San Diego as the ultimate owner of the preserve. The monitoring periods are to begin as stated in the restoration plan.

Long-term maintenance tasks for preserve management include (1) monthly monitoring and repair as necessary of barriers and signs around the preserve; (2) monthly removal of trash; (3) brief annual assessment of the status of target managed species within the preserve by an agency biologist or biological consultant, with the preparation of recommended species management activities, if warranted; (4) implementation of species management activities in consultation with resource agencies, if warranted; and (5) repair of vandalism or damage to pools in the preserve. The perpetual maintenance of the vernal pool preserve would be ensured through the provision of a funding mechanism to the satisfaction of the Director of the Park and Recreation Department prior to transferring ownership of the preserve to the City.

native vegetation would be selectively thinned with implementation of the precise plan conceptual brush management plan. These areas are in addition to the impacts described above as part of the project. A detailed brush management plan shall be prepared for subsequent tentative maps.

Impacts associated with this clearing and trimming method are discussed in the EIR prepared for the Landscape Technical Manual. The shrubs would be trimmed to comply with Chapter 6 of the Landscape Technical Manual; however, they would still exist, and short plants, such as the coast barrel cactus and ashy spikemoss, would not be affected at all. The gnatcatcher would probably continue to use coastal sagebrush that was trimmed to 18 inches. If brush management activities occur during the California gnatcatcher breeding season, potential impacts to nests could occur.

b) California Terraces VTM

Approximately 14.9 acres of native vegetation would be selectively thinned with implementation of the California Terraces VTM brush management plan (see Figure 24). These impacted areas are in addition to the impacts described above as part of the project. No brush management is shown in open space areas.

The biology effects described for the precise plan would be similar to those resulting from implementing the brush management plan prepared for the VTM.

c) South Palm Vista VTM

Approximately 3.6 acres of native vegetation would be selectively thinned with implementation of the South Palm Vista VTM brush management plan (see Figure 25). These impacted areas are in addition to the impacts described above as part of the project. No brush management is shown in open space areas.

The biology effects described for the precise plan would be similar to those resulting from implementing the brush management plan prepared for the VTM.

Significance of the Impacts

Selective thinning of the vegetation in Zones 2 and 3 as part of the precise plan conceptual map and proposed California Terraces and South Palm Vista VTMs would contribute to the significant and unmitigated biology impacts to sensitive biological resources described above.

Mitigation, Monitoring, and Reporting Program

a) Precise Plan

Implementation of the following mitigation measures would partially reduce potentially significant impacts to biological resources as a result of brush management requirements, although not to below a level of significance. A qualified biologist will be contracted to monitor the clearing of vegetation in association with brush management during all maintenance periods. This will ensure minimal removal and cutting of native vegetation in accordance with the guidelines for the Landscape Technical Manual and the brush management plan, thus minimizing impacts to wildlife habitat.

In addition, it shall be a condition of approval for all tentative maps that the developer provide maintenance of all brush management. The developer is responsible for maintaining the brush management until such time that either HOAs or other City-approved mechanisms can assume long-term responsibility. The brush management maintenance responsibility shall include brush management zones 2 and 3.

The applicant shall enter into a long-term maintenance agreement with the City, which shall be recorded with all final maps. The agreement shall stipulate that the developer shall be responsible for brush management until such time that either the HOAs or other mechanisms can assume responsibility. Any areas which are proposed to be deeded over to the City and require brush management are likewise the obligation of the developer until such time that the City has agreed to assume responsibility.

Areas covered by the Community Plan Implementation Overlay Zone, which contain brush management zones 2 and 3, must have either HOAs or other mechanisms (which must be approved by the Planning Department and Park and Recreation Department) established prior to the issuance of building permits. The HOAs and/or other approved mechanisms are required to provide permanent maintenance of the brush management areas.

b) California Terraces and South Palm Vista VTMs

The City of San Diego EAS shall ensure that it is a condition of these VTMs that a qualified biologist is contracted to monitor the clearing of vegetation in association with brush management during all maintenance periods. This will ensure minimal removal and cutting of native vegetation in accordance with the guidelines for the Landscape Technical Manual and the brush management plan, thus minimizing impacts to wildlife habitat.

The long-term maintenance of the brush management zones will be ensured by the mechanisms described above under the precise plan discussion.

E. Cultural Resources

Existing Conditions

The original California Terraces Precise Plan project boundary area was surveyed by RBR & Associates in 1983. At that time the precise plan boundary included the current project area, as well as additional area to the east. In 1984, RBR & Associates conducted additional surveys of proposed off-site improvement areas. This survey included the currently proposed off-site improvement areas and the current boundary of the South Palm Vista VTM. These surveys identified a total of 36 archaeological sites and 11 isolates. In 1985, RBR & Associates tested and assessed for significance 21 of these 36 sites. The results of this testing program are provided in Appendix D of this EIR.

Since that time, the precise plan boundary has been revised to what is currently proposed and analyzed in this EIR. Of the original 36 sites recorded, 19 are located completely or partially within the current precise plan boundary and off-site improvement areas. RBR & Associates or RECON tested all of these sites for significance. The three which were determined to be significant by RBR & Associates are SDI-6941, Locus D; SDI-7604, Locus E; and SDI-10,200. The significance of the remaining three resource areas, SDI-10,208, SDI-10,210, and SDI-10,285, was unknown at that time.

A summary of the status of the archaeological sites within the current precise plan boundary or off-site improvement areas is presented in Table 12.

The archaeological testing program designed by RBR & Associates was focused towards assessing each of the 21 sites within the project area for their ability to address research related to chronology/culture identification, site function, and regional settlement patterns. A large bifacial knife fragment, a "San Dieguito-type" point, and a Silver Lake point were recovered during the testing program. These artifacts reflect an occupation period for the area spanning thousands of years. Two obsidian samples were traced to the Coso Hot Springs. One obsidian flake was dated within the range of 1,326 to 2,374 years before the present, a time within the Early Milling period. Ceramics found at this site can be used to establish a Late period of association.

Regarding site function, the tested sites reveal a variety of site types. Artifacts recovered from a majority of the sites indicate that both lithic reduction and specialized processing was occurring. Several conclusions were made regarding settlement pattern. It was proposed that the sites which were tested reflect a collector subsistence pattern. This pattern of subsistence would have involved several base camps supported by outlying special-use sites, such as lithic quarry sites and food processing sites. Both base camps identified within the precise plan area are at the head of Dennery Canyon. Campsites

TABLE 12
STATUS OF ARCHAEOLOGICAL SITES WITHIN THE CURRENT PRECISE PLAN AND OFF-SITE IMPROVEMENT AREA

Site	Significant	Mitigation Required
SDI-6699A,B	No	None.
SDI-6941A-C, E-F	Yes	Data recovery, cataloging and analysis, report preparation. Completed (RBR & Associates 1988).
SDI-6941D	Yes	Data recovery, cataloging and analysis, report preparation. Completed by RECON in November 1992, prior to final map or grading permit.
SDI-7604A-E	Yes	Data recovery, cataloging and analysis, report preparation. Completed (RBR & Associates 1988).
SDI-7983	No	None.
SDI-7984A	No	None.
SDI-8640A,B	No	None.
SDI-10,192	No	None.
SDI-10,193	No	None.
SDI-10,194	No	None.
SDI-10,195	No	None.
SDI-10,197	No	None.
SDI-10,200	Yes	Detailed analysis of collected artifacts, report preparation. Completed by RECON in November 1992, prior to final map or grading permit.
SDI-10,202	No	None.
SDI-10,203	No	None.
SDI-10,204	No	None.
SDI-10,205	No	None.
SDI-10,208	No	None.
SDI-10,210	No	None.
SDI-10,285	No	None.

tended to be located near canyon heads, probably due to the proximity of resources necessary for subsistence.

Based on their value for addressing questions related to chronology/cultural identification, site function, and settlement pattern, 12 of the 15 sites tested by RBR & Associates within the current precise plan boundary were determined not to be significant. Three of the tested sites within the current precise plan area were determined to be significant cultural resources. The collections made during the testing program for sites SDI-7604E and SDI-10,200 were considered to be a sufficient amount of field work for these two significant sites. However, further analysis of the recovered artifacts was recommended in order to adequately mitigate expected impacts. Additional excavation and analysis was recommended for SDI-6941D. The results of RBR & Associates analysis of these three sites is included in Appendix D.

The City of San Diego required that the data recovery excavations be conducted at SDI-6941, Locus D prior to approval of the California Terraces Precise Plan. A portion of the mitigation surface collection and excavations were carried out by RECON in April and May of 1988. This program was developed in accordance with the research recommendations presented by RBR & Associates in the test report. These recommendations were based on a research program, designed by G. Timothy Gross (SOPA certified), which proposed that mitigation excavations address questions related to chronology/cultural identification, site function, and settlement pattern. Gross recommended an initial excavation program of thirty 1x1-meter test units to be followed by as many as 30 additional units, as deemed necessary to answer the research questions. At the completion of the initial 30-unit stratified sample, it was determined by RECON that no further excavations were warranted. This determination was based on the limited horizontal extent of the site deposits, the limited variety of the recovered remains, and absence of artifact variability within the deposit.

Upon review of the 1990 mitigation report, City staff determined that additional excavation was warranted at SDI-6941, Locus D. The additional excavation was guided by a detailed research design which incorporates the results of the first mitigation efforts with the continuation. The completion of the mitigation efforts calls for a grid based surface collection, excavation of 10 units in the peripheral areas of the site, and the completion of an additional 30 square units of excavation within the portion of the site that produced the greatest quantity and variety of artifacts and ecofacts. Additional excavation includes a mechanically excavated backhoe trench. All of the recovered materials are analyzed using a similar system to the first phase of the mitigation effort, paying special attention to edge damage and stages of flaked lithic artifact production. Samples for radiocarbon and obsidian sourcing and hydration studies will be processed and speciation of the shellfish and bone will be completed.

The first phase of data recovery investigations at SDI-6941D recovered a large quantity of lithic artifacts, a moderate quantity of shell and bone, one Late Prehistoric point fragment, and one ceramic sherd. No features (i.e., floor, hearth, or wall) were encountered. The good condition of the recovered shell indicates that the site was relatively undisturbed in the lower levels. The general results from this second phase are consistent with the findings of the first efforts with regard to the size and depth of the deposit at SDI-6941 and with regard to the nature of the site occupation, temporal sequence, and represented cultural assemblages. The final report for the mitigation of impacts to SDI-6941, Locus D and the detailed analysis of the collections from SDI-7604, Locus E and SDI-10,200 which mitigates impacts to these resource areas is attached as Appendix D.

SDI-10,210 was tested by RECON in 1990 for the South Palm plan. This site was not tested for importance by RBR & Associates because it was outside the boundary at the time of their work. The site is described by Davis and Wade (1990) as consisting of a sparse lithic scatter heavily impacted by road construction and vehicular activity, with over 89 percent of the site effectively destroyed by off-road-vehicle and clearing activity. Artifacts observed at this site include ground stone, flakes, unifacial tools, and flake tools primarily consisting of metavolcanics and green andesite. The conclusion of the testing program for this site was that it is not a unique archaeological resource and not important under CEQA or City of San Diego guidelines.

SDI-10,285 was tested in 1988 and is not important. The site was heavily impacted by off-road-vehicle activity. An intensive inspection of the surface of the site was performed and two 1x1-meter test units were excavated. Four flakes were recovered from the surface of the site. Two flakes of a fine-grained metavolcanic material were representative of secondary quarrying activities; two flakes of porphyritic metavolcanic material were representative of initial quarrying. No artifacts were recovered from the test units. Based on these findings, it was determined that SDI-10,285 does not represent a significant resource, and no further investigations were recommended.

There are two archaeological sites located very close to the boundary of the precise plan. These are SDI-10,201 and SDI-10,198. SDI-10,201 is not located near the boundary of the California Terraces VTM. SDI-10,198 is proposed to be placed in open space as part of the Otay Corporate Center project.

1) Issue

Would the project, including any off-site improvements, adversely affect archaeological resources?

Impacts

a) California Terraces Precise Plan

Implementation of the California Terraces Precise Plan and off-site improvements would completely or partially affect 16 of the 19 sites located within the boundary or off-site improvement areas. The three sites which would not be impacted by the precise plan, SDI-8640, SDI-10,205, and SDI-10,208, would be placed in open space. These sites were tested and found not to be significant (see Table 12).

The precise plan would impact three sites which were determined to be significant (SDI-6941D, SDI-7604E, and SDI-10,200). Mitigation for the three sites—SDI-6941, Locus D; SDI-7604, Locus E; and SDI-10,200—is ongoing. Completion of adequate mitigation would be a condition of individual tentative maps, as discussed below.

SDI-10,201 and SDI-10,198 are located off-site such that they would not be impacted by implementation of the precise plan. There are no materials present on the surface that would attract attention to these sites, with the only important change being a potential increase in pedestrian traffic across the sites.

b) California Terraces VTM

Implementation of the California Terraces VTM and off-site improvements would completely or partially adversely affect 14 of the 19 sites located within the boundary or off-site improvement areas. Three sites which would not be impacted by the VTM—SDI-8640, SDI-10,205, and SDI-10,208—would be placed in open space consistent with the precise plan. These sites were tested and found not to be significant (see Table 12). Eleven of the 14 sites that will be impacted were found to be not important. Mitigation of impacts to the remaining three—SDI-6941, Locus D; SDI-7604, Locus E; and SDI-10,200—is ongoing. Completion of adequate mitigation would be a condition of the VTM.

SDI-10,201 and SDI-10,198 are located off-site such that they would not be impacted by the VTM. There are no materials present on the surface that would attract attention to these sites, with the only important change being a potential increase in pedestrian traffic across the sites.

c) South Palm Vista VTM

Implementation of the South Palm Vista VTM would directly impact SDI-10,210 by the placement of houses. This site was tested and determined not to be significant.

Significance of the Impacts

a) California Terraces Precise Plan

Impacts to SDI-6941, Locus D; SDI-7604, Locus E; and SDI-10,200 are considered significant. Completion of the ongoing data recovery and analysis program has fully mitigated these impacts. Impacts to the other sites would not be significant, since they are either placed in open space or have been determined to be not important under CEQA and City of San Diego guidelines.

b) California Terraces VTM

Impacts to SDI-6941, Locus D; SDI-7604, Locus E; and SDI-10,200 are considered significant. Completion of the ongoing data recovery and analysis program has fully mitigated the impacts. Impacts to the other sites would not be significant, since they are either placed in open space or have been determined to be not important under CEQA and City of San Diego guidelines.

c) South Palm Vista VTM

Impacts to SDI-10,210 are not significant, since this site was determined not to be important according to CEQA and City of San Diego guidelines.

Mitigation, Monitoring, and Reporting Program

a) California Terraces Precise Plan

Because the value of an archaeological site lies in the research potential of the information contained in the site deposits, it is possible to partially mitigate the loss of information represented by the site's destruction. A data recovery program has been undertaken, which, through recovery of archaeological materials, would fully mitigate impacts to the resources. This program shall be completed prior to recordation of any final map or grading plan.

Testing phase excavations and surface collections conducted at SDI-7604E and SDI-10,200 and testing and data recovery phase sampling at SDI-6941D combine to represent a sufficient sample to adequately address the research objectives at these three sites as originally proposed during the test phase work effort by RBR & Associates. In summary, the testing and data recovery efforts account for a total sample of 77 square meters of excavation at SDI-6941D. With a site area of 10,000 square meters, this is a 0.77 percent sample. However, a 10,000-square-meter site area is not an accurate estimate of SDI-6941D, since this estimate is based on the distribution of surface artifacts and not the actual extent of the subsurface deposit. An estimate of the subsurface area of

SDI-6941D is approximately 3,600 square meters. Thus, the total sample percentage accomplished at this site within the subsurface area of the site area is 2.14 percent.

The data recovery effort completed at SDI-6941D was conducted in two phases. Phase I includes a grid-based surface collection and the excavation of 34 sample units, generally located within the northeastern portion of the site, as originally recorded. The Phase II data recovery program consists of a grid-based surface collection over a total area of 9,400 square meters, the mechanical excavation of 90 linear meters of trench and the hand excavation of 40 sample units. Coupled with the original testing program, this is a total of 77 square meters of hand excavation.

The following mitigation measures as discussed in detail in the technical report (see Appendix D) reduce potentially significant impacts from the California Terraces Precise Plan to below a level of significance. These measures shall be a condition of approval for future tentative maps within the precise plan boundary.

1. The data recovery program at SDI-6941D and artifact analysis and special studies, including radiocarbon dating and faunal analysis, shall be completed.

2. The detailed analysis of the lithic material recovered from SDI-7604, Locus E and SDI-10,200 shall be completed.

3. Any grading of archaeological sites shall be conducted under the direction of a qualified archaeologist.

4. A report shall be prepared documenting the findings addressing the research objectives proposed during the test phase.

5. A qualified archaeological monitor shall be present during construction grading in the vicinity of SDI-6941, Locus D; SDI-7604, Locus E; and SDI-10,200 to ensure appropriate treatment in the event that unknown buried deposits are encountered.

It shall be a condition of approval of the precise plan that the above mitigation measures be conditions of all subsequent tentative maps within the precise plan. The City of San Diego EAS shall verify this is a condition of the precise plan approval prior to the approval of the precise plan.

b) California Terraces VTM

The following data recovery mitigation measures would reduce potentially significant impacts from the California Terraces VTM to below a level of significance. The data recovery program includes excavation, artifact analysis, and final report preparation. Completion of these measures shall be a condition of the VTM.

1. A data recovery program shall be completed, including radiocarbon dating and faunal analysis at SDI-6941D.

2. Detailed lithic analysis of the artifacts recovered from SDI-7604E and SDI-10,200 shall be completed.

3. Any grading of archaeological sites shall be conducted under the direction of a a qualified archaeologist.

4. A data recovery report for SDI-6941D documenting the findings addressing the research objectives proposed during the test phase shall be reviewed and approved by EAS.

5. A qualified archaeological monitor shall be present during construction grading in the vicinity of SDI-6941D, SDI-7604E, and SDI-10,200 to ensure the appropriate treatment upon discovery of any unknown buried deposits of cultural debris.

The City of San Diego EAS shall ensure these measures are conditions of the tentative map prior to approval of the tentative map. A qualified archaeologist shall be present to identify the area of constraint, which will be flagged prior to construction grading. Upon completion of grading, the area to be capped will be identified. Capping will be completed before building permits are issued.

F. Noise

An acoustical analysis has been prepared for the California Terraces Precise Plan which addresses future traffic conditions on major roads within and adjacent to the precise plan area. The resulting report is summarized below and is included in this EIR as Appendix E. As discussed further below, the detail in the precise plan acoustical analysis was sufficient to determine impacts and mitigation at the tentative map level for the California Terraces VTM and South Palm VTM.

Existing Conditions

Noise sources in the vicinity of the proposed California Terraces Precise Plan area include traffic-related noise and noise generated by aircraft from Brown Field. Existing roadway noise in the project vicinity was determined using the Federal Highway Administration (FHWA) Noise Prediction Model. The San Diego Association of Governments (SANDAG) provided current (1991) traffic levels on I-805, SR-905 (formerly SR-117), and Otay Mesa Road, which are 49,000, 14,000, and 16,000 average daily trips (ADT), respectively, for these roadways. There are no currently available traffic counts for the portion of Palm Avenue east of I-805. Existing noise levels of 80 Community Noise Equivalent Level (CNEL) and 74 CNEL were calculated at 50 feet from the roadway edges of I-805 and SR-905, respectively. An existing CNEL of 74 dBA was calculated adjacent to Otay Mesa Road. The influence of I-805 on the existing noise environment is negligible due to distance and topographic attenuation. Proposed modifications in the topography are discussed under impacts. Traffic-generated noise levels over the project site currently range from 74 A-weighted decibels (dBA) to approximately 55 dBA, with the highest noise levels observed in those areas immediately adjacent to SR-905 and Otay Mesa Road (Figure 33).

Aircraft operations at Brown Field, approximately one mile ~~two miles~~ east of the site, also generate noise in the project vicinity. Occasionally, aircraft fly over the precise plan area, thus generating high single-event noise levels. The majority of the precise plan area is, however, located outside the existing 65 dBA CNEL aircraft noise contour, as shown on Figure 34. An approximate 10-acre area of the east-central precise plan area designated as open space does lie within the 65 dBA noise contour. The year 2000 projected 65 CNEL noise contour for Rodriguez Field (Tijuana Airport) is shown on Figure 34 also (City of San Diego 1981).

The CNEL is a 24-hour cumulative measure of community noise levels based on the A-weighted decibel. A-weighting is a frequency correction that correlates sound pressure levels with the frequency response of the human ear. The CNEL adds 10 dBA to the average nighttime (10:00 p.m. to 7:00 a.m.) noise levels and 5 dBA to the average

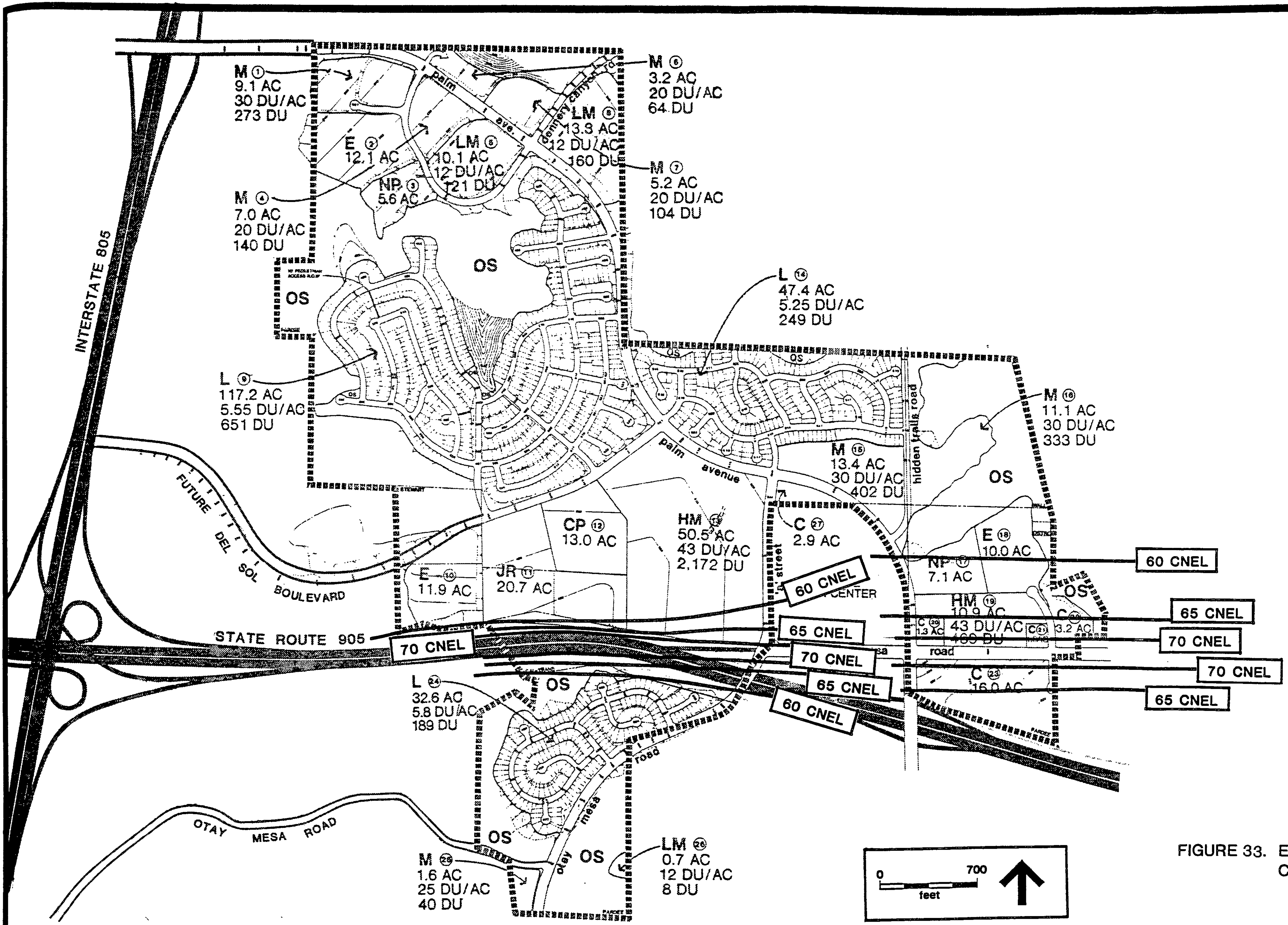
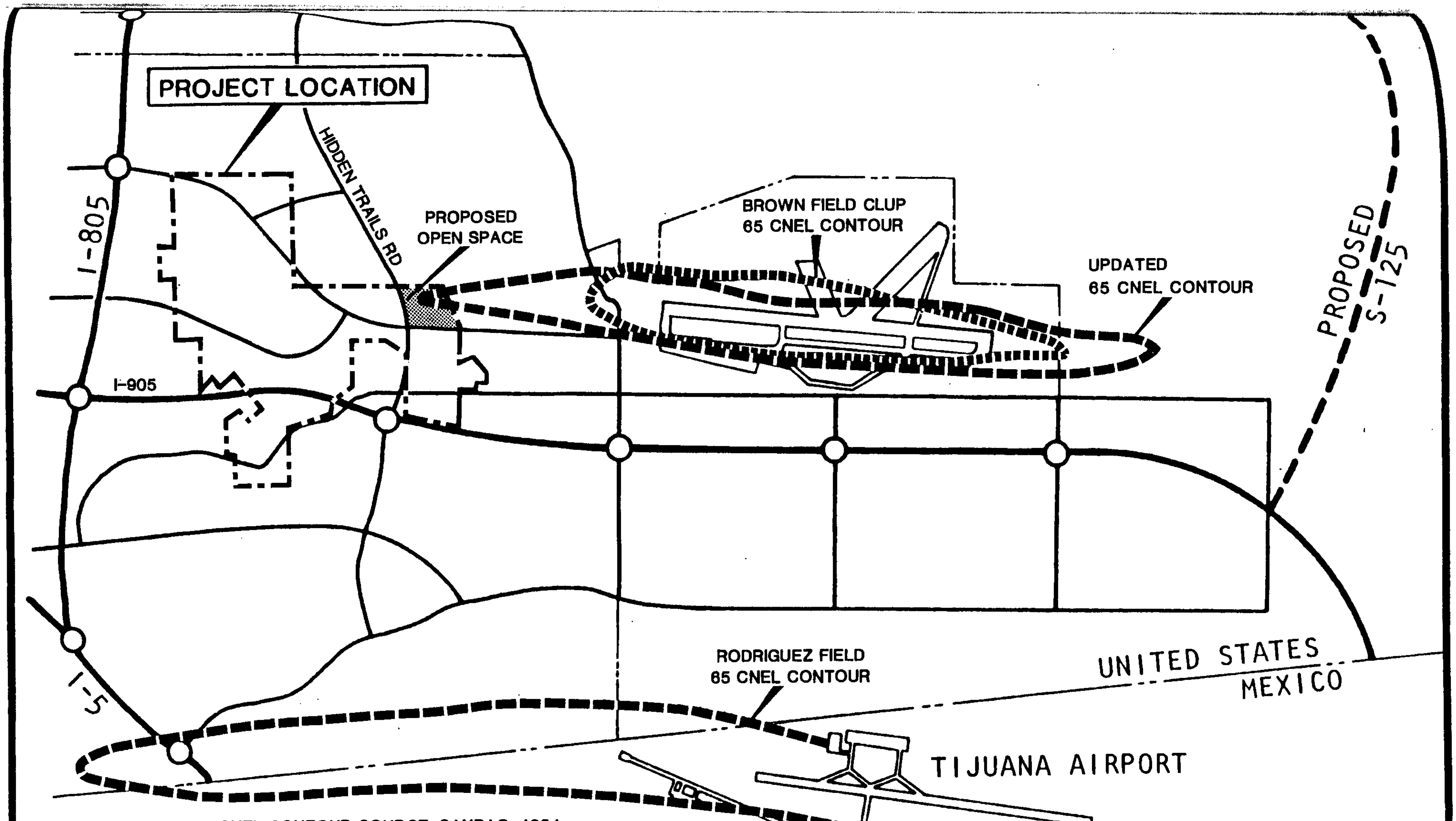


FIGURE 33. EXISTING NOISE CONTOURS



BROWN FIELD CLUP 65 CNEL CONTOUR SOURCE: SANDAG, 1981
UPDATED 65 CNEL CONTOUR SOURCE: CITY OF SAN DIEGO 1987
RODRIGUEZ FIELD 65 CNEL CONTOUR SOURCE: OTAY MESA COMMUNITY PLAN, 1981

FIGURE 34. 65 dBA NOISE CONTOUR FOR BROWN FIELD

evening (7:00 p.m. to 10:00 p.m.) noise levels to account for added sensitivity to noise during these times.

The City of San Diego has established noise criteria for new development in the Progress Guide and General Plan (1979). These standards indicate the maximum exterior CNEL considered to be compatible with various land uses. For areas where the projected future CNEL would exceed these levels, mitigation is generally required to reduce the noise. The City's exterior noise level standard is 65 CNEL for single- and multi-family residential uses, schools, and parks. Multi-family balconies which are part of required open space calculations also have a City standard of 65 CNEL. The City's exterior noise level standard is 70 CNEL for office/professional uses and 75 CNEL for other commercial developments such as shopping centers, restaurants, movie theaters, and wholesale uses. Multi-family buildings are required by the State Uniform Building Code (Title 24, Section 25-28) and City Noise Ordinance (Section 59.5.0701) to achieve an interior noise level of 45 CNEL. The City also has an interior standard of 45 CNEL for single-family residential buildings.

1) Issue

Would existing or future noise levels on the site be compatible with the uses proposed?

Impacts

An acoustical analysis has been prepared for the California Terraces Precise Plan which addresses future traffic conditions on major roads within and adjacent to the precise plan area (Appendix E). This analysis considered the potential for a high percentage of truck traffic from the industrial area to the east. In addition, noise levels from aircraft operations at Brown Field were also considered. Noise impacts were evaluated in accordance with the City's General Plan standards for land use compatibility.

Figure 35 shows the unattenuated (i.e., without consideration of noise-mitigating berms, walls, or shielding by structures) future ground-floor CNEL vehicular noise levels over the California Terraces Precise Plan area and proposed VTM areas. As can be seen in Figure 35, portions of residential areas, school and park uses, and vernal pool open space proposed immediately adjacent to Palm Avenue, "A" Street, Del Sol Boulevard, Otay Mesa Road, and SR-905 would be exposed to noise levels in excess of the 65 CNEL standard, unless appropriate noise abatement is implemented. Also as shown in Figure 35, the South Palm Vista VTM area would not be exposed to noise levels above the City's 65 CNEL residential standard and noise impacts would not occur.

As discussed below under mitigation, a barrier greater than 6 feet tall is recommended along some of the roadways. This occurs along the south side of Palm Avenue between

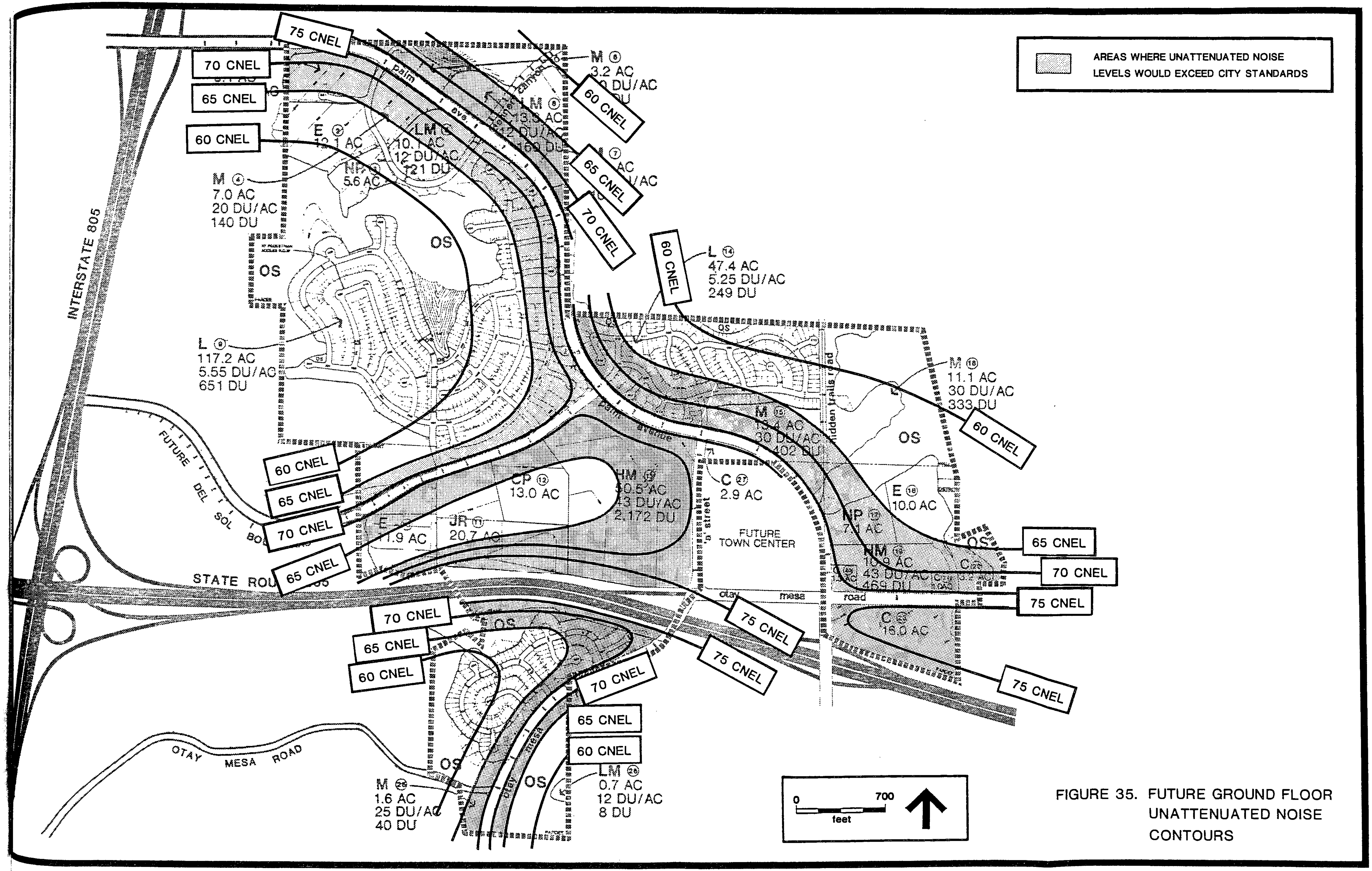


FIGURE 35. FUTURE GROUND FLOOR UNATTENUATED NOISE CONTOURS

Del Sol Boulevard and "A" Street on Planning Area 13 (VTM Lot 1022A), along the north side of Otay Mesa Road at Planning Area 19 (VTM Lots 1028B, C, D, E, and F), and along both sides of SR-905. The City's Significance Determination Guidelines (City of San Diego 1991) indicate that walls greater than 6 feet in height and 50 feet in length could create potential visual quality impacts. If the barriers greater than 6 feet in height cannot be constructed as 6-foot wall plus berm combinations, then they could create a visual impact. This issue is discussed in the Landform Alteration/Visual Quality section in this EIR.

In areas within the precise plan where residences are directly adjacent to SR-905, Palm Avenue, Otay Mesa Road, and Del Sol Boulevard, these buildings could experience interior noise levels greater than 45 CNEL. Typical construction techniques generally provide 15 dBA of exterior to interior noise attenuation.

Future noise levels could also exceed standards in the commercial lots, depending on the specific commercial use proposed. Planning Areas 20 and 21 (VTM Lots 1027 and 1029) are proposed for convenience store or gas station uses, which have a noise level limit of 75 CNEL. These areas would not be impacted by future noise levels in excess of the City's standards. Planning Area 22 (VTM Lot 1030) would not be exposed to noise levels above 70 CNEL and any commercial use (retail or office/professional) would conform with the City's noise standards. Planning Areas 23 and 27 (VTM Lots 1031 and 1023) would only be impacted if the commercial uses proposed would be subject to the 70 CNEL noise standard (office/professional uses).

In 1981, the Brown Field Airport Master Plan and the Otay Mesa Community Plan were adopted. Both included delineation of a 65 CNEL aircraft noise contour, within which residential and other similar uses would not be compatible. As shown in these documents, the projected 65 CNEL contour would occur approximately 4,000 feet from the eastern project boundary. Since 1981, new noise studies have shown the noise impact area to be larger than originally projected. The latest contours were developed using updated aircraft mix and departure times and show the projected 65 CNEL aircraft noise contour extending to Dennery Canyon. A City of San Diego Manager's Report (86-599, April 1987) has determined that with specific restriction of operations at Brown Field, residential development west of Dennery Canyon would be acceptable and not significantly affected by aircraft noise. Nearly the entire precise plan area is, however, located outside the existing 65 CNEL aircraft noise contour. A small portion of the east-central precise plan area does lie within the 65 CNEL noise contour, as shown in Figure 34. This portion of the precise plan has been designated as open space; therefore, aircraft activity associated with Brown Field would not pose a significant noise impact to future residents of the California Terraces Precise Plan area.

The year 2000 projected 65 CNEL noise contour for Rodriguez Field (Tijuana Airport) is also shown on Figure 34 (City of San Diego 1981). As can be seen in the figure, noise from Rodriguez Field would not significantly impact the California Terraces Precise Plan area.

The City of San Diego is also considering the Otay Mesa area as a potential site for another major airport (known as TwinPort) to supplement operations at Lindbergh Field. The City Council passed Resolution R-278003 on May 28, 1991, which identified the TwinPort concept on Otay Mesa as the City's preferred option for a new airport. On the same day, the City Council also adopted Resolution R-278004 which identified the TwinPort study area and stated the council's determination not to approve any actions which could allow residential development in the study area. On May 12, 1992, the council resolved to not approve any specific plans or rezonings within the study area (City of San Diego 1992).

The study area identified in Resolution R-278004 was based on a possible 65 CNEL contour line from TwinPort and it includes most of the California Terraces Precise Plan area, with the exception of the northwest corner. If the TwinPort is approved, the residential area proposed for California Terraces may be incompatible with the noise levels generated by the new airport. If the TwinPort on Otay Mesa is approved, additional acoustical studies would be necessary to determine the airport's noise impacts to the project site.

If the City Council eliminates Otay Mesa as a potential site for a new airport, Brown Field and Rodriguez Field would operate as discussed above and there would be no aircraft-related noise impacts to the proposed project.

Significance of the Impacts

Noise in the project area would be generated by future traffic on Palm Avenue, SR-905, Otay Mesa Road, Del Sol Boulevard, and "A" Street. Noise from these roadways would exceed the City of San Diego residential standard of 65 CNEL and have a potentially significant adverse noise impact on future residential, school, and park uses in the California Terraces Precise Plan and California Terraces VTM areas on the site. Also, in some commercial areas (i.e., Planning Area 23 at the southeast corner of the Palm Avenue/Otay Mesa Road intersection), if office/professional uses are proposed rather than commercial retail, the noise levels could exceed the City's 70 CNEL exterior standard. These represent a significant project-related noise impact.

Interior noise levels could exceed 45 CNEL for residential buildings directly adjacent to the major roadways within the project site. For residential uses this would represent a significant impact (City of San Diego 1991). In addition, if office/professional uses are proposed at the commercial areas, the interior noise level standard of 50 CNEL could be exceeded. This would also represent a significant impact.

Impacts to open space users from the neighborhood park and elementary school at the vernal pool preserve would also be significant as the noise levels would exceed the 65 CNEL standard.

There would be no significant vehicular traffic noise impacts to the South Palm Vista VTM area.

Mitigation, Monitoring, and Reporting Program

a) California Terraces Precise Plan

The following mitigation measures shall be a condition of approval of the currently proposed and future tentative maps within the precise plan boundary, which include the areas shown on Figure 36 as requiring noise mitigation.

The locations of noise barriers and/or setbacks needed to achieve City noise level standards at the ground-floor level are described in Table 13 and shown in Figure 36. Where there are two or more mitigation measures given for a segment on Table 13, any one of the measures would mitigate the noise impact and is considered equal as adequate noise mitigation. Construction of the noise barriers shown in Figure 36 and described in Table 13 shall be a condition of the future tentative maps which include those areas.

The recommended noise barriers would be effective for ground-floor receptors only. Second-story noise levels for residential buildings directly adjacent to Del Sol Boulevard, SR-905, Palm Avenue, and Otay Mesa Road would not be reduced by the noise barriers recommended in Table 13. Because buildings have not been designed at this planning level, the subsequent tentative map applicant shall demonstrate to the satisfaction of the City's Building Inspection Department prior to issuance of building permits that all multi-story single- and multi-family buildings adjacent to major roadways on the tentative map have been designed to achieve an interior standard of 45 CNEL, based upon future traffic volumes.

Also, if any multi-family buildings adjacent to the major roadways have second-story balconies which are required open space, then these balconies could be exposed to noise levels in excess of the City's 65 CNEL exterior standard. It shall be a condition of each tentative map containing multi-family development adjacent to SR-905, Palm Avenue, Otay Mesa Road, or Del Sol Boulevard that each balcony above the ground floor which is required open space shall be attenuated through berms, walls, or structural design to meet the City's 65 CNEL noise level standard.

Implementation of the above conditions shall be assured through the PRD and CPIOZ processing. For those planning areas within the precise plan that will be subject to the

TABLE 13
MITIGATION MEASURES

Label*	Mitigation Measure
A	3-foot barrier†
B	4-foot barrier
C	4.5-foot barrier
D	5-foot barrier
E	6-foot barrier
F	7-foot barrier
G	8-foot barrier
H	8.5-foot barrier
I	3-foot barrier or 75-foot setback
J	4-foot barrier or 75-foot setback
K	7.5-foot barrier or 6-foot setback with soft setback
L	7.5-foot barrier or 6-foot barrier with 70-foot setback
M	9-foot barrier or 6-foot barrier with 120-foot setback
N	10-foot barrier or 6-foot barrier with 120-foot setback
O	If limit 70 CNEL - 4-foot barrier; If limit 75 CNEL - no barrier
P	If limit 70 CNEL - 5-foot barrier; If limit 75 CNEL - no barrier
Q	If limit 70 CNEL - 3-foot barrier; If limit 75 CNEL - no barrier

*See Figure 36.

†A barrier can consist of any combination of earth, Plexiglas, and solid building materials such as masonry, concrete, or brick.

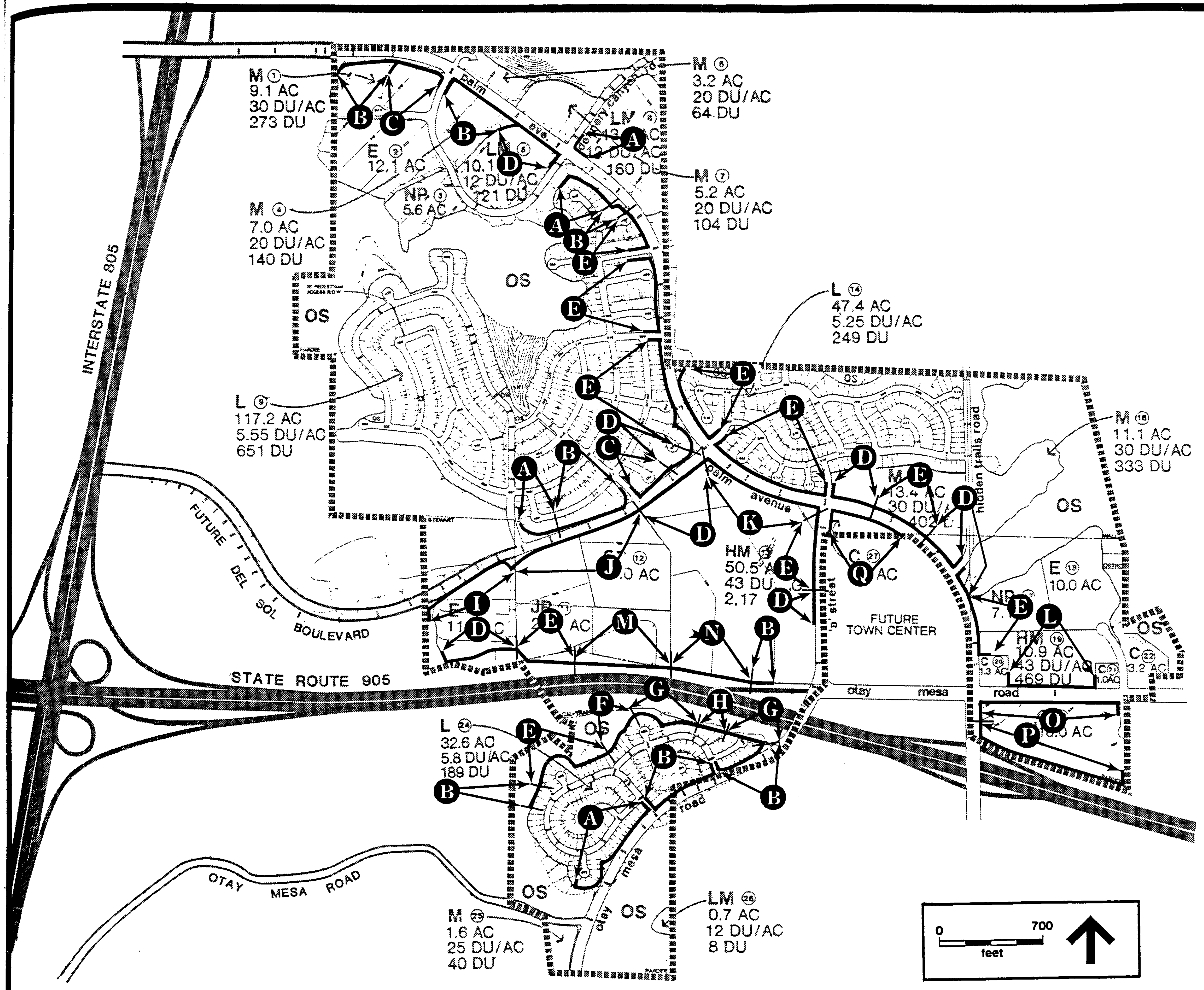


FIGURE 36. AREAS RECOMMENDED FOR FIRST FLOOR NOISE MITIGATION

(SEE TABLE 13 FOR BARRIER DESCRIPTIONS FOR EACH LETTER)

CPIOZ, the applicant shall provide an acoustical analysis to the Planning Department's Environmental Analysis Section which addresses exterior noise impacts to the proposed development prior to the issuance of any CPIOZ permit. The analysis shall determine mitigation measures which would mitigate noise impacts to below a level of significance. Future noise levels shall not exceed the adopted City standard of 65 CNEL for exterior noise. All exterior noise mitigation, including sound attenuation barriers, shall be completed prior to the issuance of any CPIOZ permits.

Likewise, for interior noise, the applicant shall provide an interior acoustical noise analysis to EAS prior to the issuance of any CPIOZ permit. The analysis shall determine mitigation measures which would mitigate interior noise impacts to below a level of significance. Future interior noise levels, including second stories, shall not exceed the adopted City standard of 45 CNEL. All interior noise mitigation shall be completed prior to the issuance of any occupancy permit.

In summary, all CPIOZ permits would require noise levels to meet the following criteria:

- Interior noise levels would not exceed the noise standard of 45 CNEL established in the General Plan Transportation Element.
- Exterior noise levels would not exceed the noise standard of 65 CNEL established in the General Plan Transportation Element.
- All acoustical studies shall be based on the final site plan and future ADT approved within the California Terraces Transportation Plan as well as the Otay Mesa Community Plan Transportation Element. The studies shall include any subsequent amendments to either document, including all other traffic studies approved by the Engineering and Development Department's Transportation Planning Division.

b) California Terraces VTM

Since the California Terraces VTM area includes areas shown on Figure 36 as requiring noise mitigation, provision of the noise barriers recommended for the California Terraces Precise Plan shown in Figure 36 and Table 13 which are within the California Terraces Precise Plan area shall be a condition of the VTM.

Where there are two or more mitigation measures given for a segment on Table 13, any one of the measures would mitigate the noise impact and is considered equal as adequate noise mitigation.

It shall be a condition of the VTM that all multi-story residential buildings adjacent to SR-905, Palm Avenue, Otay Mesa Road, and Del Sol Boulevard shall achieve interior noise levels of 45 CNEL or less to meet the applicable City and State standards. The noise technical report (Appendix E) states the amount of exterior to interior attenuation required for buildings in each area of the tentative map adjacent to a major roadway.

It shall also be a condition of the VTM that all multi-family balconies on the second floor or higher which are part of required open space calculations shall be attenuated to meet the City's 65 CNEL exterior noise level standard. The City's standard does not apply to balconies which are not part of required open space.

All noise barriers shown on Figure 36 and Table 13 which are shown within the VTM area shall be constructed prior to issuance of building permits. This shall be a condition of the VTM. All barriers which are berms shall be shown on the grading plans and verified by field inspection by the Environmental Analysis Section. All walls which are greater than six feet in height shall be shown on the building plans and identified as noise walls. A building permit is required for all walls greater than six feet in height. The Building Inspection Department shall ensure that the noise walls for which permits have been obtained have been built on the project site prior to issuance of building permits for structures to be occupied. All walls under six feet in height shall be inspected by the Planning Department prior to issuance of building permits.

For single- and multi-family buildings taller than one story which are adjacent to SR-905, Palm Avenue, Otay Mesa Road, or Del Sol Boulevard, the applicant shall provide an acoustical study or other evidence to the satisfaction of the City Building Inspection Department that interior noise levels will meet the 45 CNEL noise level standards. This shall be provided prior to issuance of building permits and shall be a condition of the VTM.

The applicant shall provide an acoustical study or other evidence to the satisfaction of the City Building Inspection Department that all multi-family balconies on the second-story or above which are adjacent to SR-905, Palm Avenue, Otay Mesa Road, or Del Sol Boulevard and which are part of required open space calculations will meet the City's 65 CNEL noise level standard. This shall be completed prior to issuance of building permits.

Implementation of these mitigation measures shall be ensured through the PRD or CPIOZ permits as described in the preceding discussion for the precise plan.

c) South Palm Vista VTM

As shown in Figure 35, the South Palm Vista VTM area would not be exposed to noise levels above 65 CNEL, the City's standard for residential areas. Noise mitigation is not required for this VTM area.

G. Traffic Circulation

A transportation analysis for the proposed California Terraces Precise Plan was prepared by Urban Systems Associates (USA), Inc., on December 16, 1986, and was subsequently revised in April 1987, January 1988, April 1988, October 1988, August 1989, November 1989, and April 2, 1990. The following information was obtained from the latest revision of the California Terraces transportation analysis, dated April 19, 1990, and comments provided by the City Transportation Development Section staff in a letter of comment dated December 9, 1991. The transportation analysis ~~which~~ reflects the dwelling unit increase from 4,323 dwelling units to 5,375, changes in land use densities, and increases to the commercial acreage. As noted in Appendix F, while the overall number of dwelling units has increased, the type of residential use has been changed to a higher density development which generates fewer trips per dwelling unit. Therefore, the net traffic generation has only increased by about 2,250 trips. This difference would not require any new analysis. The entire traffic analysis prepared for the California Terraces project is included in this EIR as Appendix F.

In 1986 and 1987, SANDAG conducted several travel forecasts of the Otay Mesa area in connection with their SR-125/Otay Mesa areawide study. USA relied upon these more recent figures in preparing the transportation analysis for California Terraces Precise Plan. A review of SANDAG's preliminary forecasts for the community plan street system in the precise plan area indicated that some street links would need to be reclassified in or adjacent to the precise plan area. To aid in determining appropriate street classification changes, USA, through SANDAG, revised the community plan street system to match the street system assumed for the precise plan area, and SANDAG ran a separate travel forecast which tested the revised street system called the USA/SANDAG Alternate 1 Travel Forecast.

This travel forecast was rerun to include other known proposed projects, such as Robinhood Ridge, Gateway Fair, Otay Corporate Center, and Spring Canyon. This report is entitled the SANDAG/USA's Alternate 2 forecast report.

The travel forecast has been rerun several times to include more recent land use changes. The latest forecast, entitled SANDAG-Otay Mesa/USA Alternate 4-11/88, changed the alignment of Palm Avenue to reflect the City staff-preferred alternative of Palm Avenue intersecting Otay Mesa Road and SR-117 (SR-905) to the east of the future town center. The street changes recommended in this forecast are based on the City's recently approved Street Design Manual of July, 1987. Other changes to the network were made outside the California Terraces Precise Plan area and do not affect the planned street system for California Terraces.

Existing Conditions

a) Traffic Circulation

The California Terraces Precise Plan area is currently undeveloped. It is situated east of I-805, between Otay Mesa Road to the south, Palm Avenue to the north, and Otay Valley Road to the east. Access to the project area is provided by SR-905 and Otay Mesa Road. There is presently a diamond freeway interchange at I-805 and Palm Avenue, but Palm Avenue dead-ends just to the east of I-805 at this time. Figure 37 shows the existing street system and the 1988 SANDAG average weekday traffic volumes.

The circulation element of the Otay Mesa Community Plan identifies future street classifications around and in the project site (Figure 38). According to the adopted plan, SR-117 (currently SR-905) would be a six-lane freeway with an interchange at Heritage Road. Palm Avenue is designated as a four-lane primary arterial and a four-lane major street between I-805 and Heritage Road. One segment of Palm Avenue, between Caliente Boulevard and Heritage Road, has been proposed for deletion in conjunction with the proposed Otay Corporate Center project to the east. Del Sol Boulevard, which passes east-west near the center of the precise plan area, is designated as a four-lane major street.

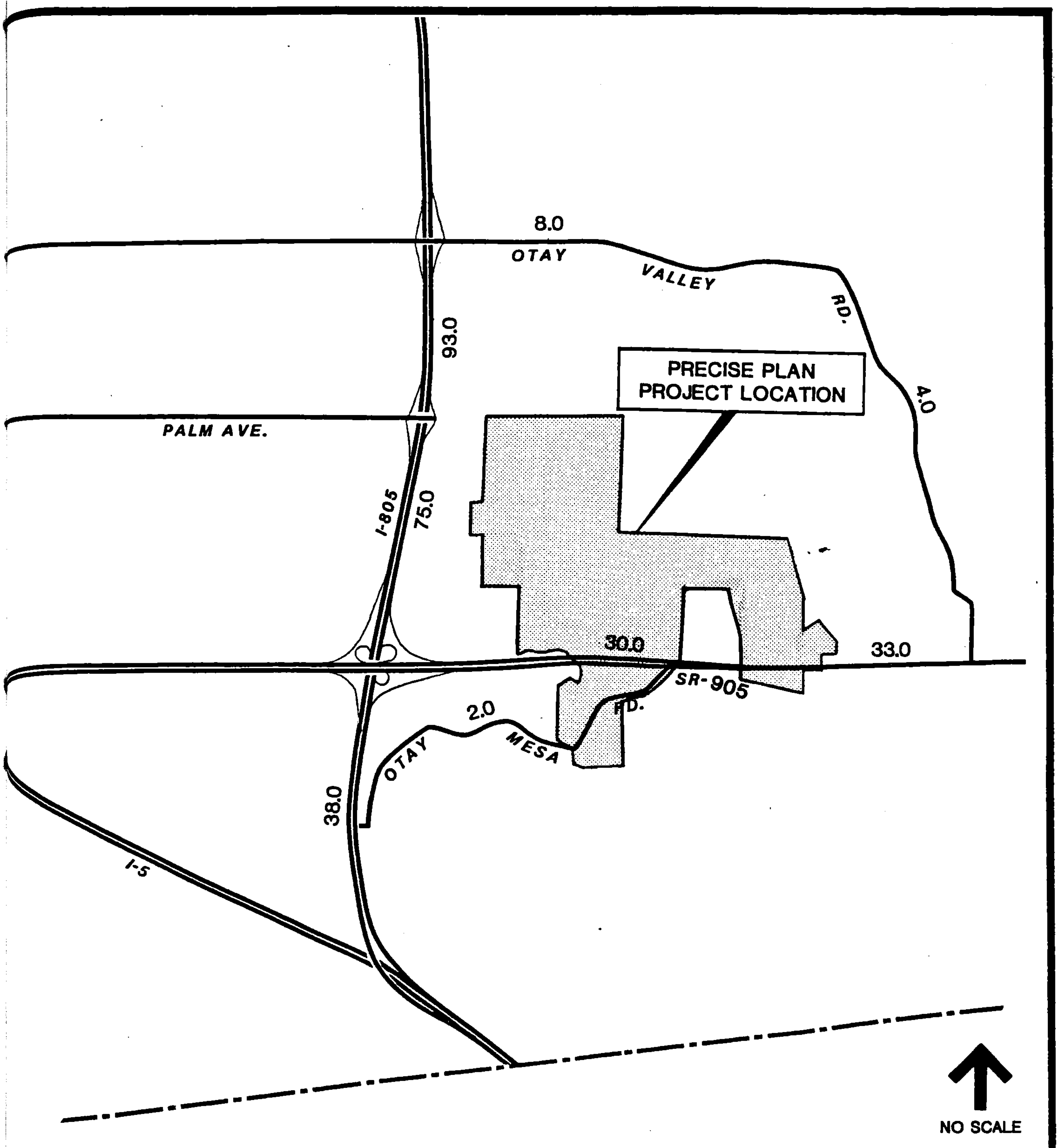
The travel forecasts as described above were all based on land uses for the Otay Mesa Community Plan area. The proposed land uses for the project site generally conform with the community plan land uses, as discussed in the Land Use section, and they are also consistent with the SANDAG-Otay Mesa/City Forecast.

b) Bikeways

The Otay Mesa Community Plan contains objectives for both a bikeway system and a pathway system for pedestrians. Bikeways should be considered as a separate, but integral, portion of the transportation system and should be oriented to connect activity centers to residential areas (City of San Diego 1981:124). The plan lists the following methods to achieve these objectives.

1. Neighborhood bikeway systems should link neighborhood parks, elementary schools, and convenience commercial centers with residential areas, with minimal street crossings.

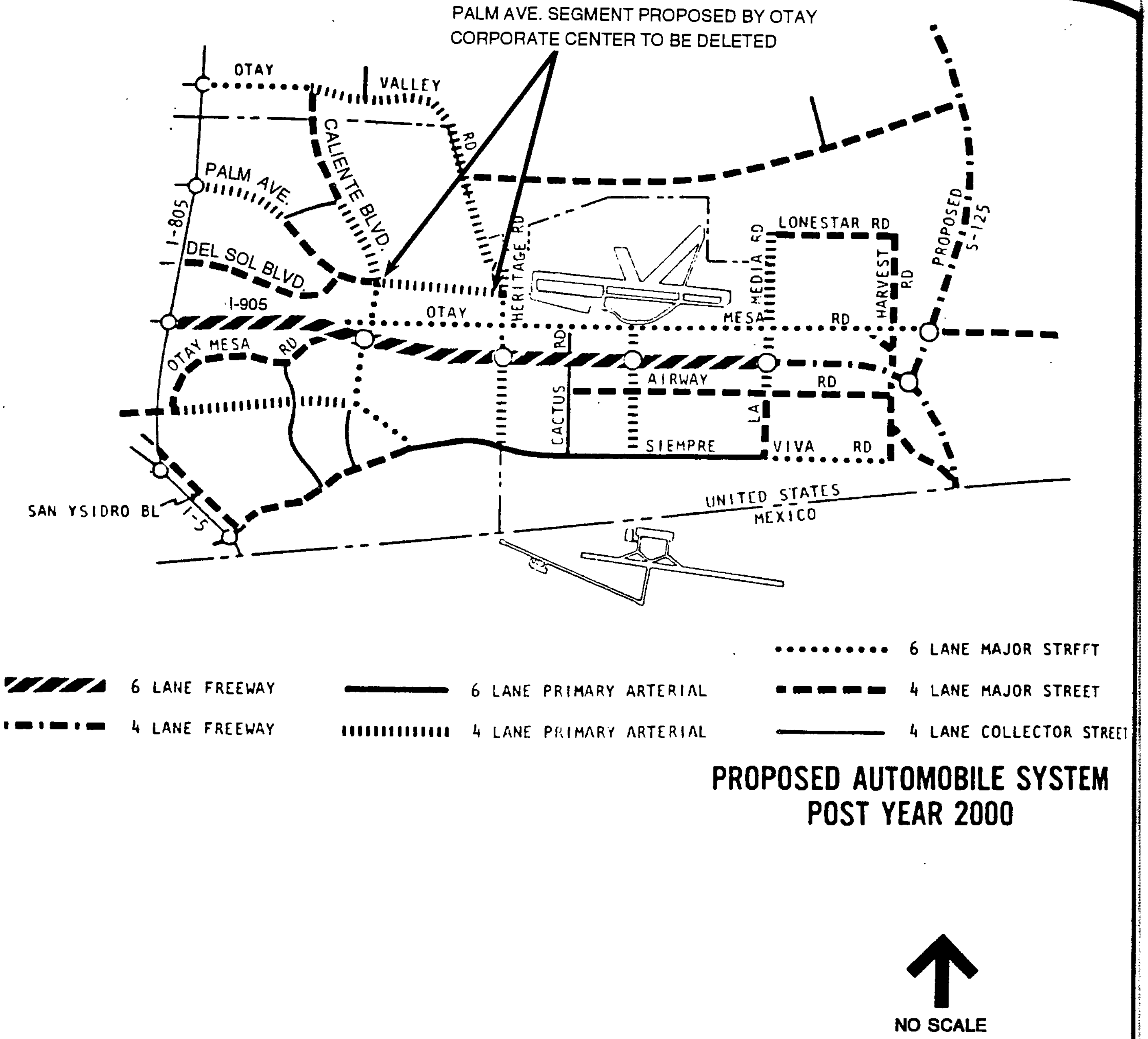
2. Community bikeway systems should link neighborhoods with major activity centers, such as the town center, community parks, junior and high schools, and the employment center. This segment of the system should tie into the city-wide and regionwide network of proposed bicycle corridor routes and should utilize exclusive rights-of-way and grade-separated crossings whenever possible.



00.0 VOLUMES IN THOUSANDS

SOURCE: USA, INC., 1988

FIGURE 37. EXISTING STREET SYSTEM AND TRAFFIC VOLUMES



SOURCE: SANDAG 1992
TRAFFIC FLOW MAP

FIGURE 38. COMMUNITY PLAN RECOMMENDED FUTURE STREET CLASSIFICATIONS

3. Bikeways should avoid high-volume streets, long or steep grades, and circuitous routing where possible.

4. Lockable bicycle racks should be provided at activity areas that receive significant bicycle traffic.

5. Minimum state standards for bikeways should be adopted.

6. On any major street with a Class II bikeway, parking should be prohibited immediately upon completion of construction.

7. On any collector street with a bikeway which has houses fronting on it, an additional ten feet of street width and right-of-way are required since parking is not prohibited.

The community plan also states that, "in addition to pedestrian pathways paralleling streets, an interior system within each neighborhood should be installed. It should lead to the neighborhood park, school, and shopping center with a minimum number of streets to cross. There should be undercrossings or overcrossings where major pedestrian ways and major streets intersect" (City of San Diego 1981:125).

1) Issue

What direct impacts would this project have on the traffic circulation system?

Impact

Because the project area is undeveloped, a new street system must be constructed within the project area to carry the project's and area's projected traffic and connect with existing major roadways such as I-805, SR-905, Otay Valley Road, and Otay Mesa Road.

The California Terraces Precise Plan proposes primarily residential, educational, recreational, and neighborhood commercial uses. These land uses would be developed in four phases and would generate a total of 50,856 ADT. Table 14 illustrates project-generated trips based on land use. A SANDAG forecast based on the SR-125/Otay Mesa Transportation Study which is, in turn, based on the Otay Mesa Community Plan land uses (see Appendix D of the traffic report) would generate 48,612 trips for the same area. Therefore, it can be concluded that the California Terraces Precise Plan land use and trip generation assumptions for the SANDAG-Otay Mesa/USA ALT. 4-11/88 Travel Forecast are consistent with the land use assumptions for the Otay Mesa Community Plan for the same area.

TABLE 14
DEVELOPMENT PHASING TRIP GENERATION

Parcel Number	Use	Amount	Trip Rate	Phase Trip Ends	Cumulative Trip Ends
		NORTH PHASE			
1	MDR*	273.0 du	6/du	1,638	
2	Elementary School	12.1 ac.	40/ac.	484	
3	North Park	5.6 ac.	40/ac.	224	
4	MDR	140.0 du.	8/du	1,120	
5	LMDR	121.0 du	8/du	968	
6	MDR	64.0 du	8/du	512	
7	MDR	104.0 du	8/du	832	
8	LMDR	160.0 du	8/du	1,280	
9	LDR	651.0 du	10/du	6,510	
				13,568	13,568
		CENTRAL PHASE			
10	Elementary School	11.9 ac.	40/ac.	476	
11	Junior High School	20.7 ac.	40/ac.	828	
12	Commercial Park	13.0 ac.	40/ac.	520	
13	HMDR	2,172.0 du	6/du	13,032	
14	LDR	249.0 du	10/du	2,490	
				17,346	30,914
		EAST PHASE			
15	MDR*	402.0 du	6/du	2,412	
16	MDR*	333.0 du	6/du	1,998	
19	North Park	7.1 ac.	40/ac.	284	
20	Elementary School	10.0 ac.	40/ac.	400	
17	HMDR	469.0 du	6/du	2,814	
18	Commercial	1.3 ac.	400/ac.	520	
21	Commercial	1.0 ac.	400/ac.	400	
22	Commercial	3.2 ac.	400/ac.	1,280	
				10,108	41,022
		SOUTH PHASE			
23	Commercial	16.0 ac.	400/ac.	6,400	
24	DLR	189.0 ac.	10/du	1,890	
25	MDR	40.0 du	8/du	320	
26	LMDR	8.0 du	8/du	64	
27	Commercial	2.9 ac.	400/ac.	1,160	
				9,834	50,856

NOTE: LDR = low density residential; LMDR = low-medium density residential; MDR = medium density residential; HMDR = high-medium density residential.

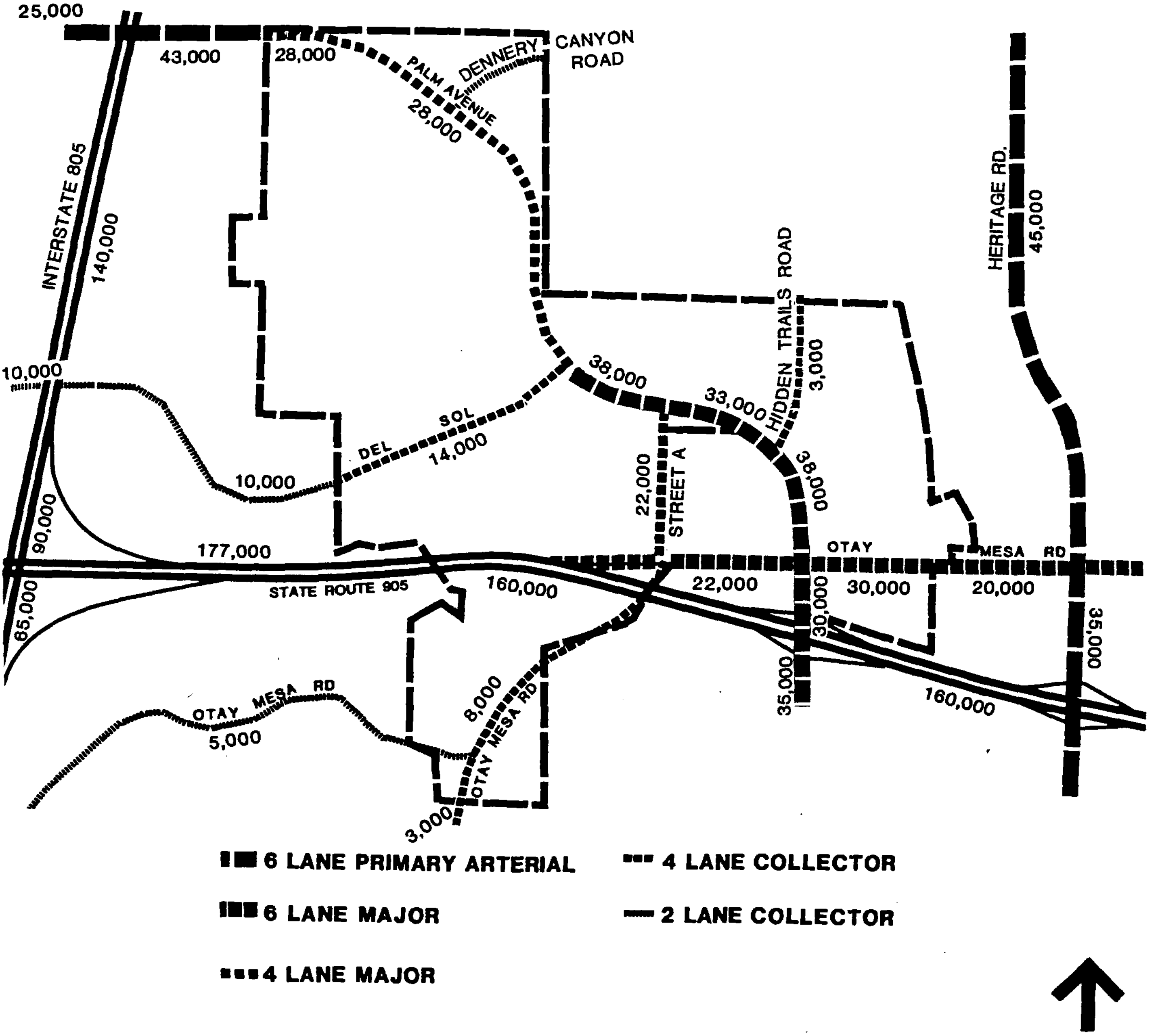
*30 du/acre; therefore, use trip rate of 6/du.

The precise plan proposes to generally follow the street system designated in the community plan. However, the project does propose some modifications to the roadway alignments. Figure 39 shows the precise plan's ultimate proposed circulation system. In the community plan circulation system (see Figure 38), Palm Avenue extends from its existing terminus at I-805 through the project site, across Caliente Boulevard, to Heritage Road. As discussed above, the Otay Corporate Center North project would delete the segment of Palm Avenue between Caliente Boulevard and Heritage Road. Also in the community plan circulation system, Caliente Boulevard would extend north across SR-905 and Otay Mesa Road to connect with Otay Valley Road. Del Sol Boulevard would connect Palm Avenue and I-805. In the project's proposed circulation system (see Figure 39), the roadway labeled Palm Avenue in the community plan would be deleted entirely and the segment shown as Caliente Boulevard would be constructed as Palm Avenue. "A" Street would connect this new Palm Avenue with Otay Mesa Road. A segment of Del Sol Boulevard would also be constructed so that it could ultimately connect this roadway with I-805.

"A" Street is the north-south four-lane major street adjacent to the western boundary of the future town center site. It is proposed to extend southerly across Otay Mesa Road and the freeway and then follow "old" Otay Mesa Road south of the freeway. "A" Street will ultimately terminate at future North Vista Avenue. The old segment of Otay Mesa Road west of "A" Street was studied to upgrade it to a major street standard as originally suggested in the community plan. These standards (1,000 feet radius curves, 7 percent maximum slope, 50 to 55 miles per hour design speed) could not be achieved due to the prohibitive topography in the project vicinity. It is, therefore, proposed that this segment be downgraded to a four-lane collector (as opposed to major) street and that the southerly leg of "A" Street be designed as the primary street circulation link.

Del Sol Boulevard is an existing four-lane street which undercrosses I-805 from the west and dead-ends just east of the freeway. The community plan extends Del Sol Boulevard to a tee intersection with Palm Avenue. It is designated as a four-lane collector based on projected build-out traffic volumes. California Terraces would require the construction of a segment of the planned extension of Del Sol Boulevard which is located between Palm Avenue and the westerly boundary of the junior high school. The need to construct the remaining portion of the segment (from the westerly boundary of the junior high school to the existing terminus of Del Sol Boulevard) would be determined during environmental review of proposed developments on the surrounding properties.

Figure 39 also illustrates the projected build-out ADTs for the area. Of the total build-out traffic volumes, the project would contribute 19,628 ADT to SR-905, 2,274 ADT to "A" Street south of SR-905, 13,536 ADT to "A" Street north of SR-905, 10,600 ADT to Otay Mesa Road, and 22,980 ADT to Palm Avenue. Del Sol Boulevard would be a dead end until further development occurs to the east in the South Palm Precise Plan area. Because



SOURCE: PDC. 1990

FIGURE 39. PRECISE PLAN PROPOSED STREET SYSTEM AND BUILDOUT ADT

California Terraces would be developed in four phases, the build-out traffic volumes would occur in stages. Therefore, the ultimate traffic improvements shown in Figure 39 can also be phased to accommodate the incremental construction of the project. Table 15 shows the incremental improvements needed to adequately handle traffic generated by particular numbers of dwelling units and commercial acreages.

Significance of the Impacts

The generation of 50,856 ADT from land uses in the precise plan would create a significant impact upon the traffic circulation system in the Otay Mesa planning area. The impacts can be mitigated through adoption of the proposed California Terraces Precise Plan transportation improvements and phasing plan.

Mitigation, Monitoring, and Reporting Program

Traffic impacts resulting from the build-out of the precise plan and the adjacent community can be mitigated to a level below significance by adoption of the precise plan street system in subsequent tentative maps as shown in Figure 39 (USA 1990). All roadway improvements shall meet the City's street design standards. These improvements can be constructed in accordance with the phasing shown in Table 15. Further mitigation measures are discussed in the second issue question addressing cumulative traffic impacts.

a) California Terraces Precise Plan

The following measure shall be a condition of approval of subsequent tentative maps within the precise plan boundary. The circulation system shown in Figure 39 shall be incorporated into the precise plan and the applicable portions of the system shall be shown on all subsequent tentative maps.

It shall be a condition of approval of the precise plan that the applicable above mitigation measures be conditions of subsequent tentative maps within the precise plan. The City of San Diego Engineering and Development Department shall verify this is a condition of the precise plan prior to approval.

b) California Terraces and South Palm Vista VTMs

The following measure shall be a condition of approval of subsequent tentative maps within the precise plan boundary. The circulation system shown in Figure 39 shall be incorporated into the applicable subsequent tentative maps.

TABLE 15
TRANSPORTATION IMPROVEMENT PHASING

Improvement	Threshold	
	Dwelling Units	Commercial Acres
Construct Palm Avenue as four lanes, two lanes each direction plus median, to primary arterial standards between I-805 and west subdivision boundary	500*	
Construct Palm Avenue as four lanes to major street standards between first intersection and Dennery Canyon Road	500*	
Improve the Palm Avenue/I-805 interchange as recommended in a project report assured to the satisfaction of the City Engineer	1,513	5.5
Construct Palm Avenue as a four-lane major street between Dennery Canyon Road and Del Sol Boulevard	1,513	5.5
Construct Palm Avenue as a minimum two-lane~~s~~ facility~~, one half of a four-lane major street~~ between Del Sol Boulevard and "A" Street to the satisfaction of the City Engineer	1,513	5.5
Construct "A" Street, an ultimate four-lane major street, as a minimum two-lane~~s~~ facility~~, one half of a four-lane collector street~~ between Palm Avenue and Otay Mesa Road to the satisfaction of the City Engineer	1,513	5.5
Construct Del Sol Boulevard, north half, as two lanes, one half of a four-lane collector street along subdivision map frontage	N/A (subdivision map~~/school/park~~ requirement)	
Construct Del Sol Boulevard, south half, as two lanes of a four-lane collector street along subdivision map frontage	N/A (subdivision map/school/park requirement)	
Complete the construction of Palm Avenue, westerly half, as a four-lane major street between Del Sol Boulevard and "A" Street	3,934	8.4
Construct easterly partial improvements of "A" Street as a four-lane major street between Palm Avenue and Otay Mesa Road	3,934	8.4
Construct Palm Avenue~~, north half, with two lanes~~ as one half of a six~~four~~-lane major street between "A" Street and Otay Mesa Road to the satisfaction of the City Engineer	5,138	24.4

TABLE 15
TRANSPORTATION IMPROVEMENT PHASING
(continued)

Improvement	Threshold	
	Dwelling Units	Commercial Acres
Improve Otay Mesa Road as a six-lane major street between California Terraces "A" Street and Palm Avenue	5,138	24.4
Improve Otay Mesa Road to six-lane major street standards between "A" Street and I-905 ramps	5,138	24.4
Complete the construction of Palm Avenue as a six-lane primary arterial between I-805 and west subdivision boundary	5,138	24.4
Construct Otay Mesa Road (extension of "A" Street) south of I-905 as one half of a four-lane collector street to Parcel 26 access. Reserve four-lane collector right-of-way to southerly subdivision boundary	N/A (subdivision map requirement)	
Construct Otay Mesa Road as one half of a four-lane collector street adjacent to Parcel 24 of California Terraces	N/A (subdivision map requirement)	
Complete improvements of Otay Mesa Road to six-lane major street standards between east subdivision boundary and Palm Avenue	5,375	24.4
If I-905 freeway is constructed prior to development of the south phase and Caltrans is unwilling to construct the future "A" Street bridge over I-905 utilizing state funds, then construction of "A" Street will be a threshold condition of Parcels 24, 25, & 26 development	(Only applies if I-905 is completed before California Terraces build-out and Caltrans does not fund the bridge)	

NOTES: Improvements to be assured to the satisfaction of the City Engineer before final maps for the listed thresholds can be approved.

"Threshold" indicates maximum amount of development allowed within California Terraces with assurance of the listed improvement.

Assured improvements to be completed, under contract, bonded, scheduled in the City Capital Improvements Program or Otay Mesa Financing Plan, to the satisfaction of the City Engineer.

This plan is intended to serve as a guideline for sequential development of street improvements. Because the geographic order of developments is not certain, it may be necessary for the City Engineer to regularly review and revise this phasing plan in order to reflect current land development proposals and actual trip generation rates and trip distribution.

*Only if development has direct access.

The City of San Diego Engineering and Development Department shall verify that the circulation system shown on the precise plan and on all subsequent tentative maps are consistent with the system shown in Figure 39 and with the City's street design standards.

Prior to occupancy of the nth dwelling unit and/or commercial parcel, the circulation system improvements shown in Table 15 shall be completed. Prior to issuance of the occupancy permits for the nth dwelling unit and/or commercial parcel, the Building and Inspection Department shall inspect the site to verify that the required circulation system improvements shown in Table 15 have been constructed.

2) Issue

Would the project result in cumulative traffic impacts to the community or regional circulation system?

Impacts

The precise plan area and much of the Otay Mesa planning area is presently undeveloped. Development plans for several projects surrounding the site are in various stages of planning and environmental review. In order to determine the needed off-site transportation improvements, regional traffic that would contribute to total traffic volumes on Otay Mesa Road, SR-905, and Palm Avenue during the phased development of California Terraces was estimated.

The assessment of regional traffic impacts and improvements included estimated traffic from the Robinhood Ridge project, Gateway Fair project, and a mobile home park project planned for the southside of Palm Avenue. Background traffic also included 20 acres of industrial development (e.g., Otay Corporate Center) per year. Robinhood Ridge is a precise plan area to the northeast of California Terraces which is anticipated to generate approximately 9,840 trips. Of these trips, 1,900 would use SR-905 while 5,900 would use Palm Avenue at I-805. Gateway Fair, a commercial development proposed for the area north of Palm Avenue directly east of I-805, is projected to generate 13,439 trips. These trips were included in the traffic volume estimates for Palm Avenue. Figure 39 shows the projected build-out traffic volumes for the roadways in the project area. The street system shown in Figure 39 was designed to accommodate the project-generated traffic and the projected traffic generated by build-out of the Otay Mesa area.

Cumulative traffic generated by development of Otay Mesa could impact on- and off-ramps at I-805 and SR-905. However, development of public transportation could help reduce vehicle trips generated in the area. A trolley line has been planned by the Metropolitan Transit Development Board (MTDB) to run from the Iris Street station east along the SR-905 alignment to a point one mile east of I-805, continuing along the Otay

Mesa Road alignment to future SR-125. A station has been planned on Caliente Boulevard which would be adjacent to the south project boundary. This line is planned for development within the next 20 years (Mendoza, MTDB, 7/30/92). The community plan calls for a public transportation system consisting of four subsystems: regional express, subregional, intracommunity, and local (City of San Diego 1981:130). The regional express and subregional subsystems are proposed to operate on SR-905 and proposed SR-125. Intracommunity routes near the project site are proposed for Palm Avenue, Otay Valley Road, Otay Mesa Road, and Del Sol Boulevard. Currently, there is no bus service in the project area. The transit agency determined to be responsible for the area would determine the timing of development and the number and locations of routes in the project area. Other public transit facilities such as ramp signalization on I-805, high occupancy vehicle (HOV) lanes on I-805 or SR-905, and park-and-ride lots would be the responsibility of Caltrans to study and develop if determined necessary.

Significance of the Impacts

The traffic generated from the land uses in the proposed precise plan, combined with trips from proposed developments which are outside the precise plan area, would create a cumulatively significant traffic impact at the identified freeway ramps.

Mitigation, Monitoring, and Reporting Program

Reducing the vehicle miles traveled by residents and users of the project site would help relieve cumulative impacts to the region's circulation system. Vehicle trips could be reduced by providing access to public transportation. The applicant shall provide any bus stops or shelters required by San Diego Transit to develop needed bus routes through the project site. If requested by MTDB, the applicant shall work with that agency to develop the trolley line and station along the SR-905/Otay Mesa Road planned route.

It shall be a condition of the precise plan and all subsequent tentative maps that provisions for bus stops and/or shelters shall be provided upon request by the transit agency responsible for the area. It shall also be a condition of the precise plan and subsequent tentative maps that the applicant work with MTDB if the agency requires information regarding the planned trolley line and station near the project site.

EAS shall verify that these conditions have been included in the precise plan and subsequent tentative maps. Subsequent tentative maps shall provide the required measures prior to issuance of occupancy permits.

3) Issue

How would the project implement recommendations in the Otay Mesa Community Plan for bikeways and pedestrian paths?

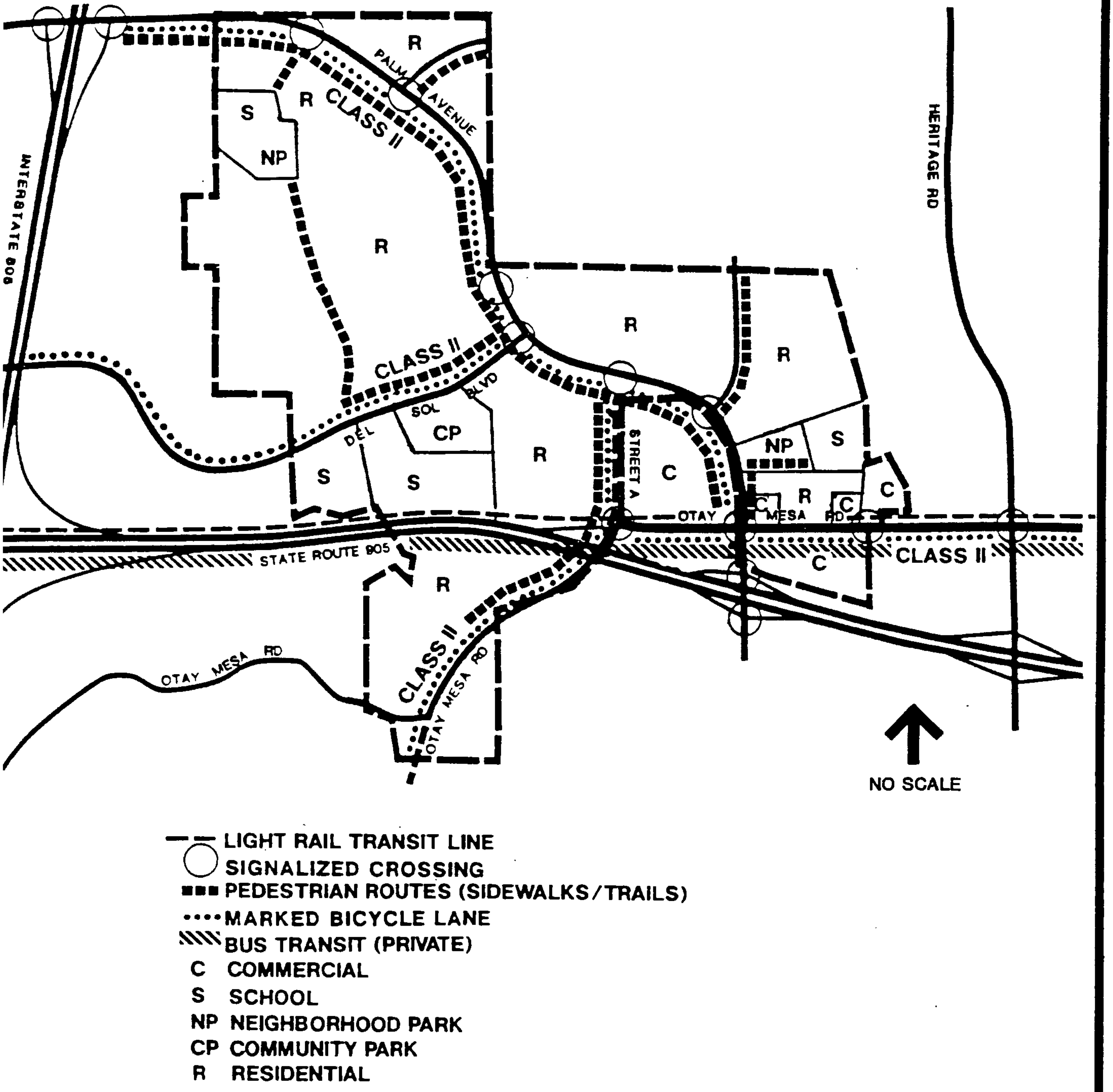
Impacts

The California Terraces Precise Plan proposed bikeway system would provide internal bicycle circulation, while linking the planning area to the community bike network and community activity centers such as parks, schools, the future town center, and institutional complexes. The bikeway system would involve the provision of marked bicycle lanes within the roadbeds of arterials, major streets, and access-controlled collector roads consistent with the bikeway system shown in the community plan (City of San Diego 1981:135). Figure 40 shows the Class II bikeways proposed in the project and the facilities which are linked by these bikeways. Access to the neighborhood park and school sites in the southeast area of the project would be provided by a low-volume cul-de-sac off Otay Mesa Road. The major roads, Palm Avenue, "A" Street, Otay Mesa Road, and Del Sol Boulevard would be provided with Class II bikeways, and parking would be prohibited. Collector streets shall also have bikeways, and an additional 10 feet of street width and right-of-way would be provided in accordance with the community plan objectives. The system should be completed with lockable bicycle racks or storage lockers at high activity centers and major transit stops to fulfill all the objectives regarding bikeways stated in the community plan.

The precise plan proposes pedestrian pathways to link the various residential projects with the community or neighborhood facilities. The pedestrian path system would include sidewalks within the parkways of arterial, major, and four-lane collectors (Palm Avenue, "A" Street, Del Sol Boulevard, and Otay Mesa Road) which are constructed in accordance with the streetscape design described in Chapter 4 of the precise plan. Standard sidewalks would be built along all local and local collector residential streets and pathways would be constructed within attached housing projects.

Significance of the Impacts

The proposed precise plan includes provisions for bikeways and pedestrian pathways in accordance with all but one of the recommendations in the Otay Mesa Community Plan.



SOURCE: PROJECT DESIGN CONSULTANTS, 1992

FIGURE 40. PRECISE PLAN ALTERNATE TRANSPORT MODES

Mitigation, Monitoring, and Reporting Program

In conformance with the objectives of the community plan, lockable bike racks or storage lockers shall be provided at all school sites, parks, and commercial centers. Bikeways and sidewalks shall be constructed in conformance with City standards.

It shall be a condition of the precise plan that all subsequent tentative maps show the bikeways and sidewalks to be constructed. EAS shall verify that this condition is included in the precise plan prior to its approval.

It shall be a condition of the tentative maps that bikeways and sidewalks are constructed in conformance with City standards.

Provision of lockable bike racks or storage lockers at all schools, parks, and commercial areas shall be a condition of the precise plan and all tentative maps which contain these land uses. The City of San Diego Planning Department shall verify that these conditions have been placed on the maps prior to their approval. These measures shall be in place prior to issuance of occupancy permits.

EAS shall verify that bikeways and sidewalks are shown on the tentative maps in conformance with the conditions of the precise plan prior to approval of the tentative maps.

H. Air Quality

Existing Conditions

The California Terraces Precise Plan project site is located in the southeastern portion of the city of San Diego, one-half mile east of the I-805 and SR-905 interchange. The project area comprises approximately 665 acres in the western portion of Otay Mesa, overlooking the Otay River valley to the north and San Ysidro and the Pacific Ocean to the west. In the vicinity of the project site are San Ysidro and Imperial Beach to the west, Chula Vista to the north, Brown Field to the east, and Tijuana to the south.

a) Climate

Otay Mesa's climate, as with most of southern California, is dominated by the interaction of ocean/land influences and by the strength and position of the Pacific High Pressure Zone. Summers are warm and dry, while winters are mild with occasional rains. Within the project vicinity, the mean annual temperature is 60° F, with summer high temperatures in the low 70s and winter lows in the low 40s (University of California Agricultural Extension Service [UCAES] 1967:39). The average precipitation of 10.3 inches per year falls almost exclusively from November through April (UCAES 1967:61).

Winds are generally light with a fresh onshore breeze most afternoons and predominantly calm or slight offshore winds at night. Winds are an important criterion for defining the initial rate of dilution near a source and for determining the regional trajectory of these emissions. Daytime winds are usually strong enough to prevent localized pollution stagnation, but may transport pollutants from other source areas into Otay Mesa. Nighttime winds, while entering Otay Mesa from "clean" source areas, are so slow and occur under such nonturbulent conditions that they may lead to pollution "hot spots" near low-level source areas such as freeways or large parking lots.

In conjunction with the two characteristic onshore/offshore wind patterns, there are two types of temperature inversions (reversals of the normal decrease of temperature with height) which occur within the region. These inversions affect atmospheric dispersive capacity. When a buoyant parcel of polluted air rises, it cools by expansion. If the air around the parcel is warm, as in an inversion, the parcel sinks back down toward its source and is effectively prohibited from dispersing. In summer, a marine/subsidence inversion is formed when the warm, sinking air mass in the Pacific High Pressure Zone is undercut by a shallow layer of cool marine air flowing onshore. This inversion forms over the entire coastal plain and allows for mixing below the inversion base at 1,000-1,500 feet, but not any higher. Elevations on the project site range from approximately 250 to 540 feet above MSL.

During the offshore flow system, cold air pools in low areas and air in contact with the cold ground cools while the air aloft remains warm. This forms nightly shallow radiation inversions, generally associated with locally high levels of vehicular pollutants, which burn off after sunrise.

The predominant pattern is sometimes interrupted by so-called Santa Ana conditions, when high pressure over the Nevada-Utah area overcomes the prevailing westerlies, sending strong, steady, hot, dry winds east over the mountains and out to sea. Strong Santa Anas tend to blow pollutants out over the ocean, producing clear days. However, at the onset or breakdown of these conditions or if the Santa Ana is weak, air quality may be adversely affected. In these cases, emissions from the South Coast Air Basin to the north are blown out over the ocean, and low pressure over Baja California draws this pollutant-laden air mass southward. As the high pressure weakens, prevailing northwesterlies reassert themselves and send this cloud of contamination ashore in the San Diego Air Basin. There is a potential for such an occurrence about 45 days of the year. When this impact does occur, the combination of transported and locally produced contaminants produces the worst air quality measurements recorded in the basin.

b) Air Quality

The study area is within the San Diego Air Basin (SDAB). The concentration of pollutants within the SDAB is measured at 11 stations maintained by the County of San Diego Air Pollution Control District (APCD) and the California Air Resources Board (CARB). Table 16 lists the applicable state and federal standards for maximum air pollutant concentrations.

The air quality monitoring station nearest to the project site is located at 80 East J Street in Chula Vista. Monitoring results from this station are considered representative of the conditions on the project site.

Air quality is commonly expressed as the number of days on which air pollution levels exceed state standards and/or federal standards set by the Environmental Protection Agency (EPA). Table 17 lists the number of days pollutants exceeded the applicable state and federal standards at the Chula Vista monitoring station during the period 1987 to 1991.

At the Chula Vista monitoring station, the state ozone standard was exceeded 13 days in 1991 and the federal standard was exceeded 3 days in 1991. The state 24-hour average for particulate matter was also exceeded in 1990, but the federal standard was not exceeded. The area did not exceed the standards for carbon monoxide, nitrogen dioxide, or sulfur dioxide in 1987 through 1991.

TABLE 16
AMBIENT AIR QUALITY STANDARDS

Pollutant	Maximum Concentration Averaged over Specified Time Period State Standard	 Federal Standard
Oxidant (ozone)	0.09 ppm (180 μg/m^3) 1 hr.	0.12 ppm (235 μg/m^3) 1 hr.
Carbon monoxide	9.0 ppm (10 μg/m^3) 8 hr.	9 ppm (10 μg/m^3) 8 hr.
Sulfur dioxide	0.05 ppm (131 μg/m^3) 24 hr.	0.14 ppm (365 μg/m^3) 24 hr.
Nitrogen dioxide	0.25 ppm (470 μg/m^3) 1 hr.	0.05 ppm (100 μg/m^3) Annual Average
Lead	1.5 μg/m^3 30-day Average	1.5 μg/m^3 Calendar Quarter
Suspended particulate matter (PM-10)	30 μg/m^3 Annual Geometric Mean	50 μg/m^3 Annual Arithmetic Mean

TABLE 17
DAYS OVER AIR QUALITY STANDARDS
CHULA VISTA MONITORING STATION

Pollutant	Year 1987	1988	1989	1990	1991
Ozone					
Federal 1-hour standard (0.12 ppm)	2	4	7	3	3
State 1-hour standard (0.09 ppm)	15	17	21	21	13
Carbon monoxide					
Federal 8-hour average (> 9 ppm)	0	0	0	0	0
State 8-hour average (9 ppm)	0	0	0	0	0
Nitrogen dioxide					
Federal annual average (0.053 ppm)	0	0	0	0	0
State 1-hour standard (0.25 ppm)	0	0	0	0	0
Sulfur dioxide					
Federal annual average (0.03 ppm)	0	0	0	0	0
State 1-hour average (0.25 ppm)	0	0	0	0	0
State 24-hour average (0.05 ppm)	0	0	0	0	0
Suspended 10-micron particulate matter (PM-10)					
Federal 24-hour average (150 µg/m^3)	0	0	0	0	0
Federal annual arithmetic mean (50 µg/m^3)	0	*	0	0	0
State 24-hour average (50 µg/m^3)†	5/61	3/92	7/61	7/62	ND
State annual geometric mean (30 µg/m^3)	0	*	EX	0	EX

SOURCE: California Air Resources Board 1987, 1988, 1989a, 1990; County of San Diego 1992.

ppm - parts per million
µg/m^3 - micrograms per cubic meter
EX - annual average standard exceeded
ND - no data available

*Data presented are valid but incomplete in that an insufficient number of valid data points were collected to meet EPA and/or CARB representative criteria.

†Number of days over standard/number of days data collected.

The San Diego APCD is responsible for achieving both state and federal air quality standards throughout the San Diego Air Basin. The programs and strategies by which the APCD proposes to meet the state and federal air quality standards are stated in the Regional Air Quality Strategies (RAQS). This document has recently been updated. The APCD Board adopted the new version of the RAQS on June 30, 1992, and the CARB approved it in November, 1992.

The project site is located within the Otay Mesa community planning area. The community plan indicates the proposed public transportation system for Otay Mesa (Figure 41). The system is envisioned as four subsystems: regional express, subregional, intracommunity, and local feeder system. The community plan also indicates proposed bike and pedestrian ways (Figure 42). The routes should connect all activity centers of the community. Figure 40 illustrates what is proposed as part of the precise plan.

In addition to the public transportation systems, the site and surrounding area is used extensively by unauthorized off-road vehicles. The high amount of off-road-vehicle usage may contribute to regional air quality problems. The amount of pollutants contributed by the unauthorized use of off-road vehicles in the area has not been quantified or addressed in any studies to date.

There is a proposed MTDB trolley line which would follow the SR-905 median east to Otay Mesa Road, then continue east along Otay Mesa Road. A station is proposed at Caliente Boulevard. Construction is proposed in approximately 15 to 20 years (Mendoza, MTDB, 7/30/92).

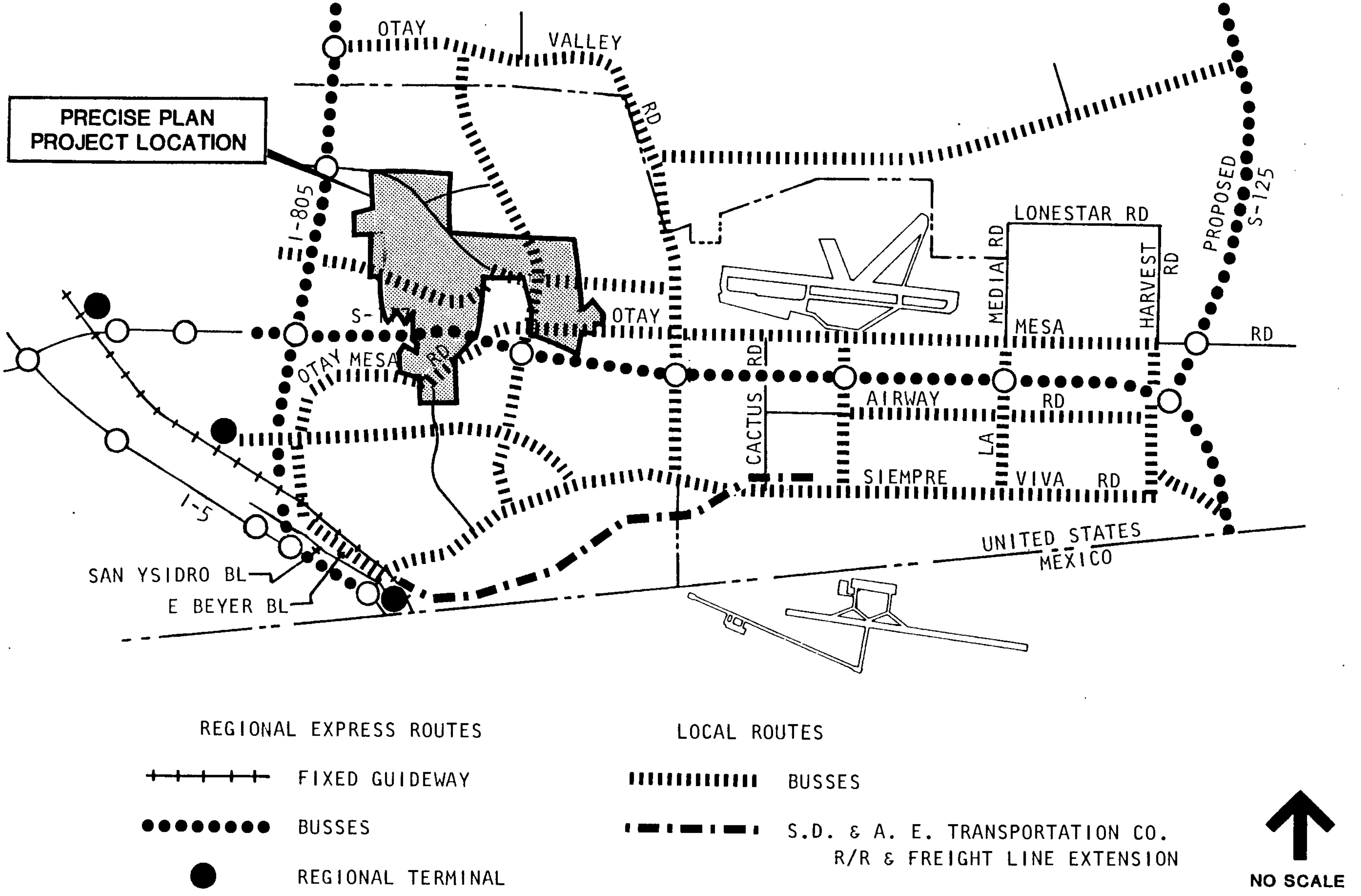
Issue

Will the proposed project affect the ability of revised RAQS to meet the state and federal clean air standards?

Impacts

Implementation of the proposed project would result in long-term emissions of criteria pollutants due to increases in traffic in the area. Additional impacts could also occur if traffic generated within the project area were to result in inadequate traffic flow.

The traffic report prepared for this project concluded that with implementation of the mitigation measures recommended in the traffic report, all roadways used by the precise plan traffic would operate at acceptable levels (see Appendix F and the Traffic Circulation section). Therefore, air quality impacts due to inadequate traffic flow would not occur.



SOURCE: OTAY MESA COMMUNITY PLAN, 1981

FIGURE 41. PROPOSED PUBLIC TRANSPORTATION AS DEPICTED IN THE COMMUNITY PLAN

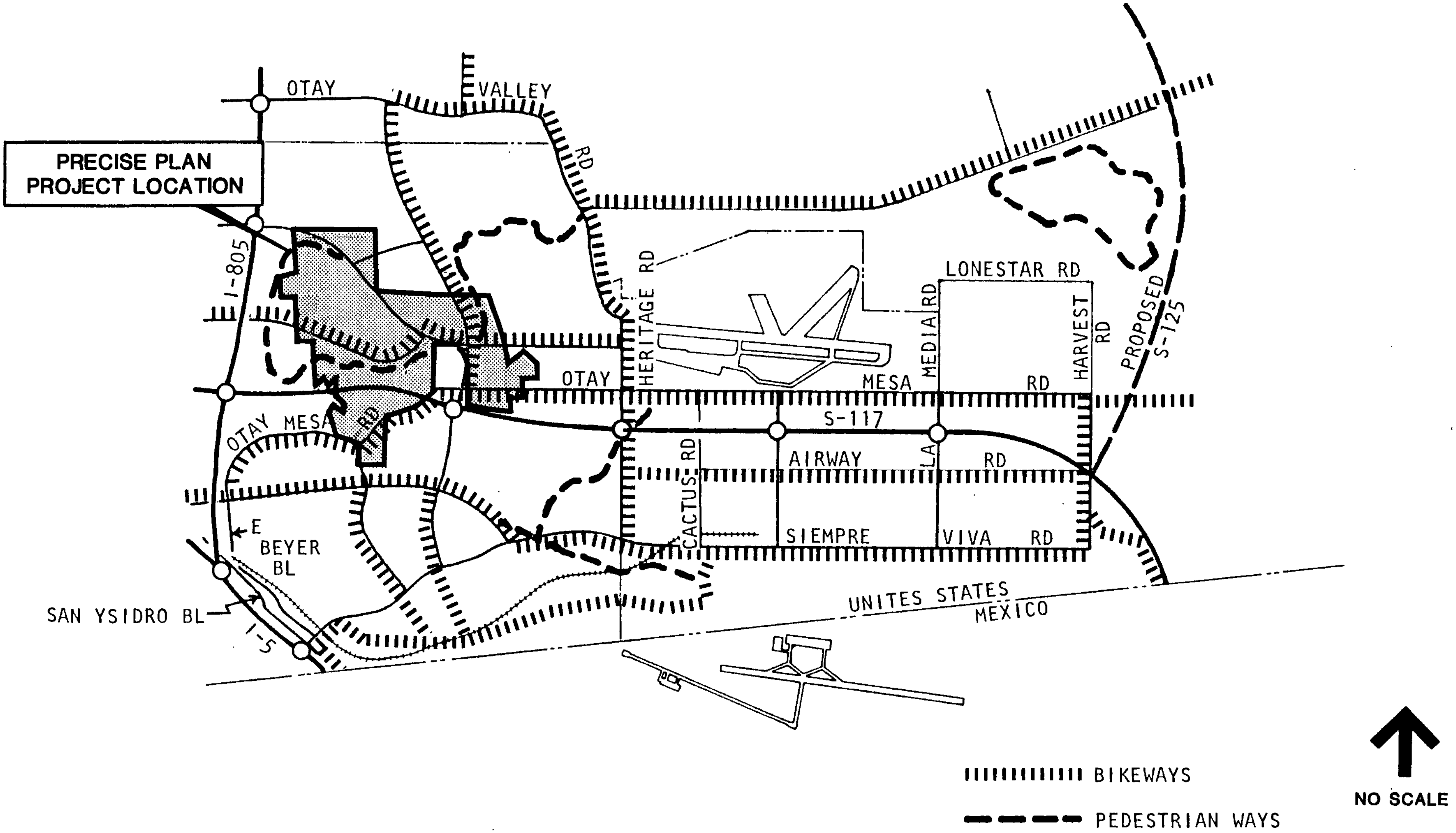


FIGURE 42. PROPOSED BIKE AND PEDESTRIAN WAYS AS DEPICTED IN THE COMMUNITY PLAN

For long-term emissions, the precise plan area contributions to the control of regional air quality may be measured by the degree to which the project is consistent with regional plans to improve and maintain air quality. The regional plan for San Diego is the San Diego RAQS. The California Air Resources Board has provided criteria for determining whether a project conforms with the RAQS (State of California 1989b:10), which include the following:

a. Is a regional air quality plan being implemented in the project area?

b. Is the project consistent with the growth assumptions in the regional air quality plan? and

c. Does the project incorporate all feasible and available air quality control measures?

The project site is located within the city of San Diego, which is within the San Diego Air Basin. The new 1991/1992 RAQS will be implemented by APCD throughout the air basin. Therefore, the project fulfills the first criterion.

Normally, if a project is consistent with the City's General Plan, it can be considered consistent with the RAQS. This project is consistent with the City's General Plan. The proposed project does include a community plan amendment, generally to decrease the intensity of use from that planned. The decrease in intensity would not cause the project to generate more growth than what would have occurred under the community plan land use designations. Therefore, the project meets the second CARB criterion of being consistent with the growth assumptions.

Air quality control measures are incorporated into the project, such as incorporating some characteristics which would help reduce vehicle miles traveled to and from the project and fulfill CARB's third criterion. These include accommodating public transportation systems in conformance with the community plan, provision of bicycle lanes on major roadways within the project, and a pedestrian sidewalk system, as discussed in the Traffic Circulation section.

Three levels of public transportation are proposed in the community plan for the Otay Mesa area—regional, subregional, and intracommunity. The regional public transportation will link the Otay Mesa area to metropolitan San Diego and points northward, while the subregional transit system will link Otay Mesa to the South Bay communities. The intracommunity system of buses will extend along major and collector streets to provide service to residential, commercial, industrial, and public facility complexes within Otay Mesa.

Implementation of the community plan transit proposals would provide California Terraces with an adequate level of public transportation. Regional express routes on I-805 and SR-905 would be easily accessible via bus lines extending along Otay Mesa Road, Palm Avenue, Del Sol Boulevard, and Caliente Road. Other bus routes would ultimately provide connections to other areas of the community as well as Mexico.

As shown in Figure 40, the precise plan proposes a bikeway system which links the planning area to the community bike network and community activity centers such as parks, schools, the town center, and institutional complexes. The bikeway system involves marked bicycle lanes within the roadbeds of arterials, major streets, and access-controlled collector roads. The system should be completed with bicycle parking at high activity centers and major transit stops. Commercial centers will provide linkages to the community-level bicycle system.

Within California Terraces, a network of pedestrian paths is proposed to link the various residential projects with the community or neighborhood facilities. The pedestrian path system would include sidewalks within the parkways of arterials, major, and four-lane collectors. It would also include standard sidewalks along local and local-collector residential streets and along pathways within attached housing projects. Crosswalks with signals would be provided at major intersections identified in the precise plan.

Significance of the Impacts

Implementation of the proposed project could cause significant direct impacts to regional air quality due to increases in pollutant emissions caused by project traffic. However, the precise plan has incorporated measures which would allow it to conform to the RAQS, including the provision of bike lanes and pedestrian trails to reduce vehicle miles traveled. Further, the applicants for future tentative maps shall work with the City to provide accommodation of bus routes and associated stops within the project area. With the mitigation measures discussed below, direct project impacts to air quality may be reduced to below a level of significance.

Potential cumulative air quality effects are discussed in Chapter 4.L., Cumulative Impacts.

Mitigation, Monitoring, and Reporting Program

a) California Terraces Precise Plan

The following mitigation measures shall be a condition of approval of those subsequent tentative maps within the precise plan boundary which include the areas shown on Figure 40 as requiring alternative transportation facilities.

The provision of alternative transportation routes as shown on Figure 40 shall be conditions of approval on all future tentative maps.

It shall be a condition of approval of the precise plan that the above mitigation measures be conditions of subsequent tentative maps within the precise plan. The City of San Diego Planning Department shall verify this is a condition of the precise plan approval prior to approval of the precise plan.

b) California Terraces VTM

Since the California Terraces VTM area includes areas shown on Figure 40 as requiring alternative transportation modes, provision of these shall be a condition of the VTM.

The alternative transportation routes shall be constructed prior to issuance of building permits. This shall be a condition of the VTM. A site inspection shall be conducted by EAS prior to issuance of building permits to ensure that improvements consistent with the approved precise street system have been properly constructed.

I. Public Service and Utilities

Existing Conditions

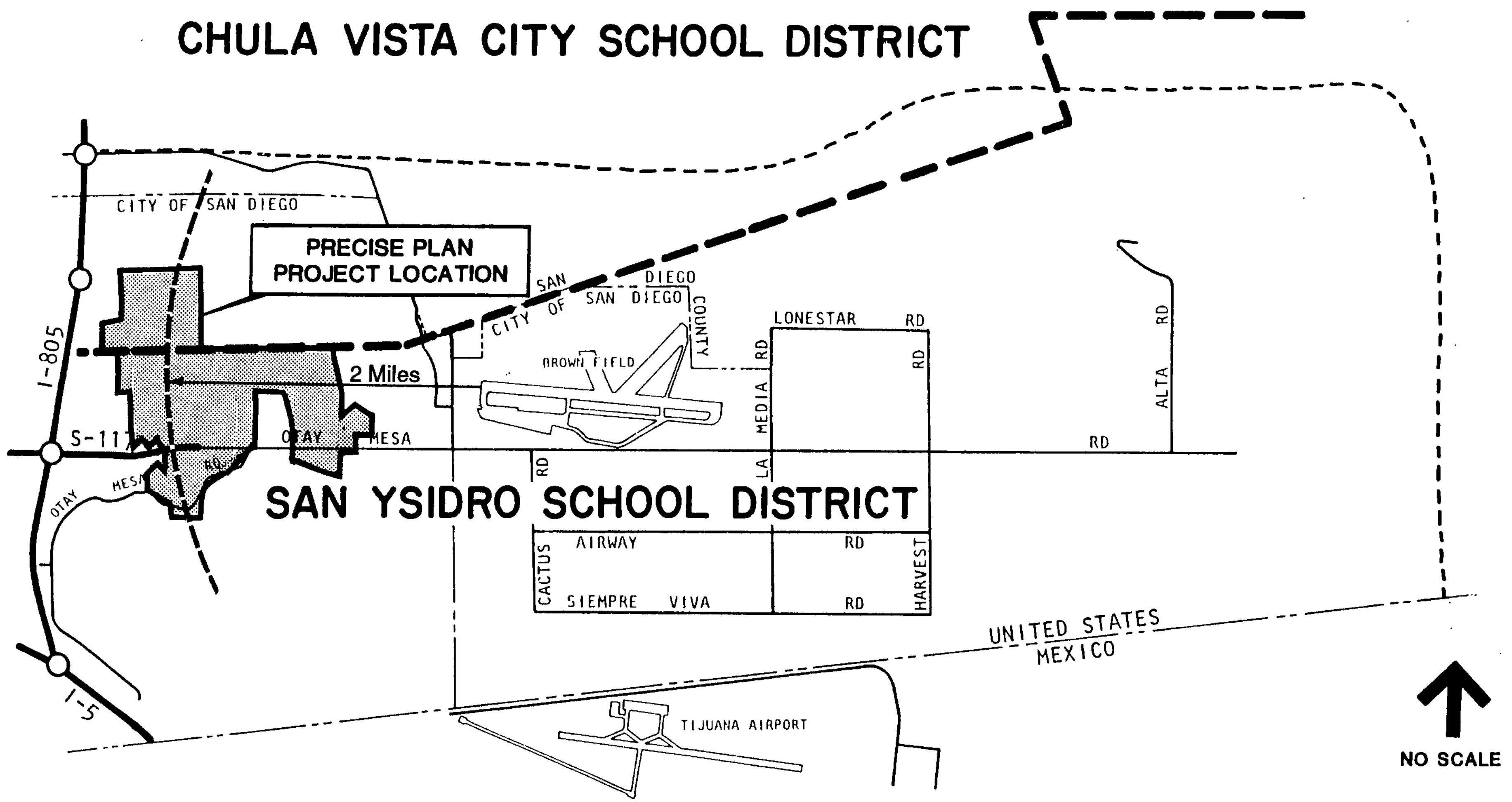
a) Schools

California Terraces is located within the Otay Mesa community planning area. As shown in Figure 43, the project area is located within two elementary school districts. The Chula Vista City School District serves a small area in the northern portion of the project site, while a majority of the precise plan area is located within the San Ysidro School District. Boundary revisions have been proposed to place the entire project area within the San Ysidro School District; however, this has not yet occurred (Perez, San Ysidro School District, 7/24/92).

The San Ysidro School District serves grades kindergarten through eight. Existing schools within one mile of the project include Beyer Elementary located at 2312 East Beyer Boulevard and San Ysidro Middle School located at 4345 Otay Mesa Road. With a capacity of 631 and a current enrollment at the end of the 1992 school year of 809, Beyer Elementary is currently overcrowded. With a capacity of 1,182 and a current 1992 enrollment of 670, San Ysidro Middle School is currently operating within its design capacity (Perez, San Ysidro School District, 7/24/92).

The entire project site is within the service area of the Sweetwater Union High School District, which serves grades 9 through 12. Existing high schools closest to the project site are Southwest High School, located at 1685 Hollister, and Montgomery High School, located at 3250 Palm Avenue. Montgomery High School has a permanent capacity of 1,270 students and an additional temporary capacity of 480 from relocatable buildings for a total capacity of 1,750. The June, 1992 enrollment at Montgomery High School was 1,957 students. Southwest High School has a permanent capacity of 1,214 students and an additional temporary capacity of 780 from relocatables for a total capacity of 1,994. Enrollment in June, 1992 was 2,208 students. Both of these schools are severely impacted, and any development in Otay Mesa would require the district to begin construction of another high school (Silva, Sweetwater Union High School District, 7/24/92).

As depicted in Figure 13, the Otay Mesa Community Plan contains designated sites for future elementary, junior high, and senior high schools. One junior high school and three elementary schools are designated within the boundaries of California Terraces. Although it is recommended that proposed school sites be reserved, the actual site selection and reservation under the Subdivision Map Act (Section 66480) would be the responsibility of the school district. Section 66480 of the Subdivision Map Act states that "The public agency for whose benefit an area has been reserved shall at the time of



ENTIRE STUDY AREA IS WITHIN THE
SWEETWATER UNION HIGH SCHOOL DISTRICT

SOURCE: OTAY MESA COMMUNITY PLAN, 1981

FIGURE 43. SCHOOL DISTRICT BOUNDARIES

school and should serve between 18,000 and 25,000 residents. Parks located adjacent to junior high school sites should have at least 13 usable acres or 20 acres if not so located as specified in the General Plan (City of San Diego 1981:102,105). At the time of recordation of the final subdivision map, the developer must dedicate land for community and neighborhood parks consistent with the community plan.

c) Water

San Diego County is located in a semiarid region which receives an annual rainfall of less than 10 inches. Without other natural sources of fresh water, almost 90 percent of the San Diego metropolitan area's freshwater supply is imported.~~—The above average rainfall which occurred in the winter of 1991 brought an end to the region's seven year drought. Southern California's groundwater basins were overdrawn by 1.5 million acre feet or more during the recent drought.~~

In response to the recent drought, the City of San Diego has developed water conservation requirements for new projects. The City's policy requires that landscape include drought-tolerant plants and irrigation systems be designed to limit water waste. As for building construction, the City is requiring low-flow fixtures as defined in the Uniform Building Code.

The California Terraces Precise Plan is located within the water service area of the City of San Diego. Three water filtration plants serve the city—the Alvarado Filtration Plant, the Otay Filtration Plant, and the Miramar Filtration Plant. The Alvarado and Otay Filtration Plants utilize a mixture of State Water Project water, Colorado River water, and runoff, while the Miramar Filtration Plant does not utilize runoff. A majority of the water is bought from the San Diego County Water Authority.

The Otay Filtration Plant is located seven miles east of I-805 and has recently been expanded to a capacity of 40 million gallons per day (mgd). No further expansion plans are being considered at this time. The Otay Filtration Plant discharges into the 15.2-million-gallon South San Diego Reservoir, located four miles east of I-805 (Pierce, City Water Utilities Department (WUD), 7/27/92).

The Alvarado Filtration Plant is located 14 miles to the north of the project site. This filtration plant has a capacity of 120 mgd. A predesign study for expansion has just been completed, and detailed design plans are under way. The expansion should be designed and built possibly by the end of 1996. Its capacity is planned to be 170 mgd. The Alvarado Filtration Plant discharges into the Alvarado and Earl Thomas Reservoir, which has a capacity of 52 million gallons and is located on-site at the filtration plant (Pierce, City WUD, 7/27/92).

approval of the final map or parcel map enter into a binding agreement to acquire such reserved area within two years after the completion and acceptance of full improvements, unless such period of time is extended by mutual agreement." If the school district does not wish to utilize a proposed school site, then the site may be developed consistent with the adjacent land uses designated by the community plan dependent upon approval of a rezone from an institutional to an appropriate zone by the City Council (Section 66479(d), Subdivision Map Act). Also, where possible, the school sites should be situated adjacent to park sites to promote sharing of facilities (City of San Diego 1981:106,107,144).

Additionally, a majority of the precise plan falls within a two-mile radius of Brown Field runways (see Figure 43). Education Code 39005, 39006, 39007, and 81036 and Government Code 15854.5 establish a requirement of the State of California to investigate and make recommendations on the acquisition of property for a new school site or for an addition to a present school site located within two miles of an airport/heliport runway. The state has not made a recommendation relative to the acquisition at this time. Approval of school sites by the state, local districts, City of San Diego Transportation Division, San Diego County Division of Aeronautics, and the City is pending due to the City of San Diego's reevaluation of the use of Brown Field. The issue of school site placement outside the two-mile radius is discussed in detail in the Project Alternatives section of this EIR.

b) Parks

The Public Facilities Element of the community plan includes the following proposals for population-based parks (City of San Diego 1981:103):

1. Designate seven neighborhood parks and two community parks. Actual locations to be determined as a result of precise plan preparation.

2. Develop all park sites with their full complement of recreational facilities.

3. Designate, dedicate, and develop the neighborhood and community parks in accordance with General Plan guidelines.

4. Integrate all school playgrounds with park sites and facilities where possible.

The community plan (see Figure 14) has one neighborhood and one community park site designated within California Terraces. The City of San Diego Progress Guide and General Plan suggests that neighborhood parks should contain a minimum usable area of five acres when adjacent to an elementary school. They should serve 3,500 to 5,000 people and have a service area radius of not over one-half mile. Community park and recreation centers should be approximately 13 acres when adjacent to a junior high

The Miramar Filtration Plant is located two miles east of Interstate 15 ~~State Route 163~~ in the Scripps Ranch ~~Mira Mesa~~ area and has a capacity of 140 mgd. A two-year predesign study for expansion has recently been initiated that would increase capacity to 210 mgd. The expansion is expected to be built three to eight years after the predesign study has been completed. The Miramar Filtration Plant discharges into the 55-million-gallon-capacity Miramar Reservoir, located on-site (Sandbeck, City WUD, 7/27/92).

In the vicinity of California Terraces, treated water is conveyed through transmission water lines in the Otay Valley to the north, near the intersection of I-805 and Palm Avenue, and at Beyer Boulevard near I-805. These systems all operate on the 490 MSL pressure level and are supplied by the Lower Otay Reservoir to the northeast. The city also maintains a 24-inch water line in Otay Valley Road and Otay Mesa Road. This line is supplied by the 490 MSL main in the Otay Valley and is pumped to an approximate pressure level of 590 ~~610~~ MSL to serve the mesa properties. The existing pumps are located in the Otay Valley, approximately 3,000 feet north of the project area.

Development of a large portion of Otay Mesa, including California Terraces as well as Robinhood Ridge, Hidden Trails, the future Town Center, Santee Investments, Handler Properties, Dennery Ranch, Palm Vista, and Remington Hills, will require design and construction of a new water system to serve a new 680 pressure zone and an increase in the capacity of the existing system to serve the existing 490 pressure zone. Previous water supply studies have been prepared which identify and size water facilities for this and other projects; however, these studies must be updated and approved by WUD.

The existing water supply system for the Otay Mesa area is adequate only for current conditions and would require facility upgrades prior to future development in the area. New development will be subject to updating the existing water supply study to identify impacts and recommend improvements.

The existing WUD policy is to require projects to submit a site-specific water facilities study in order to identify more detailed plans of on- and off-site facilities necessary to provide water facilities to the project. The study would need to identify total and phased incremental water demands, identify the location of specific on- and off-site facilities, provide fire flow demands, and identify probable and specify funding mechanisms and implementation with respect to phasing in relation to this project and other associated projects' phasing in the area.

The water facilities study must be submitted to WUD prior to final map approval. At that time the Development and Environmental Planning Division would review the study and determine if the study would require subsequent environmental review to evaluate the impacts of the recommended facilities and adequacy of the water service.

The Engineering and Development Department will not approve the final maps without a water facilities study approved by WUD. In addition, all off-site improvements needed to serve each phase of development must be completed or assured to the satisfaction of the City Engineer and the WUD prior to the final map and completed prior to occupancy. ~~Development of the California Terraces project will require design and construction of a new water system to serve a new 680 pressure zone and increasing the capacity of the existing system to serve the existing 490 pressure zone. A water supply study has been prepared to identify and size the necessary facilities to serve the project. The study has been reviewed by the City Water Utilities Department and is undergoing revisions. The scope of the study includes identification of water demand, assessment of existing facility capacity, identification and sizing of new facilities, phasing of improvements and identification of financing options. The requirement to finalize the water supply study and obtain approval of same by the Water Utilities Department will be identified as one of the conditions of each tentative map within the precise plan.~~

d) Sewer

The entire project area is within the city limits of San Diego, and the City of San Diego provides wastewater service to areas within its corporate boundaries. The major components of the City's treatment and disposal system which apply to the project site are briefly characterized below.

Collection System

The city's wastewater collection system is the Metropolitan Sewerage System. After collection in the Otay International Center trunk sewer, which is north of the project site, the ~~Effluent carried within the trunk line in Otay Valley flows to the intersection of Coronado Avenue and 19th Street. At this point, the major facilities of the collection system begin. From this point, e~~ffluent flows northward through 42-inch and larger sewers, passes through two major pump stations~~;~~, and arrives at the Point Loma Wastewater Treatment Plant. Municipal trunk sewers and local sewers all discharge to this metropolitan system.

Point Loma Treatment Plant

All of the City's wastewater is treated at the Point Loma treatment plant. The plant has a present capacity of 200 mgd and is continuously upgraded incrementally. The Point Loma treatment plant provides primary treatment, and an outfall pipeline carries the effluent for ocean disposal. The City's Clean Water Program is addressing a plan for implementation of an expansion and upgrade of the Point Loma facility to provide secondary treatment of wastewater in accordance with the Clean Water Act.

The WUD will require that projects in the area submit a site-specific sewer facilities study in order to identify more detailed plans of on-site facilities. The study would need to identify total and phased incremental sewer demand, identify the location and sizing of on-site sewage facilities, provide a discussion on the demands on the Point Loma plant, and identify and specify implementation with respect to phasing and probable funding mechanisms. The sewer facilities study must be submitted to the WUD prior to final map approval.

The Engineering and Development Department will not approve the final maps without a sewer study approved by WUD. In addition, all off-site improvements needed to serve each phase of development must be completed or assured to the satisfaction of the City Engineer and the WUD prior to the final map and completed prior to occupancy.

1) Issue

Would the proposed project impact school and park facilities?

Impacts

a) Schools

California Terraces Precise Plan

As previously mentioned, a boundary revision has been suggested to place the entire project site within the San Ysidro Elementary School District. Based on a generation factor of 0.649 student per unit for grades K-8 (Perez, San Ysidro Elementary School District, 7/24/92) and 5,375 units, full development of the project would add 3,488 students to the San Ysidro School District. Elementary school students (K-6) would attend the schools provided by the California Terraces Precise Plan. Other students would attend San Ysidro Middle School. This school is currently operating within its capacity of 1,182 students.

As indicated in Figure 4, the precise plan proposes four school facilities, three elementary schools (serving grades K-6) and a junior high school (serving grades 7-8). The San Ysidro Elementary School District has, by letter dated March 18, 1987, determined that the allocation of one junior high school and three elementary schools is adequate for the proposed dwelling units.

A 10.8-acre elementary school site would be provided in the North Phase of the precise plan and would be located in the northern portion of the project site, near Palm Avenue. A Class II bikeway is proposed along Palm Avenue. A smaller street would connect Palm Avenue with the school site. Full pedestrian sidewalks are proposed along both these streets in this area. Another 10-acre elementary school site would be provided to the east of the future town center in the East Phase of the proposed project. Both schools would be located adjacent to neighborhood parks to enable the sharing of facilities. Both school complexes would include school buildings, paved play areas, tot lots, and a centrally located parking lot with associated drop-off facilities. Refer to the Design Element of the precise plan for a description of the proposals for the integrated design of school facilities, sports and multi-purpose courts, picnic areas, play apparatus, and passive areas. A 12-acre elementary school is also planned in the Central Phase of the project along the western portion of the project boundary, to the north of SR-905. This school site would be located adjacent to a junior high school site. All of the elementary schools would be linked to the pedestrian bike system planned for the precise plan.

The precise plan would provide a 34-acre junior high school site in the west-central portion of the project area and the Central Phase of the project, to the south of Del Sol Boulevard. The site would be situated adjacent to a 13-acre community park to enable the sharing of facilities. The parking area would be centrally located to enable efficient use by both park and school users, and a pedestrian/bicycle linkage would provide access from the street system to the recreational building and play areas within the complex.

Development of the junior high school site would occur during the Central Phase. Although San Ysidro Middle School is currently within its capacity, students from the project would attend the middle school until new facilities are constructed. The addition of students would cause the middle school to exceed its capacity and would constitute a significant impact. Once development of the on-site junior high school is completed, students from the project site would attend the junior high school.

Based on a generation factor of 0.19 student per household, the proposed 5,375 dwelling units are projected to generate 1,021 high school students (Silva, Sweetwater Union High School District, 7/24/92). It is not clear at this time whether students would attend Montgomery or Southwest high schools or a future planned high school. Adding students to the presently overcrowded high schools prior to the provision of an additional high school would constitute a significant impact.

Within the Sweetwater Union High School District, the developer fees are $1.65 per square foot for residential and $0.72 per square foot for commercial uses. However, this is insufficient to provide permanent school facilities for students generated from residential developments (Campbell, Sweetwater Union High School District, 2/16/88). Therefore, it is anticipated that additional funding (e.g., a Mello-Roos Community Facilities District) would be necessary. The specific type of financing mechanism would be a condition of approval of each VTM.

If any of the school sites are not developed or are no longer needed for educational purposes, the properties should be designated for a zone consistent with the surrounding uses designated in the community plan. Development of the Del Sol school complex should be limited to single-family detached housing in the low density range, while the school sites to the east of the town center and in the north should be developed with medium-density attached residential uses. The impacts associated with the potential land use change of the school site are discussed in a project alternative in Chapter 6 of this EIR.

When the precise plan is adopted, the Otay Mesa Community Plan would be appropriately adjusted to reflect the distribution of school sites within and outside of the project site. The adjustment to the community plan would be achieved by the adoption of the proposed community plan amendment.

California Terraces VTM

As described in the project description, the California Terraces VTM proposes to provide all four of the school sites shown in the precise plan. The elementary school sites would be a minimum of ten net usable acres. The junior high school would be approximately 25 acres, when combined with the development of the adjacent parcel. These acreages are consistent with the recommendations of the General Plan for schools located adjacent to parks.

b) Parks

California Terraces Precise Plan

California Terraces Precise Plan proposes three parks sites within the project boundaries. Although the community plan designates only two parks (on a total of 29 acres) within the precise plan area, California Terraces would provide two neighborhood parks and one community park on a total of 25.7 acres. All park sites would be developed with recreational facilities, and the parks would be designated, dedicated, and developed in accordance with the community plan. In addition, all park sites would be integrated with school facilities.

The community plan indicates that neighborhood parks should be a minimum of five acres when situated adjacent to an elementary school and that community parks should be approximately 13 acres when situated adjacent to junior high schools. The precise plan provides one 7.1- and one 5.6-acre neighborhood park (both adjacent to elementary schools) and a 13-acre community park adjacent to a junior high school site. The community park site would be capable of accommodating active and passive areas as well as a recreational building and a pool.

The park sites were chosen for their accessibility to the community and neighborhood street systems and for their visibility within the community. The community park would be highly visible from SR-905 and Del Sol Boulevard. Once developed and landscaped, the park-school sites would become community landmarks and highly visible from Palm Avenue and the housing areas within its vicinity. The potential noise impacts to these sites is discussed in the Noise section of this EIR, along with mitigation measures.

The three parks would provide adequate facilities to serve the entire project area. Both neighborhood parks would have adequate area and facilities to serve 2,500 to 5,000 people, while the community park would be able to serve up to 25,000 people. As indicated in Table 2, California Terraces is projected to generate a population of 12,354. The precise plan would provide adequate park facilities for the generated population.

California Terraces VTM

The California Terraces VTM would provide the three park sites of the precise plan. These would be in the same locations as identified in the precise plan and would be 5.0 and 5.6 acres for the neighborhood parks and 13.0 acres for the community park, as recommended in the General Plan.

c) Phasing

Development of the precise plan area would occur in four phases. The California Terraces VTM implements this same phasing program. In general, public facilities would be provided as needed under the Public Facilities Financing Plan. Development of the public facilities would be based on the recommended standards of the general plan for schools and parks, as described in Existing Conditions. Provision of facilities would be as follows:

1. Streets, utilities, and drainage facilities would be constructed along with residential development to ensure sufficient capacity to meet residents' requirements.

2. Community level facilities would be built when the service area is sufficient, with fees or assessments collected as construction progresses. These facilities are within the facilities financing plan.

3. Phasing of the schools would be determined by the affected school district and would be incorporated into the financing plan.

The North Phase of the precise plan would occur in the northern portion of the plan area and would include the development of 651 single-family and 867 multi-family units. The northern elementary school and neighborhood park would be developed in conformance with the facilities financing plan.

During the Central Phase of the precise plan, the junior high school and the community park would be built. This phase would include the construction of 2,172 multi-family units to the west of the future town center and the development of 249 single-family units to the northeast of the community park.

The East Phase of the precise plan includes the development of the areas to the north and east of the future town center, including 1,204 multi-family units. At this time, the elementary school and neighborhood park to the east of the town center would be developed.

During the South Phase of the precise plan, the areas to the south of SR-117, south of Otay Mesa Road, and west of the junior high school would be developed, resulting in 189 single-family and 48 multi-family units. Also during this time, the elementary school site south of Del Sol Boulevard would be developed.

Significance of the Impacts

a) Schools

The addition of students from the precise plan area and the California Terraces and South Palm VTMs to the area's middle and senior high schools would be a significant impact due to the existing overcrowding of those facilities. These impacts would be alleviated by the construction of the schools within precise plan in accordance with the Public Facilities Financing Plan and the funding contribution derived from the financing mechanism required as a condition of each VTM. If agreements cannot be reached to ensure the provision of schools at the time students are generated by the project, then significant impacts would occur.

b) Parks

No significant impacts have been identified.

c) Phasing

No significant impacts would occur from the precise plan or its implementation by the California Terraces and South Palm VTMs if the Public Facilities Financing Plan is properly implemented.

Mitigation, Monitoring, and Reporting Program

a) Schools

California Terraces Precise Plan

The City of San Diego Planning Department shall ensure that it is a condition of approval of future tentative maps within the precise plan boundary that the developer be required to demonstrate that agreements have been made with the affected school districts to ensure that the appropriate funds are made available to the districts prior to recording any final map. Funding could be derived from a Mello-Roos Community Facilities District. This district could cover California Terraces and any other development on the west end of Otay Mesa which is primarily zoned residential, commercial, and industrial. The funds would be used partially to finance construction of the new schools on-site and could also be used to provide portable classrooms at the schools which would be affected by students as described above generated from the initial phases of development. Implementation of those applicable portions of the Public Facilities Financing Plan shall be a condition of subsequent tentative maps. Alternative school site locations are discussed in Chapter 6 of this report. The City shall ensure this is a condition prior to approval of the precise plan.

California Terraces and South Palm VTMs

The City of San Diego Planning Department shall ensure that it is a condition of these tentative maps that the developer be required to demonstrate that agreements have been made with the affected school districts to ensure that the appropriate funds are made available to the districts prior to recording of any final map. Funding could be derived from a Mello-Roos Community Facilities District. This district could cover California Terraces and any other development on the west end of Otay Mesa which is primarily zoned residential, commercial, and industrial. The funds would be used partially to finance construction of the new schools on-site and could also be used to provide portable classrooms at the schools which would be affected by students as described above generated from the initial phases of development. Implementation of those applicable portions of the Public Facilities Financing Plan shall also be a condition of these tentative maps.

Agreements shall be made between the developer and affected school districts prior to approval of final maps ensuring that funds are available for acquisition and construction of required school facilities. Prior to issuance of any building permits within the precise plan area, the school sites for the phase to be developed shall be approved by the San Ysidro Elementary School District and the Sweetwater Union High School District, and the Public Facilities Financing Plan shall be implemented according to the schedule.

b) Parks

No mitigation is required.

c) Phasing

No mitigation is required.

2) Issue

How would the project obtain sewer and water service?

Impacts

a) Water

A water supply study was conducted by N.B.S. Lowry and Associates in July 1989 and Boyle Engineering Corporation in September 1990 and address the water system for California Terraces Precise Plan area and the surrounding properties. Both studies recommend that a new pressure zone be established operating at a static head of approximately 680 MSL. This zone would supply adequate pressure to all of those lands within the Otay Mesa Community Plan area lying above the elevation 340 feet and which are not presently served by the water district. Those areas below elevation 340 feet would be served from the existing 490 pressure zone.

Approximately 95 percent of the precise plan area lies within the new 680 zone, and the remaining area would be served by the 490 zone. Existing and proposed water lines and pump stations are shown in Figure 44. The new 680 zone would be created by a series of three water pumping stations. Each pump station would draw water from the existing network of pipes in the 490 zone and would boost the pressure sufficiently to deliver the required fire flows (along with domestic demand) to the higher properties. Implementation of the precise plan and VTMs would require the first two of the three pump stations to be installed.

Based on current water consumption rates for residential, commercial, and school and park uses and an estimated population for the ~~The~~ California Terraces Precise Plan of 12,375 persons, it is estimated that the project would create a demand of approximately 2.35 million gallons per day.~~would accommodate an estimated total 12,354 persons. These would demand approximately 1.85 million gallons per day, based on the City's current per capita residential demand rate of 150 gallons per day.~~

~~The initial phases of the precise plan development (or the first development to occur in this area) would require upgrading the existing pump station for capacity and pressure. The later phases would require development of the second pump station. In addition to these two stations, an emergency water connection to the Otay Water District is proposed. This connection would be near the southwest corner of Brown Field. With the two stations and the emergency tie, an adequate and reliable water supply would be available for the project site. On site transmission mains would be sized in accordance with the overall ultimate system plan.~~

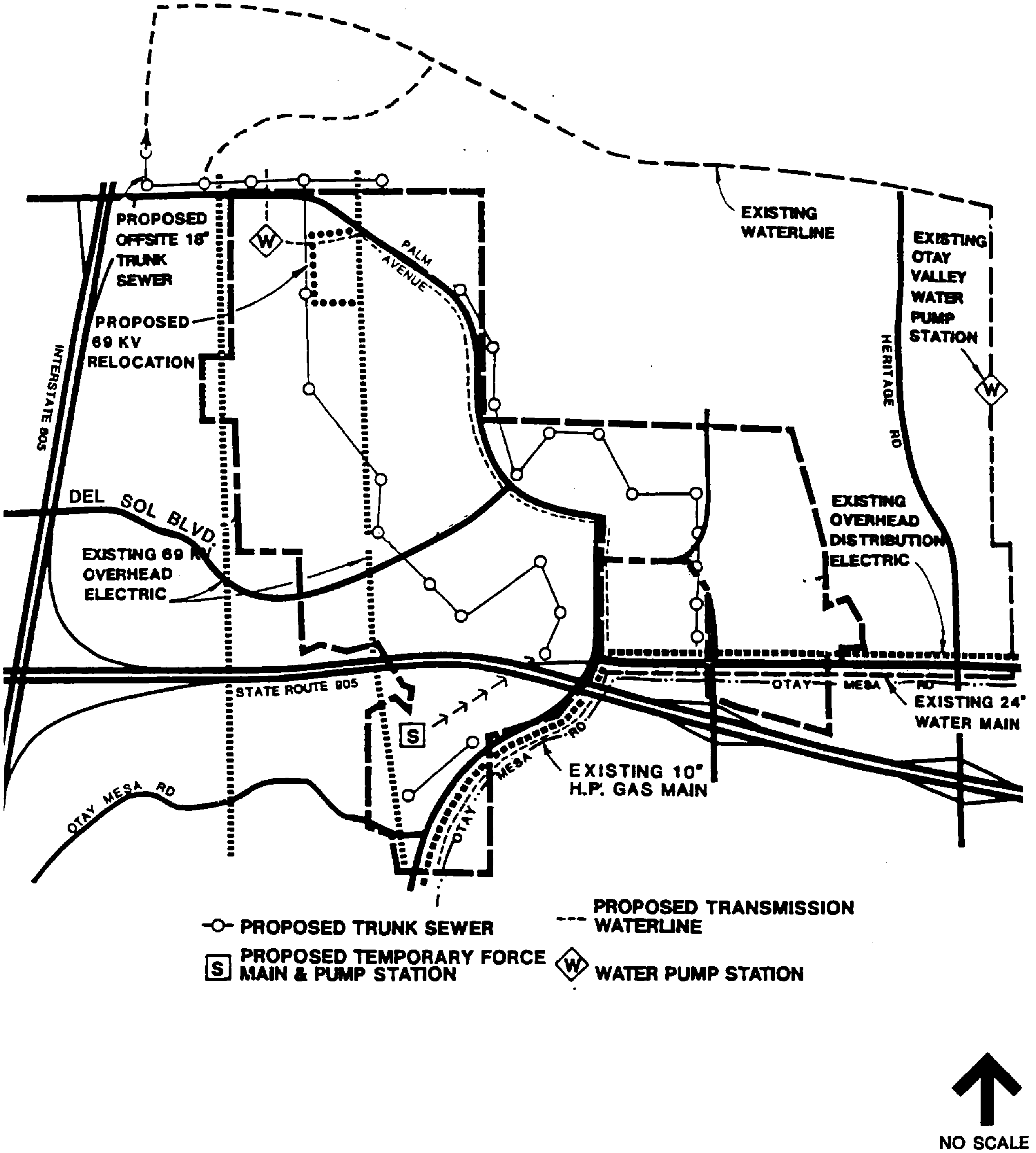


FIGURE 44. EXISTING AND PROPOSED WATERLINES AND PUMP STATIONS

b) Sewer

The project site, as well as the 40 acres designated for the future town center, would be served by a new 15- to 18-inch trunk sewer (see Figure 44). The trunk would be constructed off-site, from the northwest corner of the precise plan area within the alignment of the proposed connection of Palm Avenue, and would connect with the existing Otay International Center (OIC) trunk sewer to the north of the project site, in Otay Valley. Connection to the OIC sewer involves payment of a surcharge fee to the City of San Diego in payment for reimbursements.

Based on current sewage generation rates for residential, school and park, and commercial uses, it is estimated that the project would create an average sewer flow of 1.21 mgd and a peak demand of approximately 2.10 mgd.

The portion of the plan area which lies south of SR-905 would eventually be sewered southwesterly into the City's gravity system at Beyer Boulevard and I-805. An off-site extension of this sewer would be needed within Otay Mesa Road, northeasterly of its present terminus. This extension is not practical until after extensive realignment and regrading of Otay Mesa Road. In the interim, the single-family residences proposed south of SR-905 would be served by a temporary pump station or gravity sewer. The temporary system would discharge effluent to the gravity sewer system north of SR-905. It would be abandoned when the ultimate gravity system to Beyer Boulevard has been provided. The California Terraces VTM proposes to install the temporary pump station along Otay Mesa Road south of SR-905, until such time as the necessary off-site improvements are required due to additional development. The temporary pump station would be adequate for the proposed VTM.

Ultimate necessary off-site improvements would include attaching the downstream end of the sewer main to the OIC sewer line. This off-site improvement area would be located near the northwestern corner of the project site and would consist of an approximately 0.5-mile-long corridor from the project area to the OIC sewer line. This line traverses the Gateway Fair project and the impacts have been previously addressed in that EIR.

Significance of the Impacts

If development in the area occurs without upgrading the existing water pump station, potentially significant impacts would occur. In addition, because provisions of adequate sewer service cannot be assured without a sewer facilities study, sewer impacts are considered potentially significant.

Mitigation, Monitoring, and Reporting Program

Water and sewer studies shall be submitted to the Water Utilities Department prior to approval of any final maps to mitigate the potentially significant impacts identified above. The water study shall include a study of reclaimed water transmission and on- and off-site distribution facilities. The Water Utilities Department director shall approve the studies and Clean Water Program staff shall review the reclaimed water study included as part of the water study. Approval of the studies may require subsequent environmental review of the project, if deemed necessary by the Development and Environmental Planning Division. Any significant impacts identified during subsequent environmental review shall be mitigated to reduce the impacts.

Prior to approval of any final map, off-site water and sewer improvements shall be designed and installed by the project applicant, as recommended in approved studies, to the satisfaction of the Water Utilities Department director. Additional environmental review will be necessary prior to construction of any off-site facilities.

Prior to issuance of any building permits, the project applicant shall design and install all on-site water and sewer facilities, as recommended in approved studies, including construction of a water storage reservoir approved by the Water Utilities Department, to the satisfaction of the Water Utilities Department director.

Prior to issuance of building permits, written verification shall be obtained from the Water Utilities Department to ensure that water and sewer service would be provided to the project (in the form of a "will-serve" letter addressed to the applicant and the Development and Environmental Planning Division.

The foregoing measures shall be implemented through conditions of approval for the proposed precise plan and VTM. All mitigation measures required as part of this EIR, and any mitigation measures required if subsequent environmental analysis of the water and sewer studies is considered necessary and significant impacts are identified, shall be noted on the grading plan (VTM). Prior to issuance of the grading permit, the Development and Environmental Planning Division, Water Utilities Department, and the Clean Water Program shall review the plan to ensure implementation of these measures. All facilities shall be in place prior to issuance of any building permits. The cost of implementing this mitigation shall be the responsibility of the project applicant.

J. Safety

Existing Conditions

a) Proximity to Brown Field

In 1970, the State of California enacted a law requiring the formation of an Airport Land Use Commission (ALUC) in each county containing a public airport. It was the commission's responsibility to formulate a comprehensive land use plan (CLUP) that would safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general. In 1981, SANDAG, the ALUC for the San Diego region, approved and adopted a CLUP for Brown Field. The CLUP addresses the impact on land uses resulting from aircraft operations at Brown Field. Restrictions on land uses within the vicinity of the airport are based on the noise levels and flight activity to which the land is exposed (SANDAG 1981:3).

An Airport Influence Area (AIA) is established for areas adjacent to airports which could be impacted by excessive noise levels or where height restrictions would be needed to prevent obstruction of airspace. The AIA is under the jurisdiction of ALUC. The City of San Diego, through its community planning process and zoning ordinance, retains land use control of the AIA (SANDAG 1981:8).

In California, the technique used for quantifying aircraft noise is CNEL, which describes the daily noise environment. The AIA for Brown Field was delineated by using the projected 60 CNEL contour. The term "CNEL contour" refers to the area exposed to a particular level of noise (e.g., a 60 CNEL contour means an area which is exposed to 60 decibels of noise). The 60 and 65 CNEL contours are significant because each is used to determine compatible land uses around an airport.

The Brown Field Master Plan is the document which establishes guidelines for uses and development of Brown Field. The master plan was adopted in 1981 and the preparation of a revised draft has been initiated. The Brown Field Master Plan and Otay Mesa Community Plan include delineation of a 65 CNEL aircraft noise contour, within which residential and other similar uses would not be compatible. Since the adoption of the Brown Field Master Plan, additional studies indicate that the area which will be impacted by future noise from Brown Field is further to the west than the one established in the Master Plan. Revised contours were developed by Landrum and Brown in 1986 (City of San Diego 1987) (see Figure 34). They show a noise impact area which extends 1.5 miles further to the west than that in the airport master plan. The western boundary of the 65 CNEL contour is approximately Dennery Canyon, as shown on Figure 33 (City of San Diego 1987). In response to the new contours, the City Council adopted Resolution 268976 in July 1987 that restricts residential development east of Dennery Canyon, due to the noise impact from the airfield; residential land uses are not compatible with greater than 65 dBA noise levels. Proposed residences to the west of Dennery Canyon must be insulated to an interior noise level of 45 decibels (Stang, City of San Diego, 4/29/88).

A small portion of the east-central precise plan area does lie within the 65 CNEL dBA noise contour, as shown in Figure 34. This portion of the precise plan has been designated as open space; therefore, aircraft activity associated with Brown Field would not pose a significant noise impact to future residents of the California Terraces Precise Plan area.

The year 2000 projected 65 CNEL noise contour for Rodriguez Field (Tijuana Airport) is also shown on Figure 34 (City of San Diego 1981). As can be seen in the figure, noise from Rodriguez Field would not significantly impact the California Terraces Precise Plan area.

The City of San Diego is also considering the Otay Mesa area as a potential site for another major airport (known as TwinPort) to supplement operations at Lindbergh Field. The City Council passed Resolution R-278003, on May 28, 1991, which identified the TwinPort concept on Otay Mesa as the City's preferred option for a new airport. On the same day, the City Council also adopted Resolution R-278004 which identified the TwinPort study area and stated the council's determination not to approve any actions which could allow residential development in the study area. On May 12, 1992, the council resolved to not approve any specific plans or rezonings within the study area (City of San Diego 1992).

The study area identified in Resolution R-278004 was based on a possible 65 CNEL contour line from TwinPort and it includes most of the California Terraces Precise Plan area, with the exception of the northwest corner. If the TwinPort is approved, the residential area proposed for California Terraces may be incompatible with the noise levels generated by the new airport. If the TwinPort on Otay Mesa is approved, additional acoustical studies would be necessary to determine the airport's noise impacts to the project site.

Until a decision is made on the potential siting of an air carrier airport in the Brown Field/Rodriguez Field (Tijuana) area (TwinPort), efforts on the revised draft Master Plan for Brown Field have been postponed. In the interim, an immediate action program has been implemented for more urgent issues and a concept plan has been adopted for more general issues regarding Brown Field. The City Council is not expected to make a decision regarding the feasibility of the TwinPort before May 1993 (Roush, City of San Diego, 7/28/92). It should be noted that TwinPort is presently the City's preferred site for the airport relocation (Tanjuaquino, SANDAG, 7/28/92).

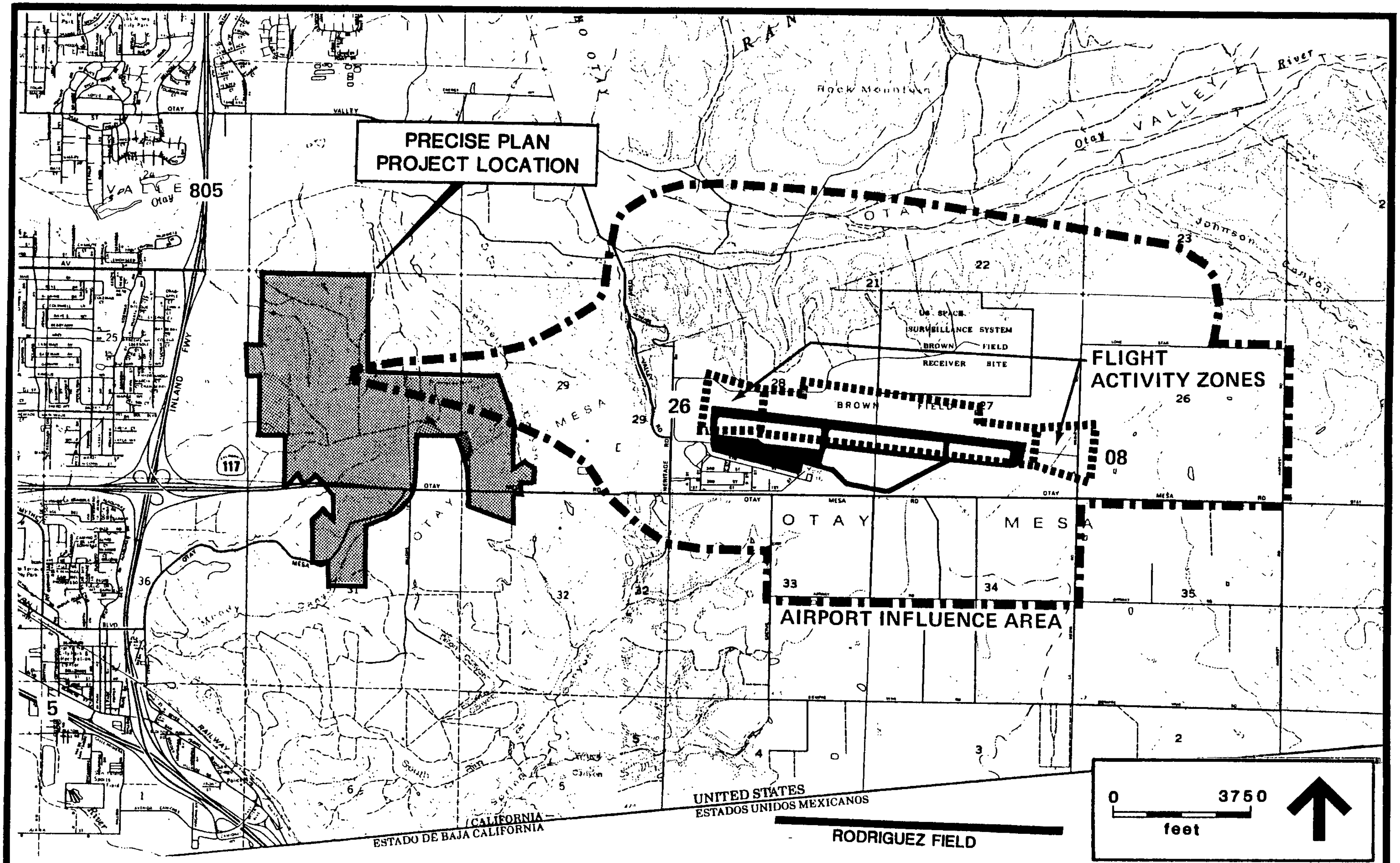
The CLUP identifies development in areas which are considered to be significant risk areas resulting from aircraft takeoff and landing patterns. These areas of risk are referred to as "Flight Activity Zones" (FAZ). Figure 45 shows the FAZ for Brown Field. Since the project site is not within the FAZ, the project site requires no FAZ-related restrictions on development.

b) Proximity to Natural Open Space

Due to San Diego's topography, climate, minimal rainfall, and frequent winds, any building with native vegetation (e.g., chaparral) growing around or near it is subject to brushfires. Coastal sage scrub (another type of native vegetation) is present on many of the canyon portions of the California Terraces Precise Plan project site area. The City of San Diego Planning Department has developed guidelines which balance the need to reduce the fire hazard to an acceptable level of risk without creating or aggravating other hazards such as soil erosion and slope failures.

In response to this potential hazard, the City of San Diego has developed a Landscape Technical Manual, which describes fire buffer zones. The California Terraces Precise Plan and California Terraces and South Palm Vista VTMs have developed brush management programs in compliance with the Landscape Technical Manual (City of San Diego 1989). The details of these plans and the proposed zones are discussed in detail in the Landform Alteration/Visual Quality section.

Plant fuel load reduction, as described in the brush management plans, is necessary for fire safety. Severe brush-clearing measures can, however, destroy vegetative cover and root systems, damaging habitat, eliminating sensitive plant species or wildlife habitat, and increasing soil erosion. The effects to biological resources of brush management are discussed in the Biological Resources section. There are numerous ways to remove brush to reduce subsequent environmental impacts associated with brush management, mainly in Zone 3. The preferred method is the use of hand tools, axes, and chain saws for cutting back, trimming, thinning, and pruning. The existing root systems of the natural brush are critical in the control of erosion. This method preserves the root systems of established plants and reduces the amount of destruction to the habitat. It also eliminates the possibility of accidentally undercutting the toe of a slope and causing slope failure. Implementation of a brush management program is an essential part of reducing the potential for fire in developed areas.



SOURCE: BROWN FIELD CLUP

FIGURE 45. FLIGHT ACTIVITY ZONES

1) Issue

Would the proposed development expose people or property to safety hazards?

Impacts

a) Proximity to Brown Field

Dennery Canyon represents both the western boundary of the 65 CNEL contour from Brown Field and the eastern boundary of the precise plan project site. The 65 CNEL contour for Rodriguez Field in Tijuana is roughly one mile from the project's southern border. Therefore, the proposed residential uses would not be subject to noise levels in excess of 65 CNEL from either Brown Field or Rodriguez Field. Noise impacts from Brown and Rodriguez fields are discussed in more detail in Chapter 4.F. of this EIR.

If the City Council eliminates the Otay Mesa area from consideration as a site for a new airport, then projected aircraft noise from Brown Field and Rodriguez Field would not pose a significant noise impact to future users of the precise plan area (see Figure 34). If the TwinPort on Otay Mesa is approved, noise generated by the new airport may be incompatible with the proposed residential development on the project site.

As noted above, the FAZ for Brown Field does not enter into the precise plan boundary. The project site then does not require any FAZ-related restrictions on development. Since no noise or safety constraints to residential development west of Dennery Canyon have been identified, development of the project site would not expose people or property to safety hazards associated with Brown Field or Rodriguez Field.

b) Proximity to Natural Open Space

In complying with the brush management program, the risk of fire hazard would be reduced. In addition, the proposed brush management plan includes brush management categories, brush removal during construction, selective thinning of existing plant material, plant material transition categories, and ongoing maintenance. Refer to the Landform Alteration/Visual Quality section of this EIR for a detailed discussion of the proposed fuel management plan. This would effectively reduce the risk of fire for the developed areas adjacent to natural vegetation areas. The potential for impacts associated with implementation of the brush management plan is discussed under the appropriate issue, such as visual quality, erosion, and biological resources.

Significance of the Impacts

No significant effects associated with the proximity to Brown Field have been identified. With implementation of the brush management program, no significant impacts have been identified.

Mitigation, Monitoring, and Reporting Program

No mitigation, other than implementation of the brush management program as described in the Landform Alteration/Visual Quality section, is required.

K. Paleontology

Existing Conditions

The California Terraces Precise Plan development on Otay Mesa is situated on the Coastal Plains physiographic province of San Diego County on wave-cut terraces with incised canyons that form the San Diego embayment. The embayment extends approximately 20 miles inland from the coast in the southern part of San Diego County and is composed of a series of relatively flat-lying marine and nonmarine sedimentary deposits.

Site topography is characterized by broad expanses of relatively flat-lying mesas. These mesas are transected by a number of northerly and westerly trending deep, steep-walled canyons and ravines. Elevations of these mesas generally range between 500 feet above MSL to 530 feet above MSL. The lowest point on the property, near the northwestern property boundary, lies at approximately 240 feet above MSL.

Three geologic formations and three surficial soil types are found within the California Terraces Precise Plan area. Formational units include Pleistocene terrace deposits, the Pleistocene/Pliocene San Diego Formation, and the Miocene Otay Member of the Rosarito Beach Formation (GEOCON 1984). Each of the geological formations and soil types are discussed below.

a) Terrace Deposits

Quaternary terrace deposits (Qt) consisting of fine to very coarse sandy gravels overlie the majority of the mesa tops. These deposits are characterized by loose to medium dense sandy and cobbly gravels with rounded and angular cobbles up to 24 inches in diameter. In general, the thickness of the terrace deposits decreases towards the west and south and the deposits are locally absent in the westernmost portions of the site where the San Diego Formation and associated topsoils are located at the ground surface (GEOCON 1984). There are no confirmed reports of fossils from the San Diego Formation in the Otay Mesa project area; therefore, paleontological sensitivity is considered to be low.

b) San Diego Formation

The Pliocene San Diego Formation (Tsd) immediately underlies the terrace deposits. The lithology of the San Diego Formation is locally similar to that of the marine terrace deposits, being characterized by silty, fine to medium sand with local gravel layers. However, strata with relatively clean silty sands typical of more northerly exposures of the San Diego Formation are interbedded with cobbly materials usually found in more southern exposures (GEOCON 1984). The San Diego Formation has a long history of producing a large number and variety of invertebrate and marine vertebrate fossils throughout the Greater San Diego area. Thus, it is considered to have a high paleontological sensitivity, although there are no reports of fossils from the San Diego Formation in the Otay Mesa project area.

c) Otay Member, Rosarito Beach Formation

The Otay Member of the Rosarito Beach Formation (To) outcrops at lower elevations underlying the San Diego Formation and terrace deposits within the deeper canyons at the site (GEOCON 1984). If exposed at the surface, the potential for finding fossils is high due to the recently collected fossils from this formation in the Otay Mesa area.

1) Issue

To what extent would the project impact paleontological resources on-site?

Impacts

The limitations of field surveys prevent a precise determination of the potential for significant fossil finds in the project area prior to grading. In general, however, there is a potential for such finds in the San Diego and Miocene/Oligocene Otay formations on-site due to the high paleontological sensitivity. Personnel of the San Diego Natural History Museum have collected abundant and extremely important Oligocene vertebrate fossils from the Otay formation about six miles north of the project site. It is unlikely that fossils would be encountered during grading within the terrace deposits due to its low paleontological sensitivity. No grading for the project would occur until after the approval of tentative maps. The reliable detection of fossils requires the presence of a paleontologist when grading occurs.

Significance of the Impacts

In implementing the proposed precise plan and tentative maps, including the proposed California Terraces and South Palm Vista VTMs, within the precise plan boundary, the potential for paleontological impacts exists. However, these potentially significant impacts can be reduced to below a level of significance by implementing the mitigation measures cited below.

Mitigation, Monitoring, and Reporting Program

a) California Terraces Precise Plan

The following mitigation measures shall be a condition of approval of tentative maps and land development permits within the precise plan boundary.

A program for the recovery of paleontological resources during grading and earthwork shall be implemented. This program will include the following steps:

1. A qualified paleontologist and/or paleontological monitor shall be retained to implement the monitoring program. A qualified paleontologist is defined as an individual with a Ph.D. or master's degree in paleontology or geology who is a recognized expert in the application of paleontological procedures and techniques such as screen washing of materials and identification of fossil deposits. A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials and who is working under the direction of a qualified paleontologist.

2. The qualified paleontologist shall attend any preconstruction meetings to consult with the excavation contractor. The requirement for paleontological monitoring shall be noted on the construction plans. The paleontologist's duties shall include monitoring, salvaging, preparing materials for deposit at a scientific institution that houses paleontological collections, and preparing a results report. These duties are defined as follows:

    a. Monitoring. The paleontologist or paleontological monitor shall be on-site during the original cutting of previously undisturbed areas of the San Diego Formation and the Otay formation to inspect for well-preserved fossils. The paleontologist shall work with the contractor to determine the monitoring locations and the amount of time necessary to ensure adequate monitoring of the project.

    b. Salvaging. In the event that well-preserved fossils are found, the paleontologist shall have the authority to divert, direct, or temporarily halt construction activities in the area of discovery to allow recovery of fossil remains in a timely manner. Recovery is anticipated to take from one hour to a maximum of two days. At the time of discovery, the paleontologist shall contact EAS. EAS must concur with the salvaging methods before construction is allowed to resume.

c) Preparation. Fossil remains shall be cleaned, sorted, cataloged, and then deposited in a scientific institution that houses paleontological collections (such as the San Diego Natural History Museum).

d) Monitoring Results Report. A monitoring results report, with appropriate graphics, summarizing the results (even if negative), analysis, and conclusions of the above program shall be prepared and submitted to EAS within three months following the termination of the paleontological monitoring program.

3. The Project Manager shall notify EAS staff of any preconstruction meeting dates and of the start and end of construction.

4. A report of findings, even if negative, shall be filed with the City of San Diego Environmental Analysis Section and the San Diego Natural History Museum prior to issuance of building permits.

It shall be a condition of approval of the precise plan that the above mitigation measures be conditions of all tentative maps within the precise plan. The City of San Diego Planning Department, Environmental Analysis Section, shall verify this is a condition of the precise plan approval prior to approval of the precise plan.

b) California Terraces and South Palm Vista VTMs

Measures to reduce potentially significant impacts to below a level of significance for the California Terraces and South Palm Vista VTMs as made a condition of approval of the maps shall be:

1. A qualified paleontologist and/or paleontological monitor shall be retained to implement the monitoring program. A qualified paleontologist is defined as an individual with a Ph.D. or master's degree in paleontology or geology who is a recognized expert in the application of paleontological procedures and techniques, such as screen washing of materials and identification of fossil deposits. A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials and who is working under the direction of a qualified paleontologist.

2. The qualified paleontologist shall attend any preconstruction meetings to consult with the excavation contractor. The requirement for paleontological monitoring shall be noted on the construction plans. The paleontologist's duties shall include monitoring, salvaging, preparing materials for deposit at a scientific institution that houses paleontological collections, and preparing a results report. These duties are defined as follows:

a. Monitoring. The paleontologist or paleontological monitor shall be on-site during the original cutting of previously undisturbed areas of the San Diego Formation and the Otay formation to inspect for well-preserved fossils. The paleontologist shall work with the contractor to determine the monitoring locations and the amount of time necessary to ensure adequate monitoring of the project.

b. Salvaging. In the event that well-preserved fossils are found, the paleontologist shall have the authority to divert, direct, or temporarily halt construction activities in the area of discovery to allow recovery of fossil remains in a timely manner. Recovery is anticipated to take from one hour to a maximum of two days. At the time of discovery, the paleontologist shall contact EAS. EAS must concur with the salvaging methods before construction is allowed to resume.

c. Preparation. Fossil remains shall be cleaned, sorted, cataloged, and then deposited in a scientific institution that houses paleontological collections (such as the San Diego Natural History Museum).

d. Monitoring Results Report. A monitoring results report, with appropriate graphics, summarizing the results (even if negative), analysis, and conclusions of the above program shall be prepared and submitted to EAS within three months following the termination of the paleontological monitoring program.

3. The Project Manager shall notify EAS staff of any preconstruction meeting dates and of the start and end of construction.

4. A report of findings, even if negative, shall be filed with the City of San Diego Environmental Analysis Section and the San Diego Natural History Museum prior to issuance of building permits.

A note shall be included on the grading plans that the above measures are conditions of approval of the tentative map. The City of San Diego Planning Department, Environmental Analysis Section, shall ensure these measures are conditions of the tentative map prior to approval of the tentative map. Prior to issuance of grading permits, EAS and EDD shall review the grading plans to ensure that these measures are on the plans.

Prior to grading activities, verification that a qualified paleontologist and/or paleontological monitor has been retained to implement the monitoring program shall be provided.

L. Cumulative Impacts

Existing Conditions

Cumulative impacts are those impacts which by themselves are not significant but, when considered with other impacts occurring from other projects in the vicinity, would result in a total or cumulative impact. As defined in the CEQA Guidelines, a cumulative impact results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable projects. For the purposes of this analysis, cumulative effects can encompass the development of California Terraces Precise Plan with the approved Robinhood Ridge Precise Plan, Gateway Fair project, the proposed Otay Corporate Center North and Otay Corporate Center South industrial areas, and the following proposed but not yet approved precise plan areas: Dennery Ranch, Hidden Trails, South Palm, and Santee Investments (see Figure 11). The following discussions examine only those issues which have the potential to create significant cumulative impacts.

1) Issue

What cumulative effects could result from the proposed development?

Impacts

a) Land Use

In Chapter 4.A., Land Use, the proposed project's land uses were analyzed together with the land uses proposed or approved for surrounding properties and found to be compatible. However, the precise plan, along with other projects in the surrounding area, would not meet the environmental goals of the Otay Mesa Community Plan or the Hillside Review guidelines for landform alteration. This is considered a significant cumulative impact.

b) Biological Resources

Development of the project, along with other approved and proposed projects in the Otay Mesa area, would cause a significant cumulative impact to the sensitive habitats and sensitive plant and animal species which exist in the area. Table 18 lists the acreages of sensitive habitats which exist on the project site and surrounding proposed precise plan areas and the anticipated impacts to these habitats.

Due to the significant losses of much of southern California's native habitat, the loss of any coastal sage scrub and southern maritime chaparral would be significant. These

TABLE 18
BIOLOGICAL RESOURCES ON AND AROUND THE PRECISE PLAN PROJECT SITE

	HABITAT																	
	Maritime Succulent Scrub		Diegan Coastal Sage Scrub		Southern Mixed Chaparral		Wetland/Riparian		Non-native/ Disturbed Grassland		Vernal Pools		Baccharis Scrub		Lemonadeberry/ Toyon Scrub		Disturbed	
Proposed Project	Existing	Impact	Existing	Impact	Existing	Impact	Existing	Impact	Existing	Impact	Existing	Impact	Existing	Impact	Existing	Impact	Existing	Impact
California Terraces Precise Plan	65.7	38.2	286.0	189.3	1.8	0.0	0.0	0.0	244.0	224.5	0.5	0.25	0.0	0.0	0.0	0.0	62.3	62.3
Santee Investments Precise Plan	22.6	14.5	-	-	-	-	0.06	0.06	-	-	0.04	0.0	-	-	-	-	102.5	102.5
Dennery Ranch Precise Plan	3.6	3.1	107.1	84.7	-	-	6.5	6.3	22.0	21.7	-	-	-	-	-	-	105.2	98.7
Robinhood Ridge Precise Plan	145.8	58.7	-	-	-	-	2.4	0.2	131.5	79.5	5.1	4.5	-	-	25.9	11.2	-	-
South Plan Precise Plan	41.7	28.0	29.2	21.1	3.3	2.7	-	-	58.9	58.9	-	-	0.5	0.5	-	-	-	-
Otay Corporate Center North TM	0.8	0.0	62.0	21.3	7.0	1.0	0.2	0.2	108.0	104.0	-	-	-	-	-	-	-	-
Otay Corporate Center South TM	2.8	1.1	6.2	6.2	-	-	2.1	1.7	-	-	-	-	-	-	-	-	8.6	2.1
Hidden Trails Precise Plan	178.5	112.2	0.0	0.0	1.0	0.0	1.5	0.3	45.8	43.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	461.5	255.8	490.5	322.6	13.1	3.7	12.76	8.76	610.2	532.3	6.0	4.75	0.5	0.5	25.9	11.2	278.6	265.6

-not within plan area

habitats are used by the California gnatcatcher and the San Diego horned lizard. Cumulative losses of these habitats in the project area would amount to 65 percent of the Diegan coastal sage scrub and 36 percent of the southern maritime chaparral within the total area of the projects discussed.

Loss of large acreages of raptor foraging habitat (89 percent of non-native grassland), vernal pools, and sensitive plant species (San Diego button celery, coast barrel cactus, San Diego sunflower, small-leaved rose, cliff spurge, San Diego bur-sage, and ashy spikemoss) associated with the implementation of all of these projects would be considered significant cumulative impacts to biological resources in the Otay Mesa area.

c) Traffic Circulation

The ultimate development proposed by the California Terraces Precise Plan would significantly contribute to the increase in traffic volumes on the roadways within the Otay Mesa area. However, the transportation impacts which would result from the build-out of California Terraces and the adjacent community would be accommodated by the street system recommended by Urban Systems (see Figure 38). This revised system was derived from the SANDAG-Otay Mesa/City travel forecast prepared by SANDAG and City staff. In addition, bikeways and pedestrian pathways are proposed to help reduce vehicle trips within the project site. The Metropolitan Transit Development Board has also planned a trolley line to be constructed within the next 20 years from the Iris Street station to SR-125 which would pass east/west through the project along the SR-905 and Otay Mesa Road alignments.

d) Air Quality

Considered with other new development in the air basin, this project would contribute to nonattainment of clean air standards, and cumulative impacts to air quality would be considered significant. The resulting increase in emissions would be due to increased emissions from mobile sources, which would degrade existing air quality in the project area. However, emissions of particulate matter may decrease when dirt roads used for off-road-vehicle activity are replaced by paved roadways within the project area.

e) Landform Alteration/Visual Quality

Grading and development of the proposed project site would significantly alter the existing landform. This project along with other projects proposed in the area would have a significant cumulative impact on landforms and visual quality in the region because of the widespread changes from undeveloped open space to urban and suburban environments which would occur if all proposed projects in the areas were built out.

f) Water Quality

The potential for significant cumulative water quality and erosion impacts from the development of western Otay Mesa would be reduced by implementing grading and erosion control techniques consistent with City requirements and the use of sedimentation basins where feasible.

g) Public Services, Schools

Because the developer fees are insufficient to provide permanent school facilities for students generated from residential developments, and because there is inadequate high school space for additional students in the Sweetwater Union High School District, this project is expected to add a significant cumulative impact to schools and educational services to students. This cumulative impact could be mitigated by the development of a Mello-Roos District. Once established, this district could issue bonds or levy special taxes to finance school construction. New school space would alleviate the crowded conditions at the existing high schools. This cumulative contribution from the precise plan would occur as long the precise plan is being implemented and the current overcrowding conditions exist.

Significance of the Impacts

Cumulative impacts concerning land use, biology, air quality, landform alteration/visual quality, and schools are considered significant and unmitigated.

Chapter Five

CEQA Mandatory Discussion Sections

A. The Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

The majority of the precise plan area is undeveloped and large portions of the site are covered with native vegetation. The exceptions include the SDG&E easement and the eastern portion of the site, which was previously in agricultural production. Currently, there is no agricultural activity on the project site. The mesa supports a mixture of annual grasses and weeds on previously cultivated and grazed land. Due to off-road activity, many dirt roads and trails have developed on the property. In addition to the off-road vehicle use, the site also provides several nonactive uses, such as wildlife habitat, habitat for sensitive plant populations, and aesthetic values. If the proposed precise plan and tentative map is approved, or similar development is pursued, then the off-road-activity areas and natural habitats containing sensitive biological resources would be replaced by predominantly residential land use. This conversion in land use is considered permanent.

The open space areas included in the precise plan would continue to provide some habitat values, although these would be substantially reduced from their present condition due to isolation, fire control clearing, and human and domestic pet disturbance. Approximately 202 acres (70 percent) of high-quality undisturbed Diegan coastal sage scrub would be lost, as well as 40 acres (61 percent) of maritime succulent scrub. These habitat types are used by California gnatcatchers and San Diego horned lizards, two sensitive species which have been observed on the project site. In addition, 25 of 32 vernal pools on-site would be impacted by the proposed project.

The canyon areas would continue to provide aesthetic values from areas to the north, west, and south, although at some locations residential units would be visible. On the mesa top, native vegetation would be replaced by landscaping, roads, and homes.

The short-term effects of project implementation are those associated with the construction of the project. Construction would affect the immediate area in the form of noise, vehicular emissions, and airborne particles (dust). However, these impacts are considered temporary and can be mitigated to a less than significant level.

The long-term effects of project implementation would be the conversion of approximately 511.4 acres of undeveloped land to commercial, residential, and public uses. This land use conversion is consistent with the Otay Mesa Community Plan, which has designated the project site for commercial, residential, and public land uses. However, development of the project site would result in increased traffic volumes, a further degradation in regional air quality, additional noise, changes in visual character, and an increase in demands on public services.

The precise plan would also provide 153.4 acres of open space, 132.5 of which would be undisturbed and natural. The remainder would be disturbed by development activities, then revegetated and preserved. Implementation of the precise plan would likely decrease or eliminate the current off-road-vehicle activity on the site, which is further denuding the mesa tops.

The project has been proposed at this time to provide housing and public facilities (schools, parks, and open space) according to the Otay Mesa Community Plan in the Otay Mesa community. The beneficial effects of the proposed project would be the provision of a wide range of housing products, needed public improvements, and an increased tax base for the City of San Diego with which to pay for government services. The provision of roads and services in the area has been identified in the planning documents for this area.

B. Any Significant Irreversible Environmental Changes Which Would Be Involved in the Proposed Action Should It Be Implemented

The most apparent irreversible environmental change associated with the precise plan and its implementation would be the commitment of a major portion of the site to residential, education, recreation, commercial, and open space uses. This conversion of land for these uses is a permanent change. Implementation of the precise plan would result in other permanent changes which have been recognized in this EIR. These include significant changes to the existing landform, land use, visual, noise, archaeological, and biological resources. The existing landform would be altered by grading operations that include cutting the mesa top areas and filling canyon heads to provide development areas. These alterations in the existing landform would be irreversible.

Implementation of the project as proposed would cause significant irreversible impacts to biological resources that exist on the property. Approximately 511.4 acres (77 percent) of the existing precise plan land area would be affected as the result of the proposed project. The remainder would be preserved as open space.

Because of the commitment of land to these uses, implementation of the precise plan would result in the consumption of energy derived from nonrenewable sources, such as fossil and nuclear fuels. Building materials would be considered permanently used.

C. Growth Inducing Impacts of the Proposed Project

Implementation of the California Terraces Precise Plan would result in residential and neighborhood- and area-oriented commercial development in an area that is presently undeveloped. Development would include extension of new, and expansion of existing utilities and roads into this area. The precise plan area and most of the land surrounding the project site is undeveloped, but several projects have been proposed. The only two which have been approved is Gateway Fair, a regional shopping center to the northeast, and construction of I-905, which bisects the southern portion of the project area. A building moratorium has been established by the City Council for the Otay Mesa area (City of San Diego 1992) for one year or until studies regarding TwinPort have been completed, whichever is first.

Other proposed projects surrounding the California Terraces Precise Plan area are primarily residential. These proposed residential developments include South Palm Precise Plan to the west; Robinhood Ridge, Dennery Ranch, and Hidden Trails to the north; and El Mirador and Santee Investments to the south. The proposed Otay Corporate Center North and Otay Corporate Center South projects are located to the east of the proposed project and are proposed industrial and commercial uses.

A project is considered growth inducing when it directly or indirectly fosters additional economic growth, population growth, or additional housing; when it removes obstacles to growth; when it taxes public facilities and services; and/or when it encourages or facilitates other activities that could significantly affect the environment. Growth inducement is generally dependent on the presence or lack of existing utilities and municipal or public services. The provision of such necessities in an unserviced area can induce growth between newly serviced areas and the community from which the facilities are obtained. In addition, growth inducement can also be defined as growth that makes it more feasible to increase the density of development in surrounding areas.

Implementation of the proposed precise plan would extend Circulation Element roads from developed areas to the west and provide Circulation Element roads on-site. This would potentially improve access to the other undeveloped properties to the south, west, and north. However, SR-905 will already provide access to these properties, and to the proposed project, from I-805 and the developed areas to the east.

Water and sewer lines would also be extended from existing lines as planned for in the Otay Mesa Community Plan. A new water zone would need to be created to handle the development proposed on the mesa tops. The water lines proposed for the project would be sized to meet the City's overall ultimate system for Otay Mesa. This type of infrastructure could facilitate growth in the surrounding properties.

Other services which would be constructed as part of the project, including schools and parks, would be sized to serve the residents of the precise plan area and implement the Otay Mesa Community Plan. The proposed commercial areas would primarily serve the precise plan area and the immediate surrounding areas and would not attract customers from an extended region. These commercial areas could facilitate growth by providing a needed service for those in the immediate vicinity of the project. However, the approved Gateway Fair regional shopping center would also provide this type of service on an expanded level.

The proposed project is consistent with the growth planned for the site in the Otay Mesa Community Plan. Areas surrounding the project site have also been planned for similar development. Therefore, any growth-inducing effects the project may have through provision of utilities, roads, and commercial services would impact surrounding areas which have also been designated for development in the community plan. The project would not promote development of a significantly different type or a greater density than that already planned for in the community plan, nor would it induce growth in areas which have been planned to remain undeveloped.

Chapter Six
Project Alternatives

A. Alternatives Considered But Rejected

The California Terraces Precise Plan has been in process in the City of San Diego since 1983. The precise plan was originally initiated by the City's Planning Commission in 1983 and the first formal submittal was made to the Planning Department in 1985. Since this time, the precise plan has undergone five revisions and formal resubmittals. The following discussion describes the previous alternative versions of the precise plan which have been considered by the applicant and the City of San Diego, but have been replaced by the currently proposed project to reduce environmental impacts.

The second submittal, made in September, 1985, eliminated or substantially reduced many of the large cut and fill slopes proposed under the original submittal. This modification reduced grading and visual impacts. In addition, the second submittal added a second neighborhood park and a portion of a third elementary school.

Under the third submittal, made in May, 1987, 718 single-family lots proposed east of Dennery Canyon were deleted to accommodate the Brown Field Master Plan and eliminate land use conflicts. Because of this modification, the total project area was reduced from 777 acres to 647 acres. The third elementary school was relocated entirely within the project boundaries. In addition, Palm Avenue was realigned along the new eastern boundary of the site, extended off-site to the northwest, and then extended along the northern boundary of the site to link to I-805. The roadway was realigned to provide higher capacity and more direct linkage between I-805, SR-905, and the eastern Otay Mesa industrial centers. Palm Avenue, as it is labeled in the current proposed project, functioned as a collector street in the third submittal.

Under the fourth submittal, in November, 1987, a 9-acre vernal pool preserve was created east of Dennery Canyon to mitigate on-site impacts to vernal pools. Commercial areas along Otay Mesa Road were reconfigured to avoid the "strip commercial" concept. Planned Residential Development requirements and Planned Commercial Development requirements were added to two multi-family areas and three commercial areas.

The fifth submittal was made in March, 1990. Under this submittal, the alignment of Palm Avenue described under the third submittal was completely eliminated. Instead, the collector street described under the third submittal was renamed Palm Avenue and slightly realigned to provide the direct connection between I-805 and SR-905. This was done in response to financing and environmental concerns associated with the alignment of Palm Avenue proposed in the third submittal. The segment of Caliente Boulevard proposed to be constructed for future extension across Dennery Canyon was eliminated, along with its associated 90-foot-high fill slope. Land uses in the southeast portion of the site were replanned to preserve an entire finger of Dennery Canyon for open space. Also in this area, a 2-acre vernal pool preserve was created adjacent to the neighborhood park. In the northern portion of the site, a 13-acre commercial site was eliminated to avoid land use conflicts associated with a rezone of the Gateway Fair project. Also in this area, the elementary school and neighborhood park were relocated away from Palm Avenue to avoid traffic safety concerns and noise impacts.

Finally, the sixth submittal was made in April, 1991. This is the proposed project. The modifications which were made to arrive at this current version of the precise plan were accomplished in cooperation with the City of San Diego Engineering and Planning Departments in a series of open space workshops for western Otay Mesa. The project is consistent with the Draft Agreement of Open Space and Planning Issues" which was mutually agreed upon during the workshop process of November 1990.

B. No Project

The "no project" alternative typically implies no use of the project site. This approach would result in the retention of the property, at least temporarily, in its present natural undeveloped condition. However, the destruction of biological habitats associated with the off-road-vehicle use of the site would continue to occur. The impacts associated with the proposed precise plan and tentative map would be eliminated. The potential for impacts relating to biological resources, landform alteration, visual quality, archaeological resources, and public facilities would be eliminated. The underlying zone is agricultural; and no agricultural uses would be allowed without the approval of a permit through the City, which would create similar impacts to the proposed project. The permanent retention of the site as open space would not implement the goals of the community plan and would require reevaluation of the community plan.

C. Reduced Grading Alternative

The project redesign alternative to reduce the landform alteration impacts to below a level of significance is conceptually depicted in Figure 46. This alternative would avoid the HR Overlay Zone and reduce all the manufactured slope heights to less than 60 feet.

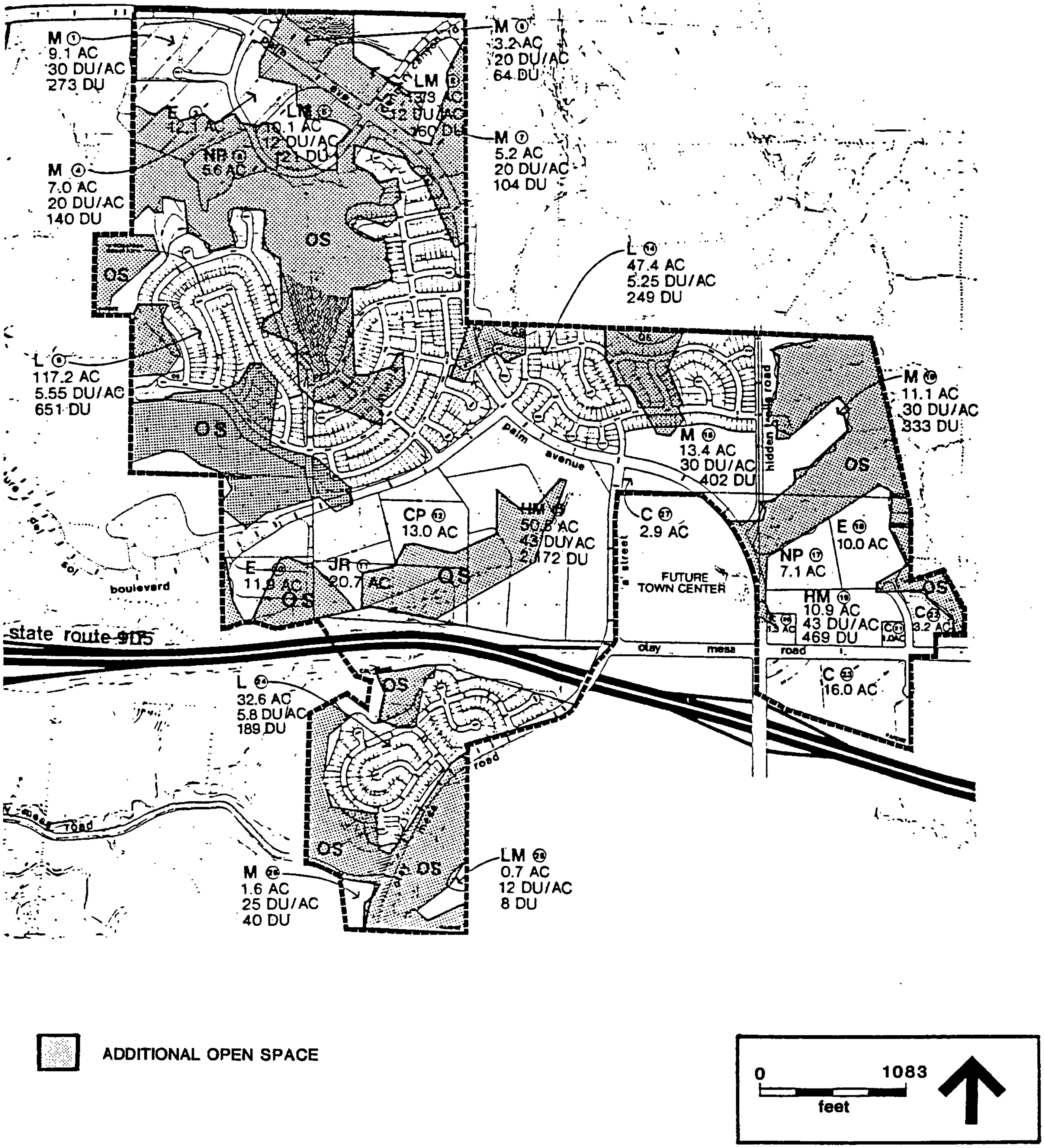


FIGURE 46. REDUCED GRADING ALTERNATIVE

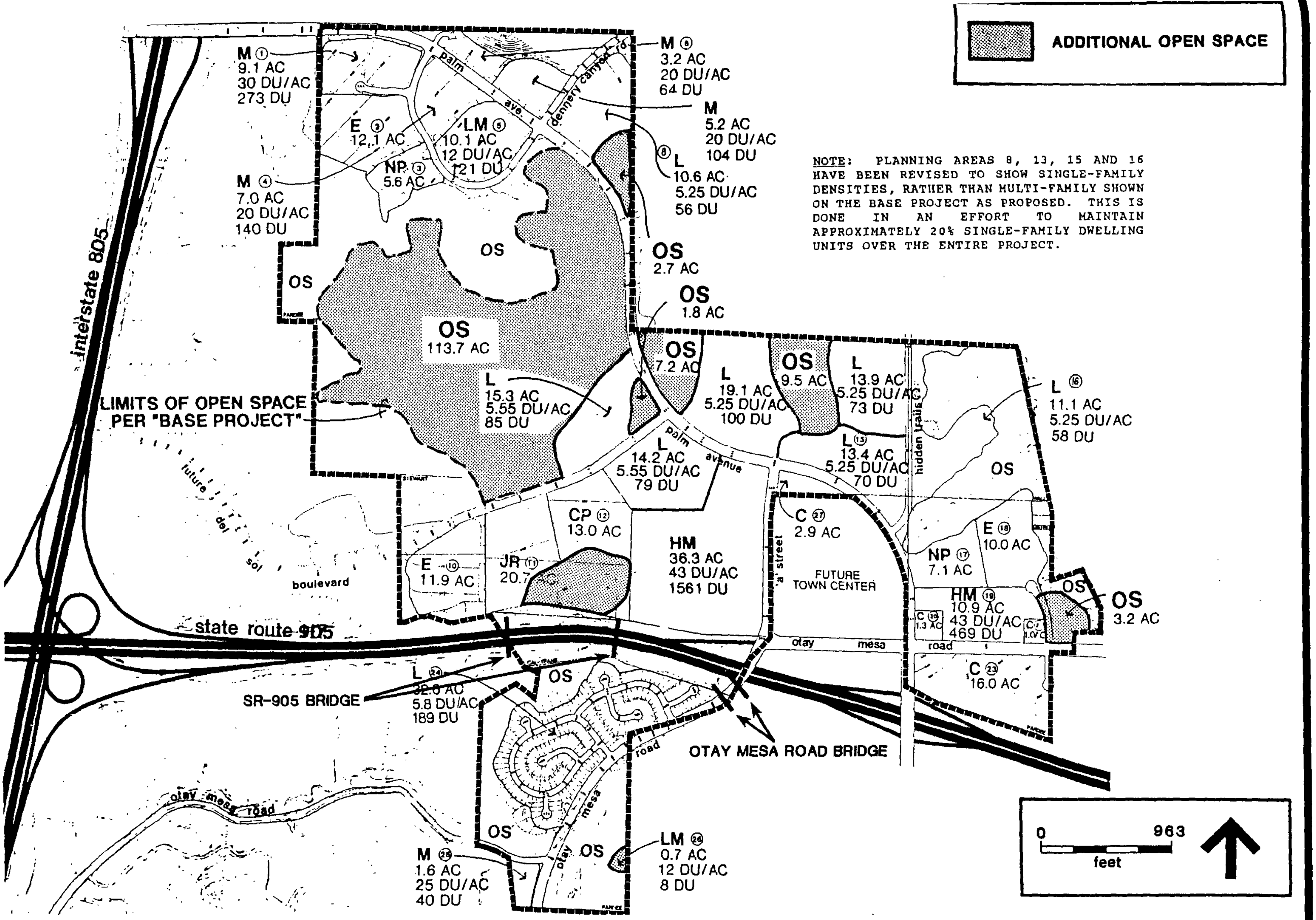
This figure illustrates what planning areas would be affected if development within the HR zone were eliminated. In doing so, the amount of developable land would be altered and the number of residential units would be reduced by approximately 56 percent to 2,360 units (Figure 4 shows the proposed precise plan). Accordingly, the amount of open space would be increased by approximately 130 acres, and extent of manufactured slopes would be reduced. The commercial, park, and school acreage south of Del Sol Boulevard would also be reduced. However, the school sites would need to be redesigned to meet minimum standards as set forth by the respective school districts, while parks would also need to be redesigned to meet standards outlined in the General Plan. Under this alternative, the major manufactured slopes (e.g., Planning Area 9) would not be created as currently planned. However, some of these manufactured slopes are within canyon heads and would still be necessary to support land uses and roadways (e.g., Palm Avenue). Additionally, the alignments of Palm Avenue and Otay Valley Road would need to be modified.

Since reduced grading would avoid the steep slopes and retain more of the natural landform, this alternative would result in reduced visual impact. Successful revegetation of the fill slopes would reduce the visual contrast as the revegetated slopes would blend in with the adjacent natural habitat and would eventually reduce the visual impact to below a level of significance. Impacts to biological resources, while reduced due to the increase in natural open space, would remain significant and unmitigated due to the loss of sensitive habitats under this alternative. Impacts to vernal pool habitat would remain the same as with the proposed project because development would occur on the flat portions of the site where the vernal pools are located. All remaining issues would be similar to the proposed and would be mitigated by the same means. Cumulative air quality impacts would remain significant and unmitigated.

D. Increased Open Space Alternative

Another redesign of the land use plan which would reduce the identified biological impacts as well as the amount of grading into steep slopes is conceptually shown in Figure 47. This alternative is considered the environmentally preferable alternative and would reduce the developable acreage by approximately 115 acres and reduce the number of dwelling units by approximately 1,885 (a 35 percent reduction). The modifications to the developable acreage areas shown for Planning Areas 9, 8, 11, 12, 14, 22, and 26 would substantially reduce biology impacts to sensitive plant species and vegetation communities. Landform alteration impacts would also be substantially lessened under the redesign but not to a level below significance. The changes which would be required at the affected planning areas are described below.

As Figure 47 indicates, the redesign indicated for Planning Area 9 would increase the coastal sage scrub acreage in open space to approximately 107 acres, thereby preserving



NOTE: PLANNING AREAS 8, 13, 15 AND 16 HAVE BEEN REVISED TO SHOW SINGLE-FAMILY DENSITIES, RATHER THAN MULTI-FAMILY SHOWN ON THE BASE PROJECT AS PROPOSED. THIS IS DONE IN AN EFFORT TO MAINTAIN APPROXIMATELY 20% SINGLE-FAMILY DWELLING UNITS OVER THE ENTIRE PROJECT.

FIGURE 47. INCREASED OPEN SPACE TO REDUCE BIOLOGY IMPACTS

additional habitat for the California gnatcatcher. Two additional vernal pools (pools 35 and 36 as described in the vernal pool plan) would also be preserved, as well as populations of other sensitive plant species. This alternative would result in the elimination of 566 of the proposed 651 single-family units at Planning Area 9. Open space (2.7 acres) would also be added at Planning Area 8 on the east side of Palm Avenue and further reduce impacts to coastal sage scrub vegetation. The number of units at this location would be reduced by approximately 100 units.

Under this alternative, the canyon area just north of I-905, currently proposed as part of the junior high and community park complex (Planning Areas 11 and 12), would be preserved as open space. To further reduce biological impacts and create an enhanced open space system, SR-905 would have to be reconstructed to bridge approximately 800 feet of the already filled canyon area, thereby linking open space north and south of the freeway. Additionally, future Otay Mesa Road just south of SR-905 would bridge (approximately 200 feet) a small finger canyon to provide an open space linkage. These improvements would reduce direct impacts to biological resources in this canyon area and reduce indirect and direct impacts to wildlife using these resources.

The reduced biology impact alternative would also permit the in situ preservation of the small-leaved rose population, a state-listed endangered species, in Planning Area 14. In order to preserve the rose, Palm Avenue would have to be realigned. Additional coastal sage scrub acreage (approximately 10 acres) would also be retained by realigning the road. Single-family development in the canyon immediately to the east would also be eliminated, and 9.5 acres of coastal sage scrub would be preserved. The manufactured slopes at the head of both of these canyons would be reduced under this concept. However, the increased open space at these canyons would be isolated by the proposed development to the north (Hidden Trails). The number of dwelling units in Planning Area 14 would be reduced from 249 to 173.

This alternative would also eliminate the proposed 3.2-acre commercial development at Planning Area 22, which could be relocated to another area of the project. A redesign in this location would preserve approximately 11 additional vernal pools on the mesa top adjacent to open space in Dennery Canyon, increase open space, and reduce visual and grading impacts. Planning area 26, south of SR-905 would also be eliminated.

As with the above alternatives, the applicant has also rejected this alternative because it achieves less units than the proposed project. Additionally, this alternative would not implement all of the goals and objectives of the community plan in terms of density and land use.

E. Alternative Grading/Product Type

Possible reductions to the landform alteration and visual quality impacts could be achieved by proposing a different housing product type which accommodates smaller graded pads and/or stepped grading. The layout of the proposed development could be redesigned to reduce the amount of slope grading. The locations within the precise plan where this concept could be applied are shown on Figure 48. This could be accomplished without a loss in the number of units by increasing the densities at these locations.

The distribution of residential unit types could be changed so that single-family detached, duplexes, and multi-family units are intermixed more to allow for sensitive grading and to reduce impacts to visually sensitive areas. For example, multi-family and duplex units, designed in a creative (i.e., topographically sensitive) manner, can be utilized on steeper slope portions of the site in a "step down" or terraced design which follows the existing grade much more closely than the flat pads currently proposed. As illustrated in Figures 49-51, more custom-type units could be designed to retain some of the existing topographical features on-site. In addition, multi-family units do not necessarily require extensive level pad areas around them. This would reduce the extent of grading, possibly allowing for more open space and preserving additional biological habitat. This alternative would also conform with the Otay Mesa Community Plan goal for developing a distinctive and sensitive project while creating a balance of housing types and while applying the Hillside Review Guidelines.

For a distinctive, sensitive development to occur under the stepped grading approach proposed by this alternative, buildings must be designed which terrace from one to two stories from front to back in order to more closely follow existing grade. Site retaining walls and walk-out basement living areas can be employed to take up the slope. This could be done without significantly reducing useable pad area, number of building units, or building square footage. This approach combined with creative design solutions for driveways, roadways, and building locations can reduce the project impacts. In addition, this type of design would meet the goals and intent of the Land Use Element of the Otay Mesa Community Plan. However, residential houses and multi-family buildings would have to be designed to a less conventional, more custom design fashion to accommodate such grading approaches, resulting in significant increases to building costs.

The size of pads around single-family units and other land uses (i.e., the park, commercial, and school sites) can be reduced by creating pad areas that slope at accepted engineering gradients for lawn and outdoor use areas of up to and including 3:1 slopes. Developed areas should be graded so that they retain the natural landform character rather than creating very flat, uniformly sloped pad areas.

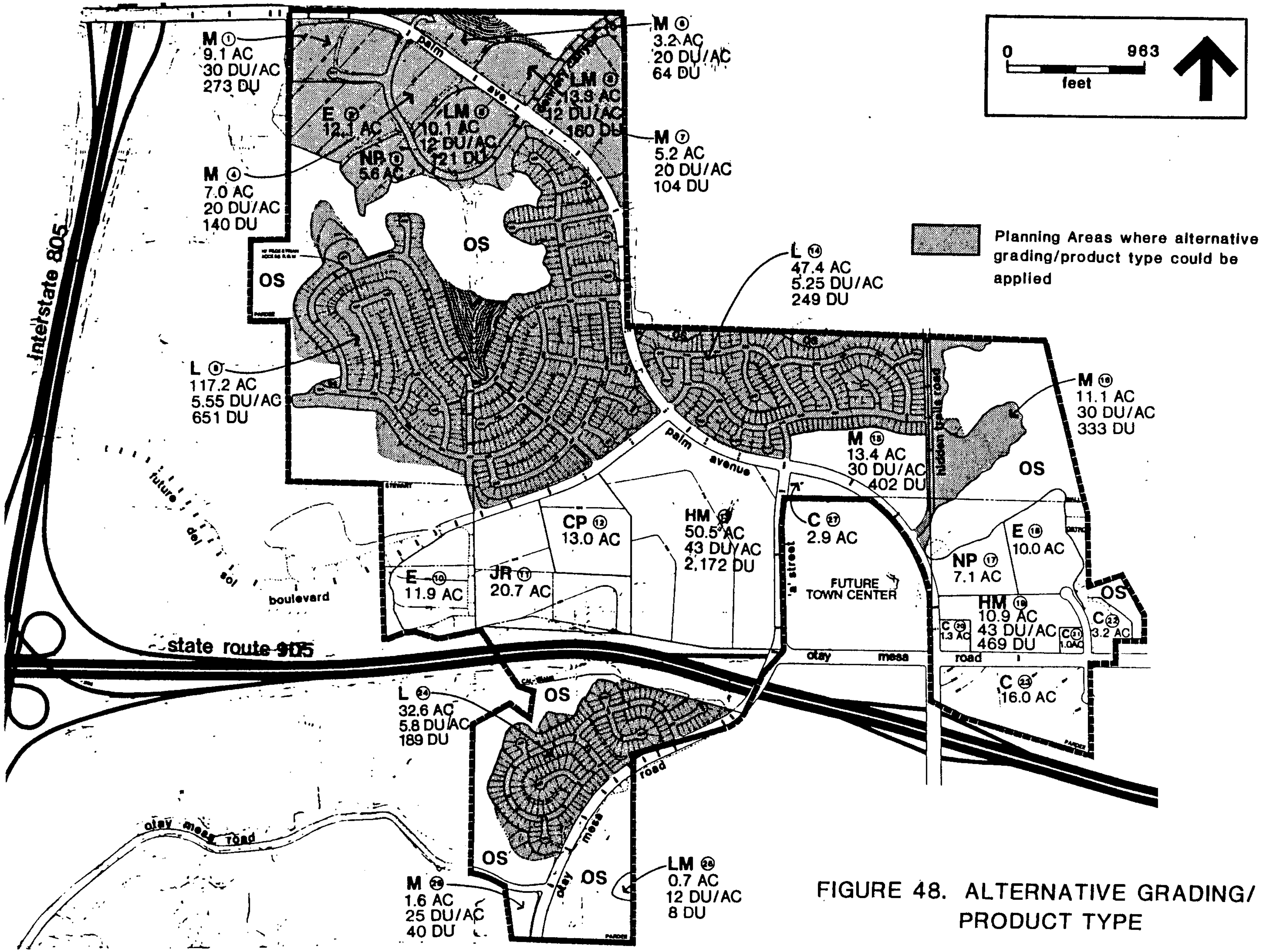


FIGURE 48. ALTERNATIVE GRADING/ PRODUCT TYPE

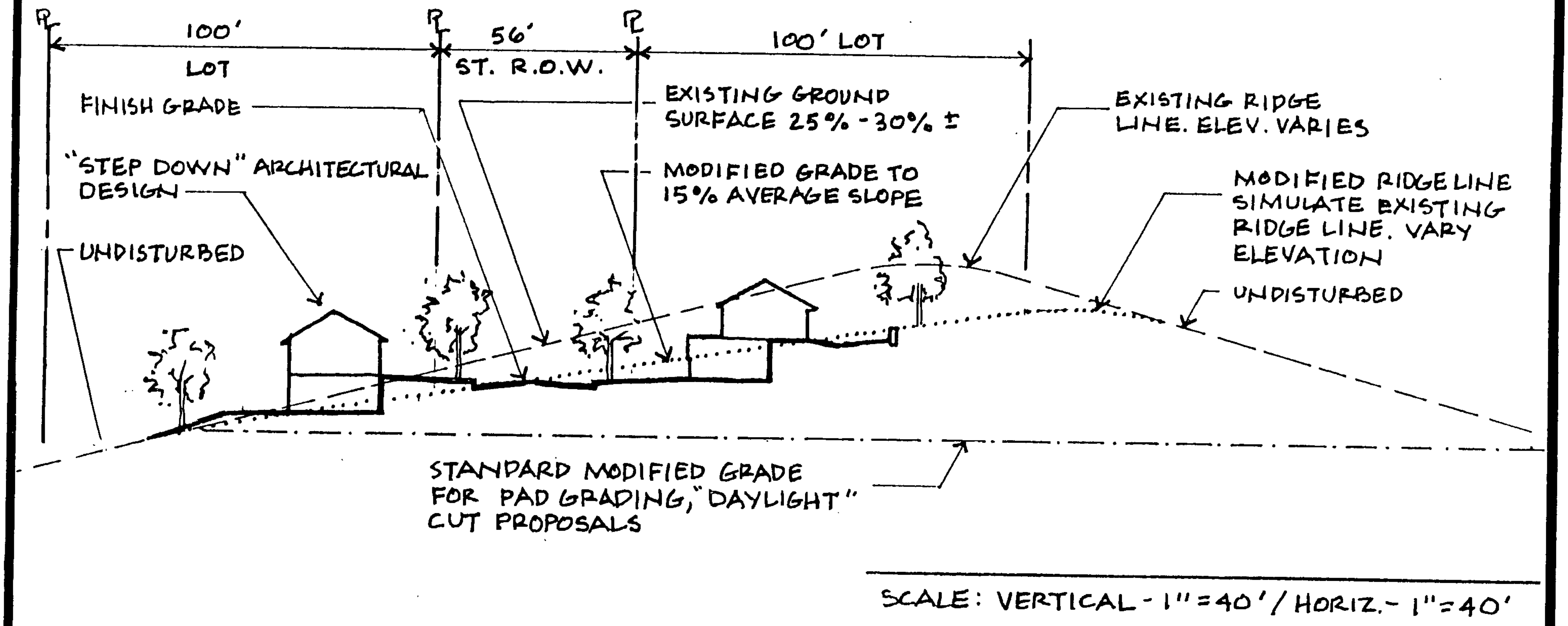


FIGURE 49. RESIDENTIAL GRADING CONCEPT - CROSS SECTION

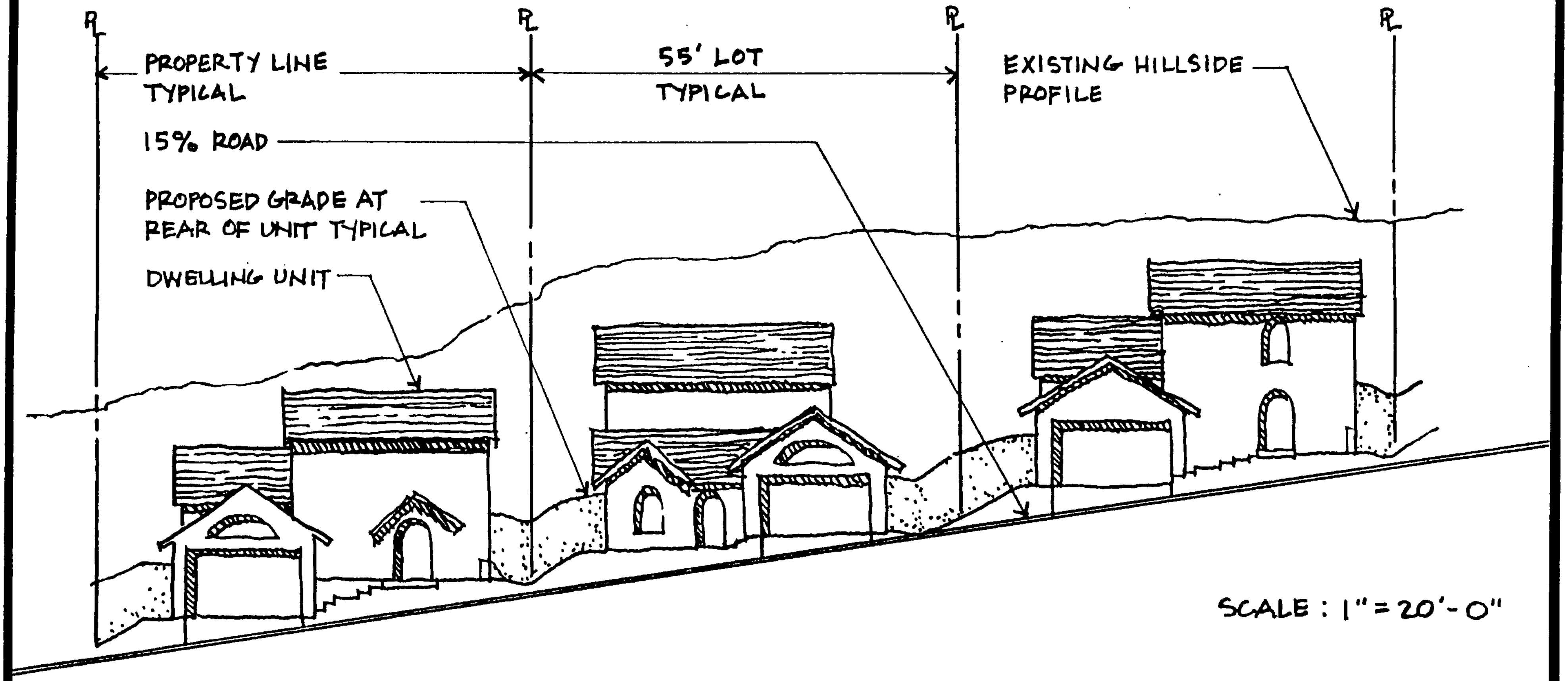


FIGURE 50. TYPICAL RESIDENTIAL ROAD ELEVATION

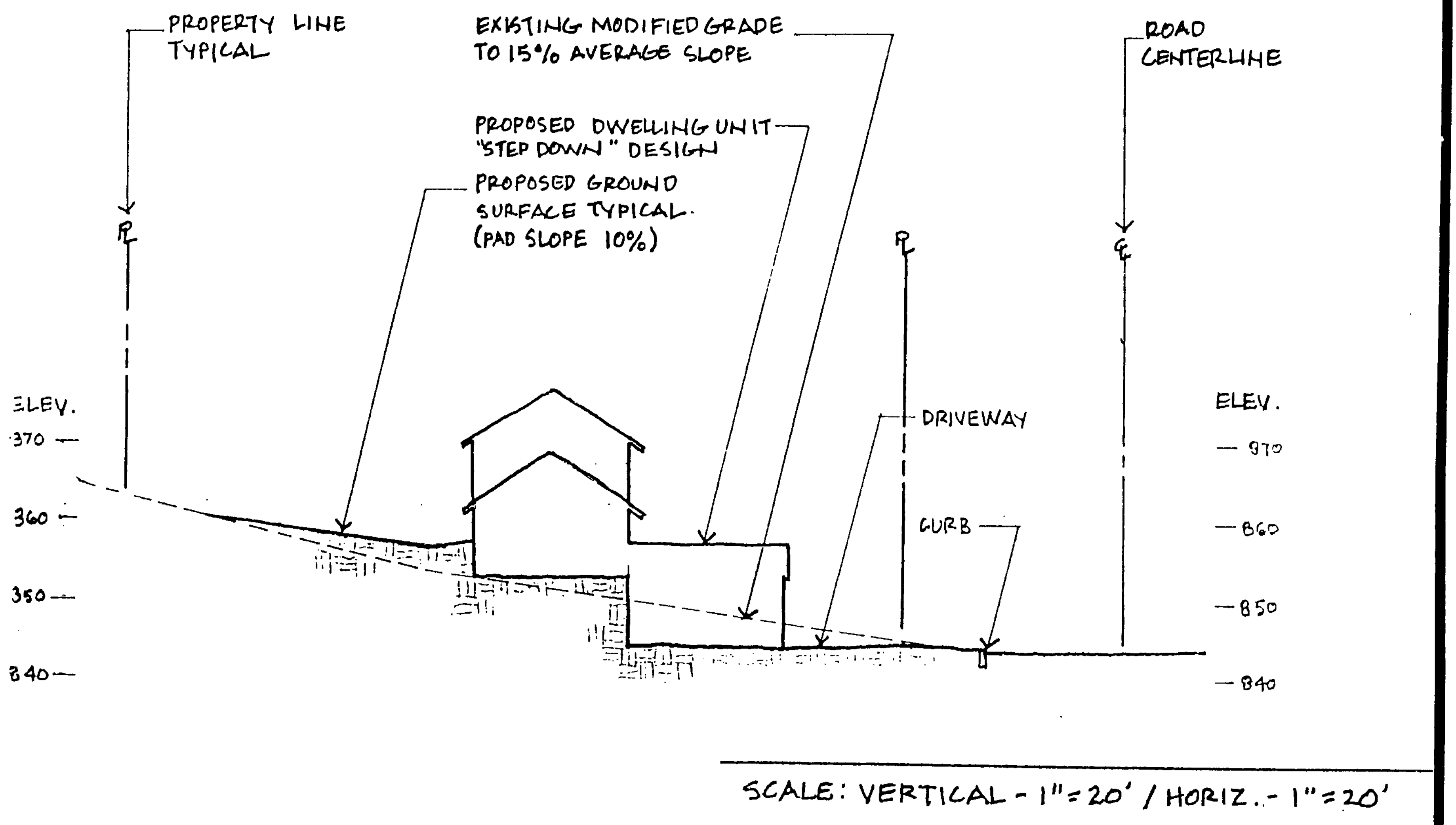


FIGURE 51. TYPICAL RESIDENTIAL AREA SECTION

The street pattern should follow the existing topography more closely by utilizing the maximum curve and gradient design guidelines allowed by the City's Street Design Manual, which the proposed project does not do in all areas. Most residential road widths could be reduced to the minimum in sensitive areas, with sidewalks on only one side and reduced on-street parking. Single-family residential blocks of streets could be stepped from block to block in order to create more grade separation between streets. Such an approach would further reduce landform alteration, although fewer linking cross streets could be built, which would reduce neighborhood circulation for both vehicles and pedestrians.

It should, however, be noted that the natural landforms associated with the California Terraces site are not the most conducive for utilizing the "stepped building" concepts described above. These concepts work most effectively at reducing landform alteration where the natural slope gradients are in the 10-25 percent range. By contrast, the demarcation between the existing nearly flat land on the mesa tops and the steep canyon (slopes greater than 50 percent) is distinct and well defined on the project site. Since the majority of the proposed development has been situated for the flatter mesa top areas, the potential for significant reductions in landform alteration impact benefits which could accrue from this alternative is limited.

In summary, the proposed grading for the development, including all of the proposed land uses, could be redesigned through the use of layout and custom-type architectural methods to utilize steeper and more sensitive grading approaches which would retain more of the existing landform, protect additional visual and biological resources, and possibly help achieve the goals of the Otay Mesa Community Plan without a loss of units. Further, in order to accommodate these grading concepts, this alternative proposes redefining of the single-family and multi-family housing product types with stepped, cascading, or split-level architectural designs to fit the more sensitive landform areas. While partially reducing the landform alteration impact associated with the project, impacts would still remain and housing costs would increase.

F. Conversion of School Sites to Other Land Uses

Three elementary schools and a junior high school are currently proposed as part of the project. It is the responsibility of the school district to select the sites and reserve them under the Subdivision Map Act (Section 66480).

Under this alternative, the effects of the school district declining the need for one or more sites are analyzed. Specifically, two situations are considered, (1) the school district declines the use of all three elementary school sites and (2) the school district declines the use of the junior high school site. The analysis assumes that the schools would not be relocated to another location on California Terraces. However, it is likely that the schools would be sited at some other location on Otay Mesa, and the impacts associated with school development would continue to occur.

Under the Subdivision Map Act, if the school district does not wish to utilize a proposed school site, then the site may be developed consistent with the adjacent land uses designated by the community plan. The alternative land uses proposed if the elementary school sites or the junior high school site are not used by the school district are shown in Figures 52 and 53, respectively. Table 19 summarizes the changes which would occur in land use, number of residential units, and traffic generation within the project site.

If the elementary school sites are redesignated, both neighborhood parks would increase to 10 acres. The community park would remain at 13 acres and continue to function as a shared use with the junior high school. As shown in Table 19, the number of residential units would increase by 257, which is an increase of 4.8 percent over the proposed project's 5,375 units. Traffic generation would increase by 916 ADT, or 1.8 percent.

If the junior high school site is redesignated, the community park would expand from 13 acres to 20 acres. As shown in Table 19, residential units would increase by 82 units, or 1.5 percent. Traffic generation would increase by 272 ADT, or 0.5 percent.

Based on the projected number of dwelling units above, neither conversion situation would significantly increase traffic on the surrounding roadways, nor would either situation increase noise levels. The amount of grading would be similar to the proposed project and biological impacts would remain the same.

Cumulative air quality impacts would be slightly greater under these alternative situations because of the incremental increase in traffic, but the conclusion that cumulative impacts are significant reached under the proposed project would not change. Because the San Diego Air Basin has not attained air quality standards for ozone and particulates, any increase in emissions would contribute to continuing nonattainment of the standards. It is the responsibility of the San Diego Air Pollution Control District to implement and enforce programs and regulations to achieve air quality standards across the basin.

The demand for public services would also be slightly greater due to the small increase in the number of residential units on the project site. However, because the increase in numbers of residential units is so small under either school site conversion scenario, major design changes to streets, utilities, drainage, water, and sewer facilities would not be required. The existing water pump station would still be required to be upgraded as under the proposed project, and a second water pump station would still need to be constructed for later phases of development. New sewer mains required under the proposed project would still be required with the redesignation of the school sites.

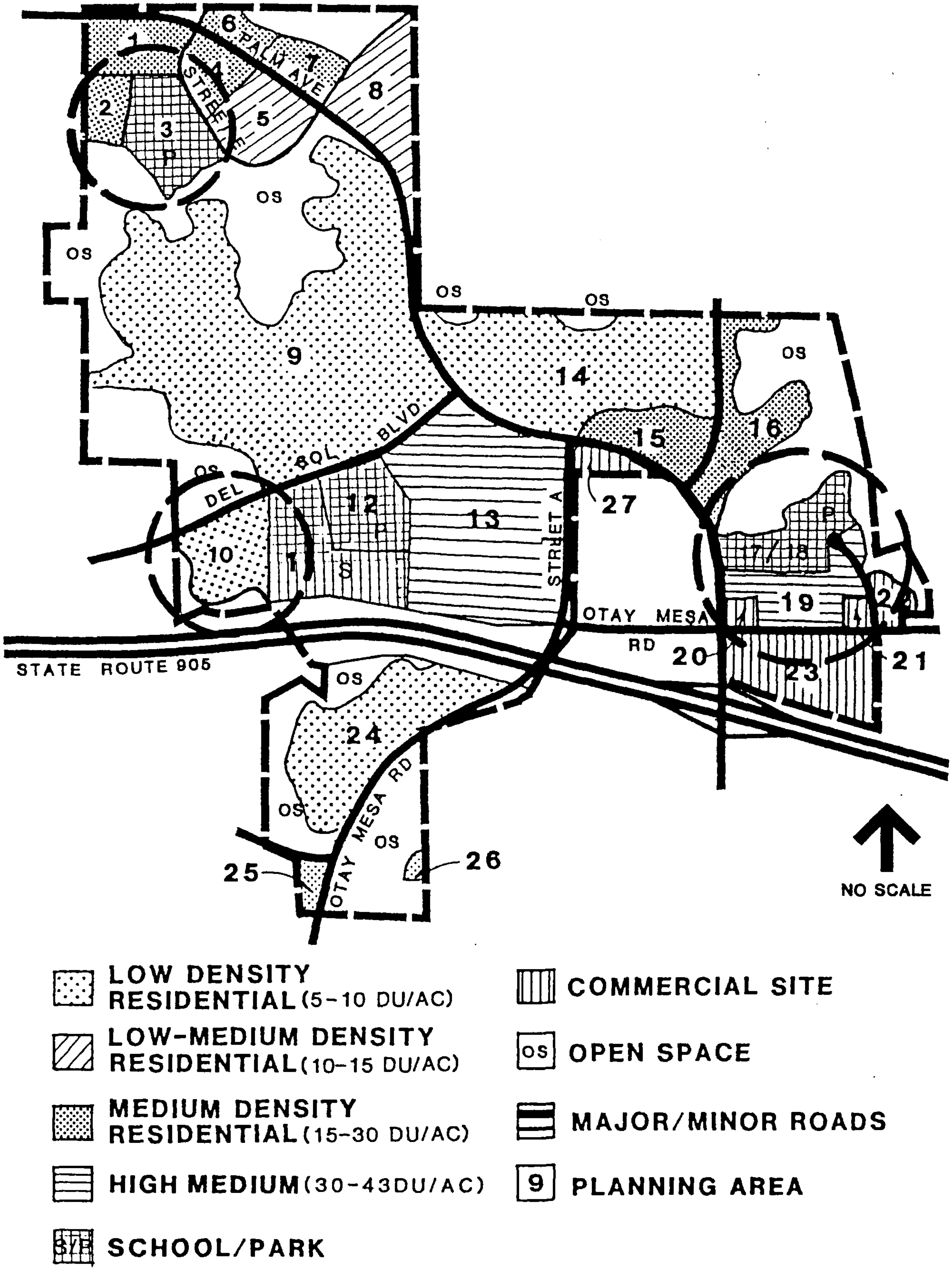


FIGURE 52. CONVERSION OF ELEMENTARY SCHOOLS TO RESIDENTIAL USE

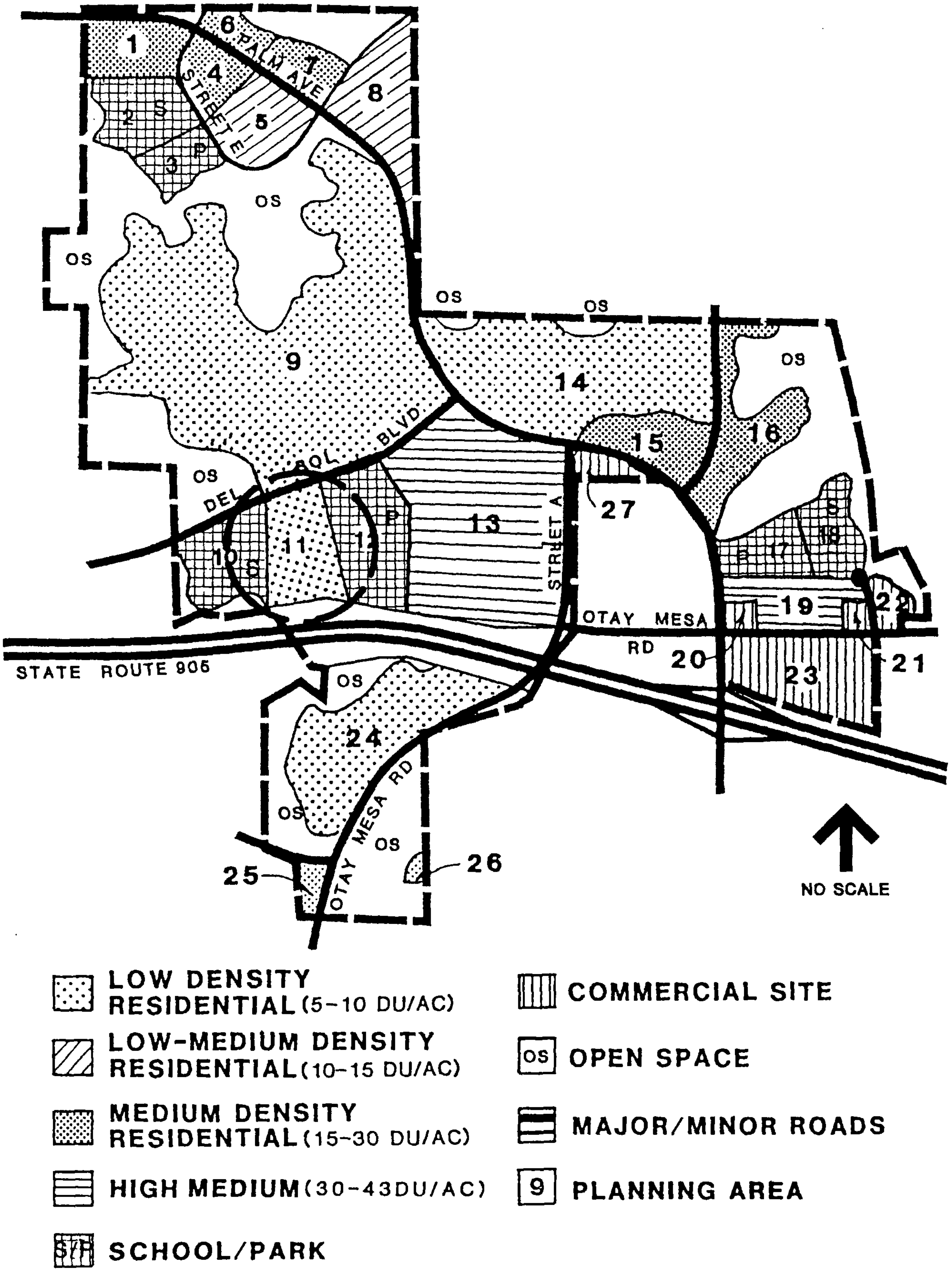


FIGURE 53. CONVERSION OF JUNIOR HIGH SCHOOLS TO RESIDENTIAL USE

TABLE 19
COMPARISON OF PROPOSED PROJECT WITH ALTERNATIVE 7.F.

School	Planning Area	Proposed Project		Alternative Land Use		Change in Traffic Generation (ADT)	Traffic Volumes (ADT)
		Land Use	Traffic Generation (ADT)*	Land Use**	Number of Residential Units		
Elementary	2	Elementary school (12.1 ac.)	484	R-2000 (22 du/ac) (4.7 ac.)	103	824	+340
	3	Neighborhood park (5.6 ac.)	224	Neighborhood park (10.0 ac.)	--	400	+176
	10	Elementary school (11.9 ac.)	476	R-5000 (6 du/ac) (9.9 ac.)	59	590	+114
	12	Community park (13.0 ac.)	520	Community park (13.0 ac.)	--	520	0
	18	Elementary school (10.0 ac.)	400	R-1250 (35 du/ac) (2.7 ac.)	95	570	+170
	17	Neighborhood park (7.1 ac.)	284	Neighborhood park (10.0 ac.)	--	400	+116
Elementary Total					257		+916

TABLE 19
COMPARISON OF PROPOSED PROJECT WITH ALTERNATIVE 7.F.
(continued)

		Proposed Project		Alternative Land Use			
School	Planning Area	Land Use	Traffic Generation (ADT)*	Land Use**	Number of Residential Units	Change in Traffic Generation (ADT)	Traffic Volumes (ADT)
Junior High	11	Junior high school (20.7 ac.)	828	R-5000 (6 du/ac) (13.7 ac.)	82	820	-8
	12	Community park (13.0 ac.)	520	Community park (20.0 ac.)	--	800	+280
Junior High Total					82		+272

*Traffic volumes calculated using the following generation rates: parks = 40 trips/acre; elementary school = 40 trips/acre; junior high school = 40 trips/acre; single-family residential = 10 trips/unit; multi-family (under 30 du/ac) = 8 trips/unit; and multi-family (over 30 du/ac) = 6 trips/unit.

**Residential acreages are net acreages.

G. Alternative School Sites

As indicated in Figure 4, the precise plan proposes four school facilities, three elementary schools (serving grades K-6) and a junior high school (serving grades 7-8). A 10.8-acre elementary school site would be provided in the northern portion of the project site, near Palm Avenue, and another 10-acre elementary school site would be provided to the east of the future town center. A 12-acre elementary school is also planned along the western portion of the project boundary, to the north of SR-905. This school site would be located adjacent to a junior high school site. The precise plan would provide a 20-acre junior high school site in the west-central portion of the project area, to the south of Del Sol Boulevard.

A majority of the precise plan falls within a two-mile radius of Brown Field runways. Education Code 39005, 39006, 39007, and 81036 and Government Code 15854.5 establish a requirement of the State of California to investigate and make recommendations on the acquisition of property for a new school site or for an addition to a present school site located within two miles of an airport/heliport runway. Such an investigation has not been done for the California Terraces property.

In response to this state code requirement, and also the San Ysidro School District's review of the site, two project designs which relocate the school sites are included as project alternatives. Figures 54 and 55 illustrate these school alternatives.

The first alternative (see Figure 54) represents an alternate site design which would locate all schools outside the two-mile Brown Field radius line. A 20-acre junior high site would be located in the northwest corner of the precise plan area adjacent to a 13-acre community park. A 10-acre elementary school site would be located on the central western boundary of the precise plan area. A second 12-acre elementary school site adjacent to a 5.8-acre neighborhood park site would be located in the west-central corner of the precise plan area.

This alternative would result in approximately 300 fewer dwelling units than is currently proposed. Since this alternative would require aligning all the schools along the western border of the site, the elementary school sites would not provide easy access for students from the eastern portions of the precise plan area. Other impacts (e.g., landform alteration and visual quality and biology) would remain similar to the proposed project. Impacts would be similar to the proposed project because no significant additional grading would occur, only the land uses would be shifted to move the schools outside the two-mile radius for Brown Field.

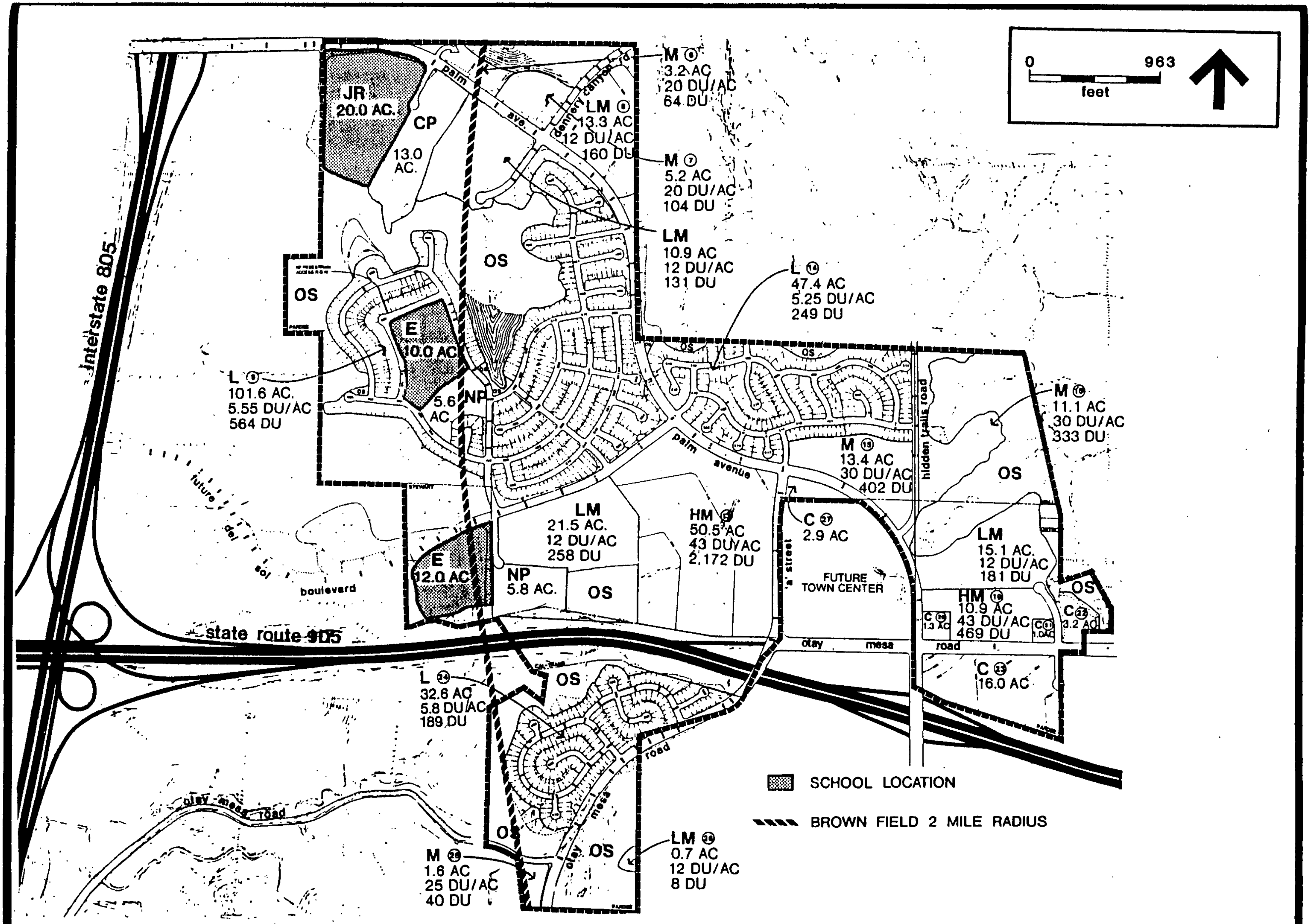
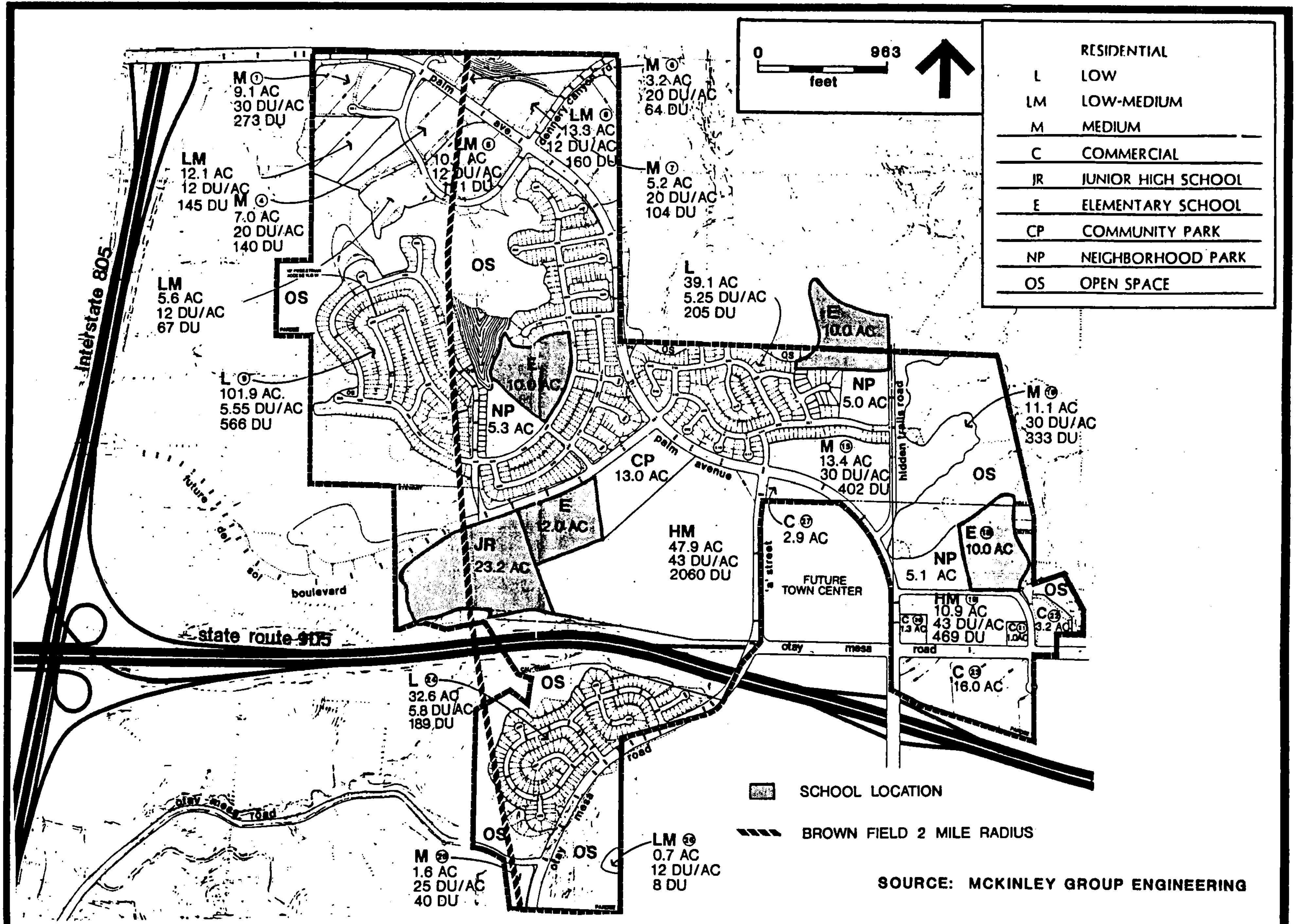


FIGURE 54. SCHOOL RELOCATION STUDY ALTERNATIVE 1



SOURCE: MCKINLEY GROUP ENGINEERING

FIGURE 55. SAN YSIDRO SCHOOL DISTRICT ALTERNATIVES

The second school site alternative is recommended by the San Ysidro School District. It provides for an additional school within the precise plan area, none of which would be located outside of the two-mile radius from the Brown Field runways. Under this alternative, four elementary school sites and one junior high school site (see Figure 55) would be built.

One 10-acre elementary school site would be located in the eastern portion of the precise plan area adjacent to a 5-acre neighborhood park. This is consistent with the proposed precise plan, but it reverses the school and park site placement. A second 10-acre elementary school site would be located on the northeastern boundary of the proposed precise plan, falling partially within the Hidden Trails Precise Plan area. The proposed California Terraces Precise Plan does not provide this school site. A third 10-acre elementary school site would be located in the west-central portion of the precise plan area adjacent to a 3.5-acre neighborhood park site. The California Terraces Precise Plan proposes a slightly larger school and park site to the northwest of the alternative sites. A fourth 10-acre elementary school site would be located adjacent to the 22-acre junior high school site located in the east-central portion of the precise plan area. The California Terraces Precise Plan proposes reversing the location of the two school sites but in the same area. None of the school sites would lie outside the two-mile radius from the Brown Field runways. Four elementary school sites and one junior high school site is more than adequate for the projected enrollment (see above discussion). As with the above alternative, other impacts (e.g., landform alteration and visual quality and biology) would remain similar to the proposed project.

Chapter Seven
EIR Preparation

This Environmental Impact Report was prepared by the City of San Diego Planning Department, Environmental Analysis Section, located at 202 C Street, Fourth Floor, San Diego, California. The following professional staff participated in its preparation.

City of San Diego, Environmental Analysis Section
- Ann Hix, Principal Planner
- Ellen Mosley, Senior Planner
- Paul O'Boyle, Associate Planner
- Cathy Winterrowd, Senior Planner

RECON (Job Number R-1785)
- Karen L. Bowling, Assistant Analyst
- Dayle M. Cheever, Project Archaeologist
- Sandra Fayette, Assistant Analyst
- Scott Fulmer, Environmental Analyst
- Loretta L. Gross, Production Supervisor
- Jill Gurak, Assistant Analyst
- Donald E. Haines, Associate Analyst
- Stacey Higgins, Production Specialist
- Jerry Hittleman, Environmental Planner
- John P. Larson, Vice President
- Cameron Patterson, Director, Resources Group
- Janet M. Peters, Associate Analyst
- Harry J. Price, Senior Technical Illustrator
- Lee A. Sherwood, Project Manager
- Bobbie Stephenson, Manager, Biological Resources

Chapter Eight

Persons and Agencies Consulted

Estrada Land Planning
    Steve Estrada

The McKinley Group
    Laurie J. McKinley

Metropolitan Transit Development Board
    Tony Mendoza

Otay Municipal Water District
    Charly Cassens

Pardee Construction Company
    Michael Madigan
    David Poole

Project Design Consultants
    Bill Dick
    Keith Keeter
    Rich Miller
    Doug Paul

RBR and Associates, Inc.
    Royce B. Riggan, Jr.

San Diego Association of Governments
    Eunice Tanjuaquino

San Diego, City of
    Airport Division
        Mary Roush
    Planning Department
        Howard Greenstein
        Mike Stang
    Water Utilities Department
        Norm Pierce
        Sarah Sandbeck

San Ysidro School District
    Gilberto Anzaldua
    Margo Lamb
    Alicia Perez

Sholders & Sanford
    Carol Chase

Sweetwater Union High School District
    Andrew Campbell
    Tom Silva
    Mr. Young

Urban Systems Associates
    Sam Kab

Chapter Nine

References Cited

Bauder, E. T.

1986 San Diego Vernal Pools, Recent and Projected Losses; Their Condition; and Threats to Their Existence, 1979-1990. Endangered Plant Project, California Department of Fish and Game.

California, State of

1987 *Annual Summary of Air Quality Data, Gaseous and Particulate Pollutants, California* (Vol. XIX). Air Resources Board.

1988 *Annual Summary of Air Quality Data, Gaseous and Particulate Pollutants, California* (Vol. XX). Air Resources Board.

1989a *Annual Summary of Air Quality Data, Gaseous and Particulate Pollutants, California* (Vol. XXI). Air Resources Board.

1989b Guidelines for Air Quality Impact Assessments for General Development and Transportation-Related Projects. Air Resources Board. June.

1990 *Annual Summary of Air Quality Data, Gaseous and Particulate Pollutants, California* (Vol. XXII). Air Resources Board.

Davis, MacMillin, and Sue A. Wade

1990 Archaeology Data Recovery at SDi-6941, Locus D, Otay Mesa.

Everett, William T.

1979 Threatened, Declining and Sensitive Bird Species in San Diego County. *Sketches* 29(10):2-3.

GEOCON, Inc.

1984 Preliminary Soil Investigation and Geologic Reconnaissance for Otay Mesa Property, San Diego, California.

1990 Preliminary Soil and Geologic Reconnaissance for South Palm Vista Vesting Tentative Map, San Diego, California.

Greene, H. G., K. A. Bailey, S. H. Clarke, J. I. Ziony, and M. P. Kennedy

1979 Implications of Fault Patterns of the Inter-California Continental Border Land Between San Pedro and San Diego. In *Earthquakes and Other Perils: San Diego Region,* edited by Patrick L. Abbott and William J. Elliott, pp. 21-27. San Diego Association of Geologists.

Holland, Robert F.

1986 Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, California Department of Fish and Game. October.

Kennedy, Michael P., and Gary L. Peterson

1975 *Geology of the San Diego Metropolitan Area, California.* Bulletin 200, California Division of Mines and Geology, Sacramento.

Oberbauer, Tom, and Julie Vanderwier

1991 The Vegetation and Geologic Substrate Association and Its Effect on Development in Southern California. In *1991 Environmental Perils, San Diego Region*, edited by Abbott, P. L., and W. J. Elliott, pp. 203-212. San Diego Association of Geologists, October.

Project Design Consultants

1991 California Terraces Precise Plan. Updated October, 1992.

RBR and Associates

1988 Cultural Resource Inventory and Assessment: California Terraces.

RECON

1980 Otay Mesa East Feasibility Study. RECON Number R-1121.

Remsen, Jan

1979 Species of Special Concern: California's Imperiled Birds. *Western Tanager* 45(8):1-8.

San Diego, City of

1979 Progress Guide and General Plan.

1981 Otay Mesa Community Plan.

1983 Hillside Review Overlay Zone.

1987 Brown Field Municipal Airport Noise Contour Study. Prepared by Landrum and Brown. City Manager's Report 86-599. April.

1989 Landscape Technical Manual, Section 6 (Brush Management). Planning Department. October.

1991 Significance Determination Guidelines.

1992 City Council Resolution No. 279939. May 12.

San Diego, County of
1982 State Implementation Plan for the San Diego Air Basin.

1992 Five-Year Annual Air Quality Summary. Air Pollution Control District. May.

San Diego Association of Governments (formerly Comprehensive Planning Organization)
1981 Comprehensive Land Use Plan, Brown Field, San Diego, California. September.

1990 San Diego Air Carrier. Airport Site Selection Study. January.

San Diego Herpetological Society
1980 Survey and Status of Endangered and Threatened Species of Reptiles Natively Occurring in San Diego County. Prepared for the Fish and Wildlife Committee, San Diego County, Department of Agriculture.

Soule, Michael E., D. Bolger, A. Alberts, J. Wright, M. Sorice, and S. Hill
1988 Reconstructed Dynamics of Rapid Extinctions of Chaparral-Requiring Birds in Urban Habitat Island. *Conservation Biology* 2(1). March.

Unitt, P. A.
1984 Birds of San Diego County. *Memoir* 13, San Diego Society of Natural History.

University of California Agricultural Extension Service
1967 *Climates of San Diego County: Agricultural Relationships.*

Urban System Associates
1990 Revised Transportation Analysis for California Terraces.

Westman, Walter E.

1987 Implications of Ecological Theory for Rare Plant Conservation in Coastal Sage Scrub. In *Conservation and Management of Rare and Endangered Plants: Proceedings from a Conference of the California Native Plant Society,* edited by T. S. Elias, pp. 133-140. Sacramento.

Zedler, Joy B.

1989 The Ecology of Southern California Vernal Pools: A Community Profile. *U.S. Fish and Wildlife Service Biological Report* 85(7,11).

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

UPDATED GEOLOGIC MAP

OCEANVIEW HILLS – PA 61
SAN DIEGO, CALIFORNIA

PREPARED FOR

PARDEE HOMES
SAN DIEGO, CALIFORNIA

JULY 11, 2018
PROJECT NO. 07955-42-02

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. 07955-42-02
July 11, 2018

Pardee Homes
13400 Sabre Springs Parkway, Suite 200
San Diego, California 92128

Attention: Mr. Allen Kashani

Subject: UPDATED GEOLOGIC MAP
OCEANVIEW HILLS – PA 61
SAN DIEGO, CALIFORNIA

Reference: *Update Geotechnical Investigation, Oceanview Hills – PA 61, San Diego, California*, prepared by Geocon Incorporated dated March 15, 2018 (Project No. 07955-42-02).

Dear Mr. Kashani:

In accordance with the request of Civil Sense, Inc., we have prepared this letter to provide an updated geologic map using the latest grading plan. Civil Sense provided an AutoCAD file of the grading plan which was used as the base map to generate the Geologic Map (Figure 1) and the Cross Sections (Figure 2). Based on our review of the grading plan, the recommendations contained in the referenced geotechnical investigation remain applicable to the project.

Should you have any questions regarding this letter, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

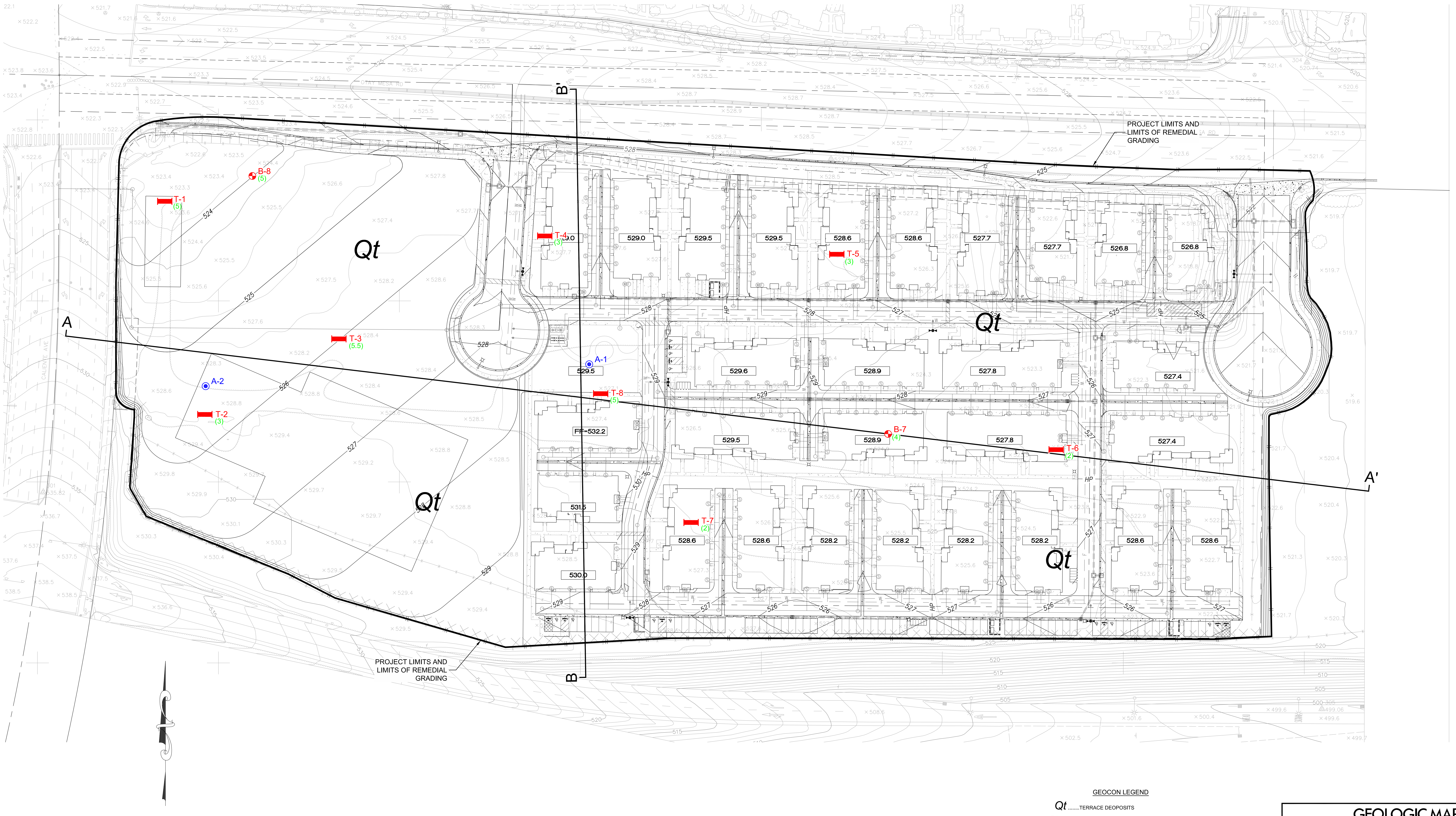
GEOCON INCORPORATED

RODNEY C. MIKESELL
No.2533

Rodney C. Mikesell
GE 2533

RCM:dmc

(e-mail) Addressee
(3/del) Civil Sense, Inc.
Attention: Ms. Maykia Vang



GEOCON LEGEND

Qt ....TERRACE DEOPOSITS

T-8 ....APPROX. LOCATION OF TRENCH

A-2 ◉ ....APPROX. LOCATION OF INFILTRATION TEST

B-8 ....APPROX. LOCATON OF PREVIOUS BORING (Geocon)

(5.5) ....APPROX. THICKNESS OF SURFICIAL SOIL

B B' ....APPROX. LOCATION OF GEOLOGIC CROSS SECTION

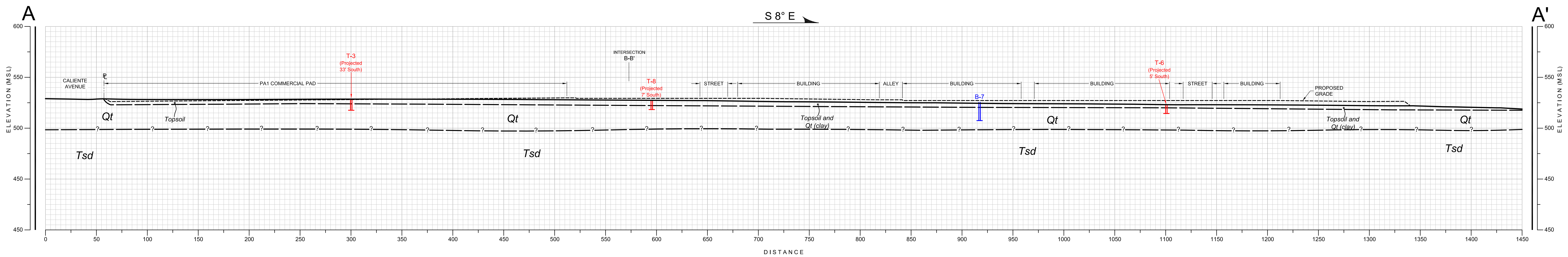
GEOLOGIC MAP

OCEANVIEW HILLS - PA 61
SAN DIEGO, CALIFORNIA

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

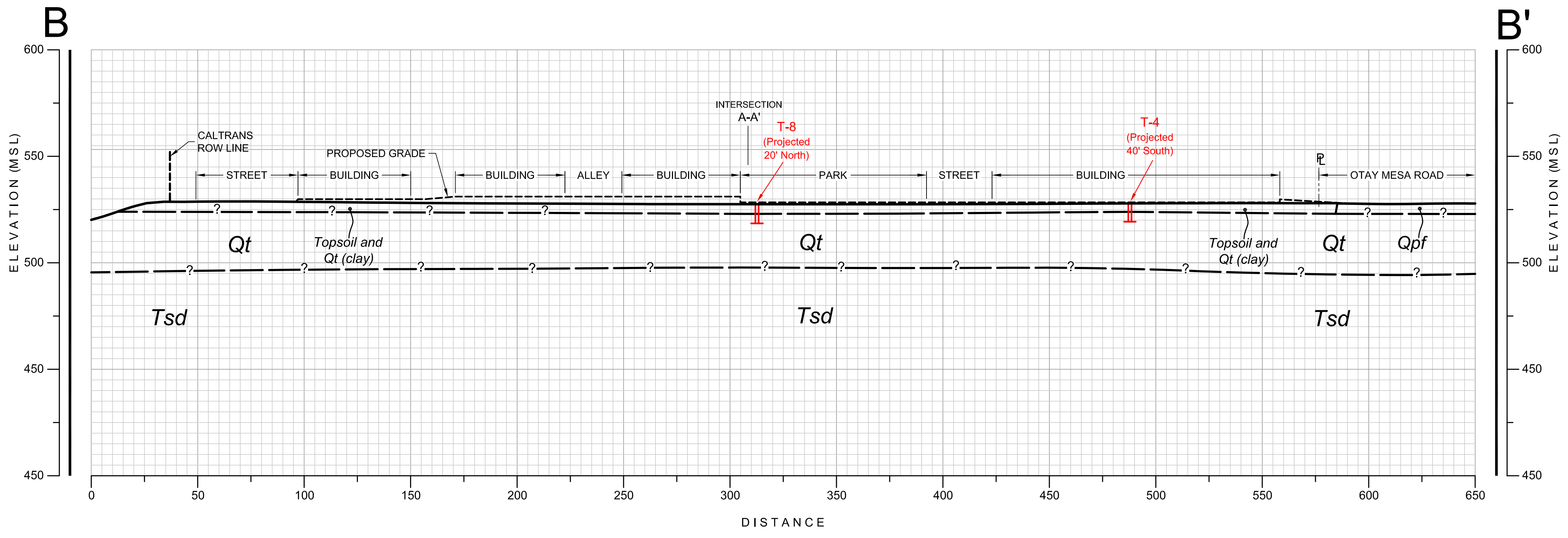
SCALE 1" = 50'
DATE 07 - 11 - 2018
PROJECT NO. 07955 - 42 - 02
FIGURE 1
SHEET 1 OF 1

Plotted:07/11/2018 12:05PM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\07955-42-02 California Terraces\SHEETS\07955-42-02 Geo Map Update.dwg



GEOLOGIC CROSS-SECTION A-A'

SCALE: 1" = 50' (Vert. = Horiz.)



GEOLOGIC CROSS-SECTION A-A'

SCALE: 1" = 50' (Vert. = Horiz.)

GEOCON LEGEND

Qpf ....PREVIOUSLY PLACED FILL

Qt ....TERRACE DEPOSITS

Tsd ....SAN DIEGO FORMATION

T-9 ....APPROX. LOCATION OF TRENCH

B-1 ....APPROX. LOCATON OF PREVIOUS BORING (Geocon)

~?~ ....APPROX. LOCATION OF GEOLOGIC CONTACT
(Queried Where Uncertain)

GEOLOGIC CROSS SECTION

OCEANVIEW HILLS - PA 61
SAN DIEGO, CALIFORNIA

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

SCALE 1" = 50'	DATE 07 - 11 - 2018
PROJECT NO. 07955 - 42 - 02	FIGURE 2
SHEET 1 OF 1	

Plotted:07/11/2018 11:52AM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\07955-42-02 California Terraces\SHEETS\07955-42-02 XSections Update.dwg

UPDATE
GEOTECHNICAL INVESTIGATION

OCEANVIEW HILLS – PA 61
SAN DIEGO, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

PARDEE HOMES
SAN DIEGO, CALIFORNIA

MARCH 15, 2018
PROJECT NO. 07955-42-02

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. 07955-42-02
March 15, 2018

Pardee Homes
13400 Sabre Springs Parkway, Suite 200
San Diego, California 92128

Attention: Mr. Allen Kashani

Subject: UPDATE GEOTECHNICAL INVESTIGATION
OCEANVIEW HILLS – PA 61
SAN DIEGO, CALIFORNIA

Dear Mr. Kashani:

In accordance with your request, we herein submit the results of our update geotechnical investigation for the subject project. We performed our investigation to evaluate the underlying soil and geologic conditions; potential geologic hazards; and to assist in the design of the proposed development. The accompanying report presents the results of our study with conclusions and recommendations pertaining to the geotechnical aspects of the proposed project. The site is suitable for the proposed development provided the recommendations of this report are incorporated into the design and construction of the planned project.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Noel G. Borja
Senior Staff Engineer

Rodney C. Mikesell
GE 2533

Ali Sadr
CEG 1778

RODNEY C. MIKESELL
No.2533

ALI SADR
No. 1778

NGB:RCM:AS:dmc

(e-mail) Addressee
(3/del) Civil Sense, Inc.
Attention: Ms. Maykia Vang

TABLE OF CONTENTS

TABLE OF CONTENTS (Concluded)

UPDATE GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical investigation for the proposed construction of several multi-family residential structures, a commercial area, private and public streets, and associated utilities on a vacant parcel of land located southeast of the intersection of Otay Mesa Road and Caliente Avenue in the Otay Mesa area of San Diego, California (see Vicinity Map, Figure 1). The purpose of this geotechnical investigation is to evaluate the surface and subsurface soil conditions, general site geology, and to identify geotechnical constraints that may impact the planned development.

To aid in the preparing of this report, we reviewed the following plans and geotechnical report:

1. *Site Plan, Ocean View Hills (PA-61), San Diego, California*, prepared by Civil Sense, undated.
2. *Conceptual Site Plan, Ocean View Hills (PA-61), San Diego, California*, prepared by Placeworks, dated January 5, 2017.
3. *Update Geotechnical Report, South Otay Mesa Corporate Center, California Terraces Planning Area 61, San Diego, California*, prepared by Geocon Incorporated, dated February 29, 2008 (Project No. 07955-42-01).

The field investigation consisted of excavating 7, exploratory trenches to evaluate the underlying geologic conditions within the area of planned development and performing 2, field-saturated hydraulic conductivity tests. Geocon Incorporated previously performed 2, small-diameter borings on May 14, 1984, which was included in the geotechnical investigation report listed as Reference 3. The locations of the exploratory trenches, previous borings, and hydraulic conductivity tests are shown on the Geologic Map, Figure 2. Civil Sense provided an AutoCAD file of the preliminary grading plan which was used as the base map to generate Figure 2. Logs of the exploratory trenches and borings and a detailed discussion of the field investigation are presented in Appendix A.

We performed laboratory tests on selected soil samples obtained during the field investigation to evaluate pertinent physical properties for engineering analyses and to assist in providing recommendations for site grading, foundation design criteria, and pavement design. Details of the laboratory testing and a summary of test results are presented in Appendix B.

The conclusions and recommendations presented herein are based on analyses of the data obtained from the field investigation, laboratory tests, and our experience with similar soil and geologic conditions.

2. SITE AND PROJECT DESCRIPTION

Planning Area 61 consists of a 13.7-acre, vacant lot, located southeast of the intersection of Caliente Avenue and Old Otay Mesa Road in San Diego, California. The property is currently covered with weeds and brush. The property is generally flat with site elevations ranging from 530 Mean Sea Elevation (MSL) near the southwest corner to 518 MSL in a desilting basin that was constructed previously at the northeast corner of the site.

We understand the site will be developed to accommodate 29, multi-family structures with associated utilities, streets and alleys, concrete hardscape walkways, a small park, and landscaping. A retaining wall with a maximum height of 7 feet is planned at the southeast corner of the site. The western 4.6 acres of the site is currently planned for commercial use.

Based on the grading plan, grading across the residential portion will result in fills of approximately 1 foot to 8 feet. The deeper fill will be in a detention basin at the northeast corner of the site. Across the commercial area, cuts of approximately 1 to 4 feet will be made. Minor fills of less than 1 foot from existing grade will be performed at the northwest corner.

The above locations, site descriptions, and proposed development are based on a site reconnaissance, review of published geologic literature, our field investigations, and discussions with you. If development plans differ from those described herein, we should be contacted to review the plans and provide revisions to this report as needed.

3. SOIL AND GEOLOGIC CONDITIONS

The site is underlain by two surficial materials, undocumented fill and topsoil and one geologic unit, Very Old Terrace Deposits. A description of these units is presented herein and also shown on the exploratory excavation logs in Appendix A. Geologic units are shown on Figure 2 and geologic cross sections are presented on Figure 3.

3.1 Undocumented Fill (Unmapped)

Scattered pockets of undocumented fills are present on the site. Undocumented fills were placed as stockpiles and berms around the perimeter of the site and also as ramps and jumps for off-road vehicles. The thickness of undocumented fills is unknown; however, we estimate that undocumented fill thickness will range between 1 to 5 feet. The lateral extent of the undocumented fill is also unknown and was not mapped due to heavy vegetation. Undocumented fill is will require removal and replacement as compacted fill.

3.2 Topsoil (Unmapped)

Topsoil blankets the entire site and are generally composed of soft to stiff, sandy to silty clay. The topsoil thickness likely varies from approximately 2 to 5 feet. Topsoils are compressible in their present condition and remedial grading will be required. Based on laboratory testing, the topsoil is highly expansive. Toposils are unsuitable for support of the project and should be removed and replaced as compacted fill. Expansive topsoil should be placed at a depth of at least 3 feet below finish pad subgrade.

3.3 Very Old Terrace Deposits (Qt)

Very Old Terrace Deposits, also known as Very Old Paralic Deposits, covers the site bellow the topsoil and undocumented fill as indicated in our exploratory borings and trenches. The Very Old Terrace Deposits in this area are generally comprised of highly expansive clay underlain by dense to very dense, silty to clayey sand with varying gravel and cobble content. The clayey portion covers almost the entire area of proposed development. Previous borings and recent exploratory trenches indicate that the clayey portion of terrace deposits transitions into topsoil with an approximate thickness of up to 5 feet. The highly expansive Terrace Deposits should be removed and replaced as compacted fill at a depth of at least 3 feet below planned finish grade.

Dense to very dense, sandy and cobbly layers underlie the clay. This portion of the terrace deposit is generally low expansive and possesses high shear strength characteristics. Based on the general geology of the area, the Very Old Paralic Deposits thickness is approximately 20 to 30 feet. These deposits unconformably rests on the Pliocene age San Diego Formation (Tsd). The sandy portion of the Terrace Deposits is suitable for support of the planned improvements.

4. GROUNDWATER

We did not encounter groundwater in our field investigation. Based on the proposed improvements, we do not expect groundwater to have an adverse impact on the project; however, it is not uncommon for groundwater or seepage conditions to develop where none previously existed. Groundwater elevations are dependent on seasonal precipitation, irrigation, land use, among other factors, and vary as a result. Proper surface drainage will be important to future performance of the project.

5. GEOLOGIC HAZARDS

5.1 Geologic Hazard Category

Based on our review of geologic literature and experience with the soil and geologic conditions in the general area, it is our opinion that known active, potentially active, or inactive faults are not located at the site. The site is not within a State of California Earthquake Fault Zone.

The *City of San Diego Seismic Safety Study Geologic Hazards and Faults, Sheet 7,* defines the site with a Hazard Category 53. Category 53 is defined as *Level or sloping terrain, unfavorable geologic structure, low to moderate risk.*

5.2 Faulting and Seismicity

According to the computer program *EZ-FRISK* (Version 7.65), six known active faults are located within a search radius of 50 miles from the property. The nearest known active fault is the Newport-Inglewood/Rose Canyon Fault Zone, located approximately 8 miles west of the site. The Newport-Inglewood/Rose Canyon Fault Zone is the dominant source of potential ground motion. Earthquakes that might occur on the Newport-Inglewood/Rose Canyon Fault Zone or other faults within the southern California and northern Baja California area are potential generators of significant ground motion at the site. The estimated deterministic maximum earthquake magnitude and peak ground acceleration for the Newport-Inglewood/Rose Canyon Fault Zone are 7.5 and 0.32g, respectively. Table 5.2.1 lists the estimated maximum earthquake magnitude and peak ground acceleration for the most dominant faults in relationship to the site location. We calculated peak ground acceleration (PGA) using Boore and Atkinson (2008), Campbell and Bozorgnia (2008), and Chiou and Youngs (2007) acceleration-attenuation relationships.

TABLE 5.2.1
DETERMINISTIC SPECTRA SITE PARAMETERS

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Peak Ground Acceleration		
			Boore-Atkinson NGA USGS 2008 (g)	Campbell-Bozorgnia NGA USGS 2008 (g)	Chiou-Youngs (2007) NGA USGS 2008 (g)
Newport-Inglewood/Rose Canyon	8	7.5	0.29	0.24	0.32
Rose Canyon	8	6.9	0.25	0.23	0.26
Coronado Bank	15	7.4	0.22	0.16	0.20
Palos Verdes Connected	15	7.7	0.24	0.17	0.22
Elsinore	44	7.85	0.13	0.09	0.11
Earthquake Valley	48	6.8	0.07	0.05	0.04

We used the computer program *EZ-FRISK* to perform a probabilistic seismic hazard analysis. The computer program *EZ-FRISK* operates under the assumption that the occurrence rate of earthquakes on each mapped Quaternary fault is proportional to the fault slip rate. The program accounts for earthquake magnitude as a function of fault rupture length. Site acceleration estimates are made using the earthquake magnitude and distance from the site to the rupture zone. The program also accounts for uncertainty in each of following: (1) earthquake magnitude, (2) rupture length for a given magnitude, (3) location of the rupture zone, (4) maximum possible magnitude of a given earthquake, and (5) acceleration at the site from a given earthquake along each fault. By calculating the expected accelerations from considered earthquake sources, the program calculates the total average annual expected number of occurrences of site acceleration greater than a specified value. We utilized acceleration-attenuation relationships suggested by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), and Chiou and Youngs (2007) in the analysis. Table 5.2.2 presents the site-specific probabilistic seismic hazard parameters including acceleration-attenuation relationships and the probability of exceedence.

TABLE 5.2.2
PROBABILISTIC SEISMIC HAZARD PARAMETERS

Probability of Exceedence	Peak Ground Acceleration		
	Boore-Atkinson NGA USGS 2008 (g)	Campbell-Bozorgnia NGA USGS 2008 (g)	Chiou-Youngs (2007) NGA USGS 2008 (g)
2% in a 50 Year Period	0.44	0.37	0.43
5% in a 50 Year Period	0.32	0.27	0.31
10% in a 50 Year Period	0.24	0.21	0.22

While listing peak accelerations is useful for comparison of potential effects of fault activity in a region, other considerations are important in seismic design, including frequency and duration of motion and soil conditions underlying the site. Seismic design of the structures should be evaluated in accordance with the California Building Code (CBC).

5.3 Liquefaction Potential

The risk associated with liquefaction hazard is low due to the lack of shallow groundwater and dense nature of the underlying sediments.

5.4 Subsidence

Based on the subsurface soil conditions encountered during our field investigation, the risk associated with ground subsidence is low.

5.5 Flooding

The site is not located within a designated drainage or floodplain area (FEMA, 2012). The risk associated with flooding hazard is low.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

6.1.1 From a geotechnical engineering standpoint, it is our opinion that the site is suitable for the proposed development provided the recommendations presented herein are implemented in design and construction of the project.

6.1.2 The site is underlain by scattered pockets of undocumented fill and topsoil. Based on the exploratory borings and trenches, the surficial soils are underlain by the Very Old Terrace Deposits. The near surface materials are considered highly expansive (EI greater than 90). Remedial grading will be required for the onsite topsoil and clayey portions of the Terrace Deposits. The sandy portions of the old terrace deposits are suitable for the support the proposed loads or additional engineered fill.

6.1.3 We did not encounter groundwater during the field investigation. We expect excavations for the proposed improvements will be relatively shallow; therefore, we do not expect groundwater to have an adverse impact on the project as currently proposed.

6.1.4 The site is located approximately 8 miles west of the Newport-Inglewood/Rose Canyon fault zone. Based on our review of available literature, active, potentially active, or presumed inactive faults do not cross the site.

6.1.5 With the exception of possible strong seismic shaking, we did not observe or know of significant geologic hazards that would adversely affect the proposed development.

6.1.6 The risks associated with soil liquefaction and flooding hazards are low.

6.1.7 The proposed residential structures can be supported on a shallow foundation system founded entirely on properly compacted fill soil.

6.1.8 Geocon Incorporated should review the foundation and improvement plans prior to finalizing. If plans differ significantly from those described herein, Geocon should be contacted to check if additional analyses will be required.

6.1.9 Subdrains are not required for this project.

6.2 Excavation and Soil Characteristics

6.2.1 Excavation of the onsite soils should be possible with moderate to heavy effort using conventional, heavy-duty equipment during grading and trenching operations.

6.2.2 The soil encountered in our field investigation is considered to be both “non-expansive” (Expansion Index [EI] of 20 or less) and “expansive” (EI greater than 20) as defined by 2016 California Building Code (CBC) Section 1803.5.3. Table 6.2 presents soil classifications based on the expansion index.

TABLE 6.2
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	Expansion Classification	2016 CBC Expansion Classification
0 – 20	Very Low	Non-Expansive
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

6.2.3 We performed laboratory tests on samples of the site materials to evaluate the percentage of water-soluble sulfate content. Appendix B presents the results from the laboratory water-soluble sulfate content tests. The test results indicate that on-site materials at the locations tested possess “Not Applicable” and “S0” sulfate exposure to concrete structures, as defined by 2016 CBC Section 1904 and ACI 318-14 Chapter 19. The presence of water-soluble sulfates is not a visually discernible characteristic. Therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e. addition of fertilizers and other soil nutrients) may affect the concentration.

6.2.4 Geocon Incorporated does not practice in the field of corrosion engineering. Therefore, if improvements that could be susceptible to corrosion are planned, further evaluation by a corrosion engineer may be needed.

6.3 Grading

6.3.1 All grading should be performed in accordance with the *Recommended Grading Specifications* contained in Appendix D. Where the recommendations of Appendix D conflict with this section of the report, the recommendations of this section take precedence.

6.3.2 Prior to commencing grading, a preconstruction conference should be held at the site with the owner or developer, grading contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling and/or the grading plans can be discussed at that time.

6.3.3 Grading should be performed in conjunction with the observation and compaction testing services of Geocon Incorporated. Fill soil should be observed on a full-time basis during placement and tested to check in-place dry density and moisture content.

6.3.4 Site preparation should begin with removal of all deleterious material and vegetation. The depth of removal should be such that material exposed in cut areas or soil to be used for fill is relatively free of organic matter. Deleterious material generated during stripping and/or site demolition should be exported from the site.

6.3.5 Abandoned utilities should be removed and the subsequent depressions and/or trenches backfilled with properly compacted fill as part of the remedial grading.

6.3.6 Soft soils at the base of the existing detention basin should be removed to expose dense Terrace Deposits.

6.3.7 The undocumented fill, topsoil, and the clay portion of the Very Old Terrace Deposits are considered unsuitable to receive fill and settlement sensitive structures and should be completely removed to expose the underlying competent sandy Terrace Deposits. The depth of remedial grading is estimated to be 3 to 6 feet below existing grades. The estimated depth of the surficial soils that will require remedial grading is shown on the Geologic Map, Figure 2. The actual depth should be determined in the field during grading.

6.3.8 Selective grading should be performed so that expansive soils (EI greater than 90) are placed at least 3 feet below finish subgrade elevation. Alternatively, expansive soils can be mixed with low expansive, granular soil, and used as fill material in the upper 3 feet of pad grade provided the mixed soil has an expansion index (EI) less than 90. The contractor should expect to perform significant mixing to enable a uniform compacted fill that meets the required expansion index. As pad grades for the commercial portion are not yet known, consideration should be given to keeping expansive soils to a depth of at least 5 feet below planned sheet grade elevations in the commercial area to account for future pad regrading.

6.3.9 Because of the limited fill depths, mining of the underlying sandy cobble terrace will likely be needed to generate sufficient soil for either capping building pads or generating soil for mixing with the on-site clays.

6.3.10 Prior to placing fill, the upper 12 inches at the base of removals should be scarified, moisture conditioned as necessary and recompacted. Soils derived from onsite excavations are suitable for reuse as fill if free from vegetation, debris and other deleterious material. Fill lifts should be no thicker than will allow for adequate bonding and compaction. Fill, backfill, and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of maximum dry density at or slightly above optimum moisture content, as determined in accordance with ASTM D 1557. Grading should be performed so that the upper 3 feet of soil below finish pad subgrade consist of soil with a *low* to *medium* expansive potential (EI of 90 or less).

6.3.11. Oversize rock greater than 12 inches should be placed at least 5 feet below finish pad grade or 3 feet below the deepest utility, whichever is greater. Rock greater than 6 inches should not be placed in the upper 3 feet below building pad grade. Oversize rock that cannot be placed as recommended should be exported off site.

6.3.12 Imported fill should consist of granular soil with a *low* expansion potential (EI of 50 or less) that is free of deleterious material or stones larger than 3 inches and should be compacted as recommended above. Geocon Incorporated should be notified of the import soil source and should perform laboratory testing prior to its arrival at the site to evaluate its suitability as fill material.

6.4 Slopes

6.4.1 A 2:1 (horizontal:vertical) or flatter fill slope with a maximum height of approximately 7 feet is planned along the eastern boundary of Street B. The outer 15 feet (or a distance equal to the height of the slope, whichever is less) should consist of properly compacted granular soil fill to reduce the potential for surface sloughing. All fill slopes should be track-walked upon completion such that the fill soils are uniformly compacted to at least 90 percent relative compaction to the face of the finish slope.

6.4.2 Fill slopes constructed with granular materials as recommended above will have a factor of safety of at least 1.5 under static conditions with respect to both deep-seated and surficial instability for the slope heights proposed.

6.4.3 All slopes should be planted, drained, and maintained to reduce erosion.

6.5 Seismic Design Criteria

6.5.1 We used USGS (2017) to determine seismic design criteria. Table 6.5.1 summarizes site-specific design criteria obtained from the 2016 California Building Code (CBC; Based on the

2015 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The short spectral response uses a period of 0.2 second. The building structure and improvements should be designed using a Site Class D. We evaluated the Site Class in accordance with Section 1613.3.2 of the 2016 CBC and Table 20.3-1 of ASCE 7-10 based on our experience with the site subsurface soils and exploratory boring information. The values presented in Table 6.5.1 are for the risk-targeted maximum considered earthquake (MCE_R).

TABLE 6.5.1
2016 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2016 CBC Reference
Site Class	D	Table 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	0.865g	Figure 1613..3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.328g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.154	Table 1613.3.3(1)
Site Coefficient, F_V	1.743	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	0.999g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	0.572g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	0.666g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.382g	Section 1613.3.4 (Eqn 16-40)

6.5.2 Table 6.5.2 presents additional seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10 for the mapped maximum considered geometric mean (MCE_G).

TABLE 6.5.2
2016 CBC SITE ACCELERATION DESIGN PARAMETERS

Parameter	Value	ASCE 7-10 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.348g	Figure 22-7
Site Coefficient, F_{PGA}	1.152	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.401g	Section 11.8.3 (Eqn 11.8-1)

6.5.3 Conformance to the criteria in Tables 6.5.1 and 6.5.2 for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and not to avoid all damage, since such design may be economically prohibitive.

6.6 Foundation and Concrete Slabs-On-Grade Recommendations

6.6.1 The foundation recommendations herein are for proposed one- to three-story residential structures. The foundation recommendations have been separated into three categories based on either the maximum and differential fill thickness or Expansion Index. The foundation category criteria are presented in Table 6.6.1.

TABLE 6.6.1
FOUNDATION CATEGORY CRITERIA

Foundation Category	Maximum Fill Thickness, T (feet)	Differential Fill Thickness, D (feet)	Expansion Index (EI)
I	T<20	--	EI≤50
II	20≤T<50	10≤D<20	50<EI≤90
III	T≥50	D≥20	90<EI≤130

6.6.2 We will provide final foundation categories for each building or lot after finish pad grades have been achieved and we perform laboratory testing of the subgrade soil.

6.6.3 Table 6.6.2 presents minimum foundation and interior concrete slab design criteria for conventional foundation systems.

TABLE 6.6.2
CONVENTIONAL FOUNDATION RECOMMENDATIONS BY CATEGORY

Foundation Category	Minimum Footing Embedment Depth (inches)	Continuous Footing Reinforcement	Interior Slab Reinforcement
I	12	Two No. 4 bars, one top and one bottom	6 x 6 - 10/10 welded wire mesh at slab mid-point
II	18	Four No. 4 bars, two top and two bottom	No. 3 bars at 24 inches on center, both directions
III	24	Four No. 5 bars, two top and two bottom	No. 3 bars at 18 inches on center, both directions

6.6.4 The embedment depths presented in Table 6.6.2 should be measured from the lowest adjacent pad grade for both interior and exterior footings. The conventional foundations should have a minimum width of 12 inches and 24 inches for continuous and isolated footings, respectively. A typical footing dimension detail is provided on Figure 4.

6.6.5 The concrete slab-on-grade should be a minimum of 4 inches thick for Foundation Categories I and II and 5 inches thick for Foundation Category III.

6.6.6 Slabs that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder. The vapor retarder design should be consistent with the guidelines presented in the American Concrete Institute's (ACI) *Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials* (ACI 302.2R-06). The vapor retarder used should be specified by the project architect or developer based on the type of floor covering that will be installed and if the structure will possess a humidity-controlled environment.

6.6.7 The bedding sand thickness should be determined by the project foundation engineer, architect, and/or developer. However, we should be contacted to provide recommendations if the bedding sand is thicker than 6 inches. It is common to see 3 inches and 4 inches of sand below the concrete slab-on-grade for 5-inch and 4-inch thick slabs, respectively, in the southern California area.

6.6.8 The foundation design engineer should provide appropriate concrete mix design criteria and curing measures to assure proper curing of the slab by reducing the potential for rapid moisture loss and subsequent cracking and/or slab curl. We suggest that the foundation design engineer present the concrete mix design and proper curing methods on the foundation plans. It is critical that the foundation contractor understands and follows the recommendations presented on the foundation plans.

6.6.9 As an alternative to the conventional foundation recommendations, consideration should be given to the use of post-tensioned concrete slab and foundation systems for the support of the proposed structures. The post-tensioned systems should be designed by a structural engineer experienced in post-tensioned slab design and design criteria of the Post-Tensioning Institute (PTI) DC 10.5-12 *Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive Soils* or *WRI/CRSI Design of Slab-on-Ground Foundations*, as required by the 2016 California Building Code (CBC Section 1808.6.2). Although this procedure was developed for expansive soil conditions, it can also be used to reduce the potential for foundation distress due to differential fill settlement. The post-tensioned design should incorporate the geotechnical parameters presented in Table 6.6.3 for the particular Foundation Category designated. The parameters presented in Table 6.6.3 are based on the guidelines presented in the PTI DC 10.5 design manual.

TABLE 6.6.3
POST-TENSIONED FOUNDATION SYSTEM DESIGN PARAMETERS

Post-Tensioning Institute (PTI), Third Edition Design Parameters	**Foundation Category**		
	I	**II**	**III**
Thornthwaite Index	-20	-20	-20
Equilibrium Suction	3.9	3.9	3.9
Edge Lift Moisture Variation Distance, e_M (feet)	5.3	5.1	4.9
Edge Lift, y_M (inches)	0.61	1.10	1.58
Center Lift Moisture Variation Distance, e_M (feet)	9.0	9.0	9.0
Center Lift, y_M (inches)	0.30	0.47	0.66

6.6.10 The foundations for the post-tensioned slabs should be embedded in accordance with the recommendations of the structural engineer. If a post-tensioned mat foundation system is planned, the slab should possess a thickened edge with a minimum width of 12 inches and extend below the clean sand or crushed rock layer.

6.6.11 If the structural engineer proposes a post-tensioned foundation design method other than PTI DC 10.5:

- The deflection criteria presented in Table 6.6.3 are still applicable.
- Interior stiffener beams should be used for Foundation Categories II and III.
- The width of the perimeter foundations should be at least 12 inches.
- The perimeter footing embedment depths should be at least 12 inches, 18 inches and 24 inches for foundation categories I, II, and III, respectively. The embedment depths should be measured from the lowest adjacent pad grade.

6.6.12 Our experience indicates post-tensioned slabs may be susceptible to excessive edge lift, regardless of the underlying soil conditions. Placing reinforcing steel at the bottom of the perimeter footings and the interior stiffener beams may mitigate this potential. The structural engineer should design the foundation system to reduce the potential of edge lift occurring for the proposed structures.

6.6.13 During the construction of the post-tension foundation system, the concrete should be placed monolithically. Under no circumstances should cold joints form between the footings/grade beams and the slab during the construction of the post-tension foundation system unless designed by the structural engineer.

6.6.14 Category I, II, or III foundations may be designed for an allowable soil bearing pressure of 2,000 pounds per square foot (psf) (dead plus live load). This bearing pressure may be increased by one-third for transient loads due to wind or seismic forces. The estimated maximum total and differential settlement for the planned structures due to foundation loads is 1 inch and ½ inch, respectively.

6.6.15 Isolated footings outside of the slab area, if present, should have the minimum embedment depth and width recommended for conventional foundations for a particular Foundation Category. The use of isolated footings, which are located beyond the perimeter of the building and support structural elements connected to the building, are not recommended for Category III. Where this condition cannot be avoided, the isolated footings should be connected to the building foundation system with grade beams. In addition, consideration should be given to connecting patio slabs, which exceed 5 feet in width, to the building foundation to reduce the potential for future separation to occur.

6.6.16 Interior stiffening beams should be incorporated into the design of the foundation system in accordance with the PTI design procedures.

6.6.17 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisture conditioned, as necessary, to maintain a moist condition as would be expected in any such concrete placement.

6.6.18 Where buildings or other improvements are planned near the top of a slope 3:1 (horizontal:vertical) or steeper, special foundation and/or design considerations are recommended due to the tendency for lateral soil movement to occur.

- For fill slopes less than 20 feet high or cut slopes regardless of height, footings should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope.

- When located next to a descending 3:1 (horizontal:vertical) fill slope or steeper, the foundations should be extended to a depth where the minimum horizontal distance is equal to H/3 (where H equals the vertical distance from the top of the fill slope to the base of the fill soil) with a minimum of 7 feet but need not exceed 40 feet. The horizontal distance is measured from the outer, deepest edge of the footing to the face of the slope. A post-tensioned slab and foundation system or mat foundation system can be used to reduce the potential for distress in the structures associated with strain softening and lateral fill extension. Specific design parameters or recommendations for either of these alternatives can be provided once the building location and fill slope geometry have been determined.

- If swimming pools are planned, Geocon Incorporated should be contacted for a review of specific site conditions.

- Swimming pools located within 7 feet of the top of cut or fill slopes are not recommended. Where such a condition cannot be avoided, the portion of the swimming pool wall within 7 feet of the slope face be designed assuming that the adjacent soil provides no lateral support. This recommendation applies to fill slopes up to 30 feet in height, and cut slopes regardless of height. For swimming pools located near the top of fill slopes greater than 30 feet in height, additional recommendations may be required and Geocon Incorporated should be contacted for a review of specific site conditions.

- Although other improvements, which are relatively rigid or brittle, such as concrete flatwork or masonry walls, may experience some distress if located near the top of a slope, it is generally not economical to mitigate this potential. It may be possible, however, to incorporate design measures which would permit some lateral soil movement without causing extensive distress. Geocon Incorporated should be consulted for specific recommendations.

6.6.19 The recommendations of this report are intended to reduce the potential for cracking of slabs and foundations due to expansive soil (if present), differential settlement of fill soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

6.6.20 Concrete slabs should be provided with adequate crack-control joints, construction joints and/or expansion joints to reduce unsightly shrinkage cracking. The design of joints should consider criteria of the American Concrete Institute (ACI) when establishing crack-control spacing. Additional steel reinforcing, concrete admixtures and/or closer crack control joint spacing should be considered where concrete-exposed finished floors are planned.

6.6.21 Geocon Incorporated should be consulted to provide additional design parameters as required by the structural engineer.

6.7 Retaining Walls

6.7.1 Retaining walls that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall) and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid density of 35 pounds per cubic foot (pcf). Where the backfill will be inclined at 2:1 (horizontal to vertical), an active soil pressure of 50 pcf is recommended. Soil with an expansion index (EI) of greater than 50 should not be used as backfill material behind retaining walls.

6.7.2 Where walls are restrained from movement at the top, an additional uniform pressure of 7H psf should be added to the active soil pressure for walls 10 feet high or less. The active pressure should be increased to 14H for the portion of the walls higher than 12 feet. For retaining walls subject to vehicular loads within a horizontal distance equal to two-thirds the wall height, a surcharge equivalent to 2 feet of fill soil should be added. Loads from the adjacent structures should be incorporated into the design of the retaining walls, if applicable.

6.7.3 The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted granular (EI of 50 or less) free-draining backfill material with no hydrostatic forces or imposed surcharge load. Figure 5 presents a typical retaining wall drain detail. If conditions different than those described are expected, or if specific drainage details are desired, Geocon Incorporated should be contacted for additional recommendations.

6.7.4 The structural engineer should determine the seismic design category for the project in accordance with Section 1613 of the 2016 CBC. If the project possesses a seismic design category of D, E, or F, retaining walls that support more than 6 feet of backfill should be designed with seismic lateral pressure in accordance with Section 18.3.5.12 of the 2016 CBC. The seismic load is dependent on the retained height where H is the height of the wall, in feet, and the calculated loads result in pounds per square foot (psf) exerted at the base of the wall and zero at the top of the wall. A seismic load of 20H should be used for design. We used the peak ground acceleration adjusted for Site Class effects, PGA_M, of 0.401g calculated from ASCE 7-10 Section 11.8.3 and applied a pseudo-static coefficient of 0.33.

6.7.5 The recommendations presented herein are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 15 feet. In the event that walls higher than 15 feet or other types of walls (such as crib-type walls) are planned, Geocon Incorporated should be consulted for additional recommendations.

6.7.6 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.

6.8 Lateral Loading

6.8.1 For resistance to lateral loads, an allowable passive earth pressure equivalent to a fluid density of 300 pcf is recommended for footings or shear keys poured neat against properly compacted granular fill soils or undisturbed formation materials. The allowable passive pressure assumes a horizontal surface extending away from the base of the wall at least 5 feet or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material not protected by floor slabs or pavement should not be included in the design for lateral resistance. Where walls are planned adjacent to and/or on descending slopes, a passive pressure of 150 pcf should be used in design.

6.8.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between soil and concrete of 0.4 should be used for design.

6.9 Storm Water Management

6.9.1 If storm water management devices are not properly designed and constructed, there is a risk for distress to improvements and properties located hydrologically down gradient or adjacent to these devices. Factors such as the amount of water being detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeological study at the site. If infiltration of storm water runoff into the subsurface occurs, downstream improvements may be subjected to seeps, springs, slope instability, raised groundwater, movement of foundations and slabs, or other undesirable impacts as a result of water infiltration.

6.9.2 We performed an infiltration study on the property. A summary of our study and storm water management recommendations are provided in Appendix C. Based on the results of our study, infiltration is considered infeasible due to low infiltration rates.

6.10 Site Drainage and Moisture Protection

6.10.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2016 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed or existing structures.

6.10.2 In the case of basement walls or building walls retaining landscaping areas, a waterproofing system should be used on the wall and joints, and a Miradrain drainage panel (or similar) should be placed over the waterproofing. The project architect or civil engineer should provide detailed specifications on the plans for all waterproofing and drainage.

6.10.3 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

6.10.4 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes can be used. In addition, where landscaping is planned adjacent to the pavement, construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base material should be considered.

6.11 Grading and Foundation Plan Review

6.11.1 Geocon Incorporated should review the grading and foundation plans for the project prior to final design submittal to determine if additional analysis and/or recommendations are required.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.

3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. The findings of 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 the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

THE GEOGRAPHICAL INFORMATION MADE AVAILABLE FOR DISPLAY WAS PROVIDED BY GOOGLE EARTH, SUBJECT TO A LICENSING AGREEMENT. THE INFORMATION IS FOR ILLUSTRATIVE PURPOSES ONLY; IT IS NOT INTENDED FOR CLIENT'S USE OR RELIANCE AND SHALL NOT BE REPRODUCED BY CLIENT. CLIENT SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS GEOCON FROM ANY LIABILITY INCURRED AS A RESULT OF SUCH USE OR RELIANCE BY CLIENT.

N

NO SCALE

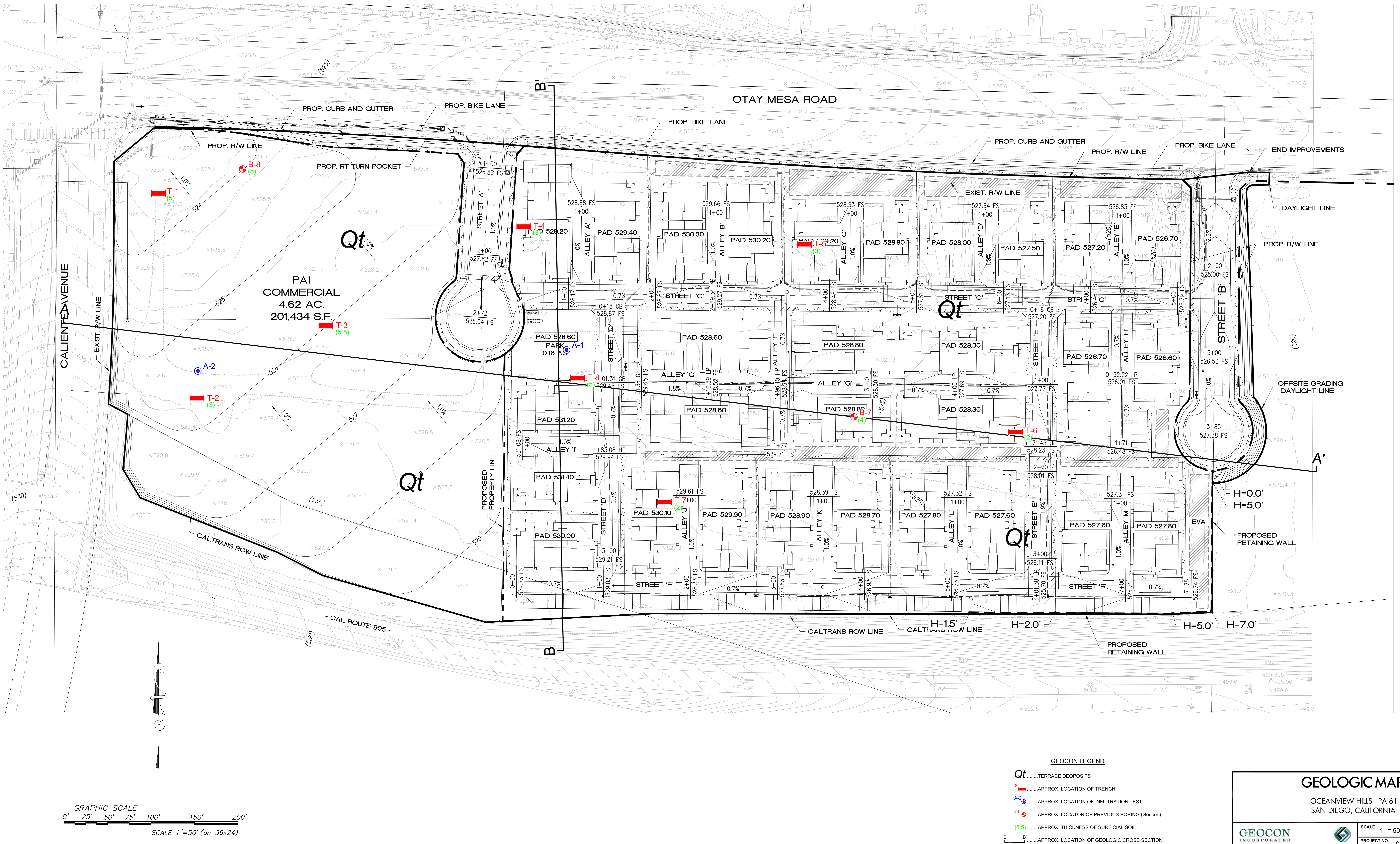
VICINITY MAP

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

OCEANVIEW HILLS - PA 61
SAN DIEGO, CALIFORNIA

NB / RA		DSK/GTYPD	DATE 03 - 15 - 2018	PROJECT NO. 07955 - 42 - 02	FIG. 1

Plotted:03/14/2018 4:01PM | By:JONATHAN WILKINS | File Location:Y:\PROJECTS\07955-42-02 California Terraces\DETAILS\07955-42-02 VicinityMap.dwg



GEOCON LEGEND

- Qt ....TERRACE DEOPOSITS
- T-8 ▬ ....APPROX. LOCATION OF TRENCH
- A-2 ◉ ....APPROX. LOCATION OF INFILTRATION TEST
- B-8 ⊕ ....APPROX. LOCATON OF PREVIOUS BORING (Geocon)
- (5.5) ....APPROX. THICKNESS OF SURFICIAL SOIL
- B B' ....APPROX. LOCATION OF GEOLOGIC CROSS SECTION

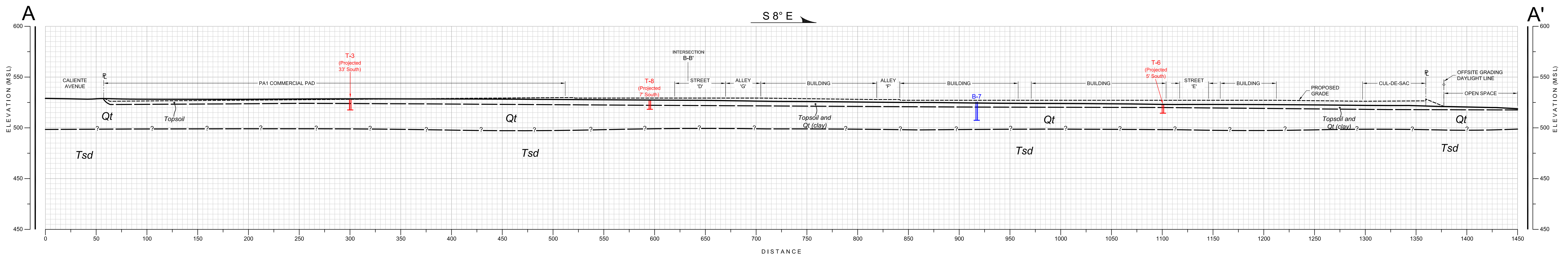
GEOLOGIC MAP

OCEANVIEW HILLS - PA 61
SAN DIEGO, CALIFORNIA

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

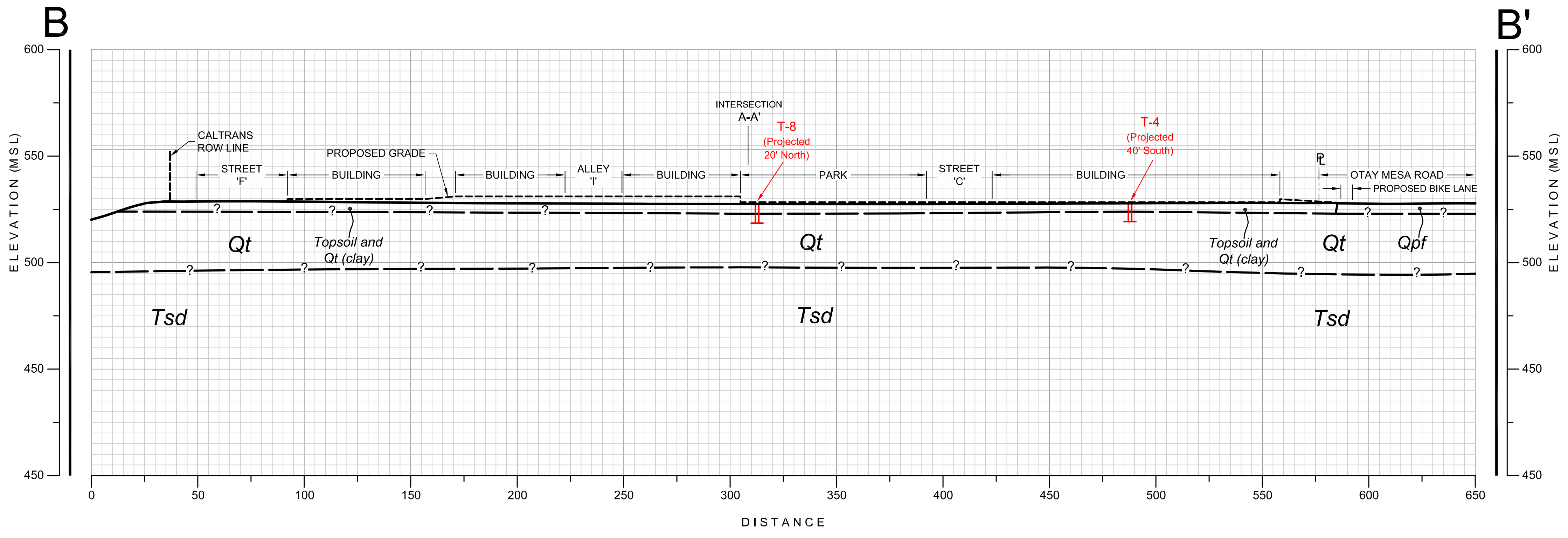
SCALE	1" = 50'	DATE	03 - 15 - 2018
PROJECT NO.	07955 - 42 - 02	FIGURE	2
SHEET	1 OF 1		

Plotted:03/15/2018 8:21AM \| By:RUBEN AGUILAR \| File Location:Y:\PROJECTS\07955-42-02 California Terraces\SHEETS\07955-42-02 Geo Map.dwg



GEOLOGIC CROSS-SECTION A-A'

SCALE: 1" = 50' (Vert. = Horiz.)



GEOLOGIC CROSS-SECTION A-A'

SCALE: 1" = 50' (Vert. = Horiz.)

GEOCON LEGEND

Qpf........PREVIOUSLY PLACED FILL

Qt........TERRACE DEPOSITS

Tsd........SAN DIEGO FORMATION

T-9 ‖ ....APPROX. LOCATION OF TRENCH

B-1 ‖ ....APPROX. LOCATON OF PREVIOUS BORING (Geocon)

~?~ ....APPROX. LOCATION OF GEOLOGIC CONTACT
(Queried Where Uncertain)

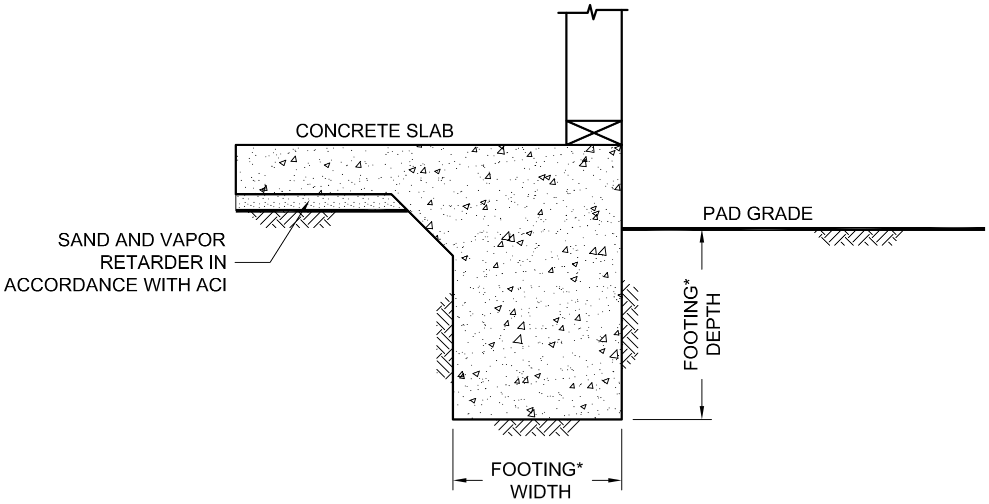
GEOLOGIC CROSS SECTION

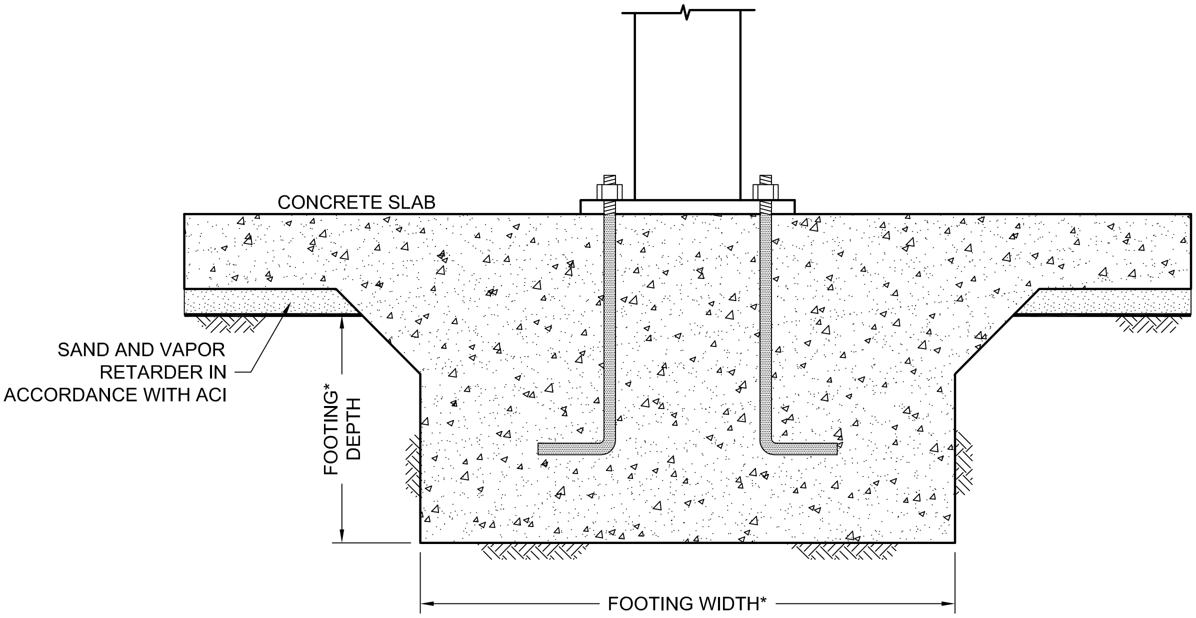
OCEANVIEW HILLS - PA 61
SAN DIEGO, CALIFORNIA

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

SCALE 1" = 50'	DATE 03 - 15 - 2018	
PROJECT NO. 07955 - 42 - 02		FIGURE 3
SHEET 1 OF 1		

Plotted:03/15/2018 8:23AM | By:RUBEN AGUILAR | File Location:Y:\PROJECTS\07955-42-02 California Terraces\SHEETS\07955-42-02 XSections.dwg





*....SEE REPORT FOR FOUNDATION WIDTH AND DEPTH RECOMMENDATION

NO SCALE

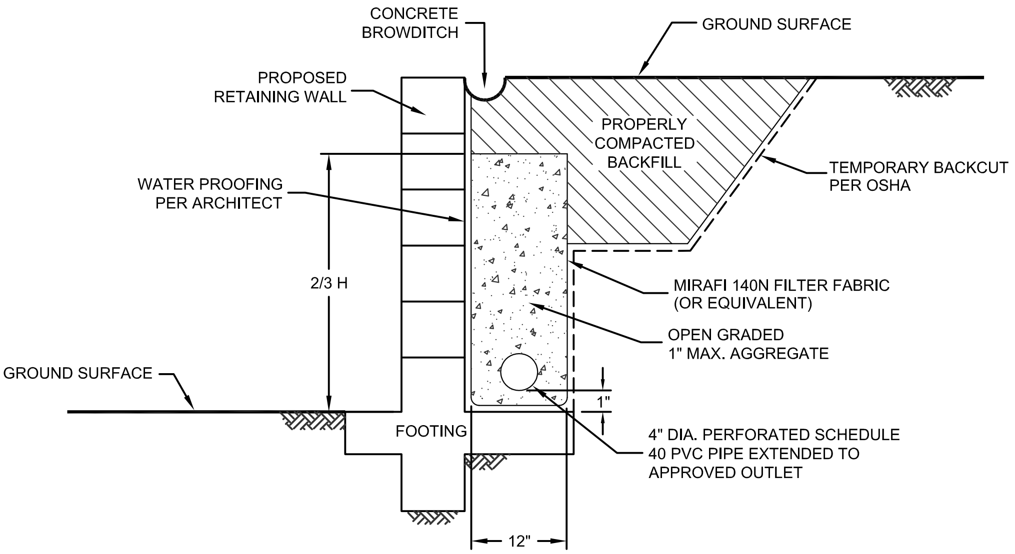
WALL / COLUMN FOOTING DIMENSION DETAIL

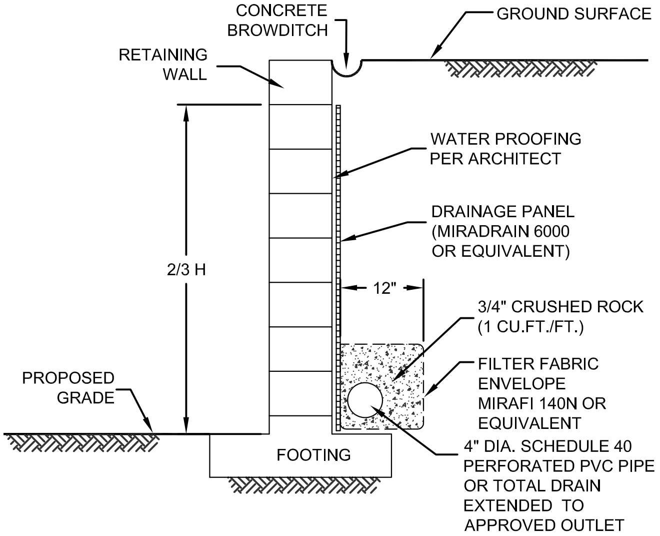
GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

OCEANVIEW HILLS - PA 61
SAN DIEGO, CALIFORNIA

NB / RA		DSK/GTYPD	DATE 03 - 15 - 2018	PROJECT NO. 07955 - 42 - 02	FIG. 4

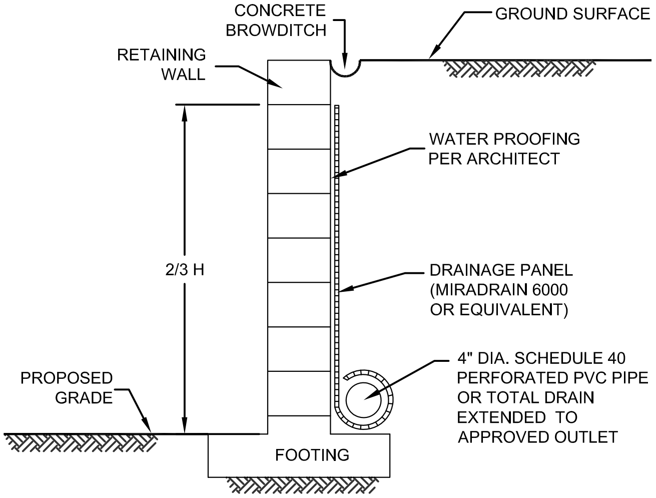
Plotted:03/14/2018 4:03PM | By:JONATHAN WILKINS | File Location:Y:\PROJECTS\07955-42-02 California Terraces\DETAILS\Wall-Column Footing Dimension Detail (COLFOOT2).dwg





NOTE :

DRAIN SHOULD BE UNIFORMLY SLOPED TO GRAVITY OUTLET
OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPING



NO SCALE

TYPICAL RETAINING WALL DRAIN DETAIL

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

OCEANVIEW HILLS - PA 61
SAN DIEGO, CALIFORNIA

NB / RA		DSK/GTYPD	DATE 03 - 15 - 2018	PROJECT NO. 07955 - 42 - 02	FIG. 5

Plotted:03/14/2018 4:04PM | By:JONATHAN WILKINS | File Location:Y:\PROJECTS\07955-42-02 California Terraces\DETAILS\Typical Retaining Wall Drainage Detail (RWDD7A).dwg

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

Fieldwork for our geotechnical investigation included a site visit, subsurface exploration, and soil sampling. The approximate locations of the exploratory trenches and borings are shown on the Geologic Map, Figure 2. The logs of trenches and borings are presented as figures following the text in this appendix. In addition, we performed 2, preliminary field-saturated infiltration tests.

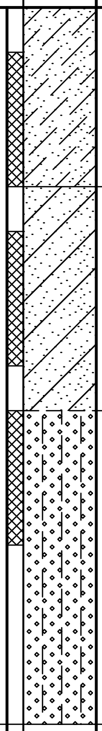
We performed our exploratory trenching on December 22, 2017, and included excavating a with a John Deere rubber tire backhoe. We collected bulk samples of select soils and returned to the laboratory for testing. Borings were performed in 1984 for a previous investigation.

The soil conditions encountered in the borings were visually examined, classified and logged. Figures A-1 through A-8 present the logs of the exploratory trenches. The boring logs from our previous investigation are provided on Figures A-9 and A-10. The logs depict the various soil types encountered. The elevations shown on the logs are approximate elevations.

TRENCH T 1

ELEV. (MSL.) **523'** DATE COMPLETED **12-22-2017**

EQUIPMENT **JD 410 BACKHOE** BY: **N. BORJA**



DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	T1-1			SC	**TOPSOIL** Loose, dry, dark brown, Clayey, fine to medium SAND; trace gravel			
2	T1-2			CL/CH	**VERY OLD TERRACE DEPOSITS (Qt)** Soft, damp, dark brown, Sandy to Silty CLAY; some white specs			
4	T1-3			SM	Dense, dry, mottled light brown and olive brown, Silty, fine to medium SANDSTONE			
6								
8					TRENCH TERMINATED AT 8 FEET No groundwater encountered			

Figure A-1,
Log of Trench T 1, Page 1 of 1

07955-42-02.GPJ

SAMPLE SYMBOLS			
	■ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	▨ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. 07955-42-02

TRENCH T 2

ELEV. (MSL.) **529'** DATE COMPLETED **12-22-2017**

EQUIPMENT **JD 410 BACKHOE** BY: **N. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL	**TOPSOIL** Soft, moist, dark brown, Sandy CLAY			
2								
				SM/SC	**VERY OLD TERRACE DEPOSITS (Qt)** Medium dense to dense, damp, mottled light brown and olive brown, Silty to Clayey, fine to medium SAND			
4								
				SM	Very dense, damp, olive brown, Silty, fine to medium SANDSTONE			
6								
8								
					TRENCH TERMINATED AT 9.5 FEET No groundwater encountered			

Figure A-2,
Log of Trench T 2, Page 1 of 1

07955-42-02.GPJ

SAMPLE SYMBOLS

▩ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
⊠ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

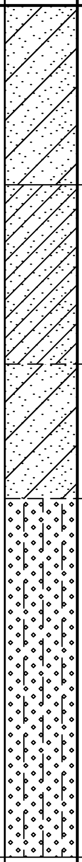
NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. 07955-42-02

TRENCH T 3

ELEV. (MSL.) **528'** DATE COMPLETED **12-22-2017**

EQUIPMENT **JD 410 BACKHOE** BY: **N. BORJA**



DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL	**TOPSOIL** Soft, moist, dark brown, Sandy CLAY			
2				CH	**VERY OLD TERRACE DEPOSITS (Qt)** Firm to stiff, moist, dark brown, Silty to Sandy CLAY; some white specs			
4				CL	Firm, damp, light brown and white, Sandy CLAY; porous			
6				SM	Dense, damp, light brown to olive brown, Silty, fine to medium SANDSTONE			
8								
					TRENCH TERMINATED AT 9.5 FEET No groundwater encountered			

Figure A-3,
Log of Trench T 3, Page 1 of 1

07955-42-02.GPJ

SAMPLE SYMBOLS			
	■ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. 07955-42-02

TRENCH T 4

ELEV. (MSL.) **527'** DATE COMPLETED **12-22-2017**

EQUIPMENT **JD 410 BACKHOE** BY: **N. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL	**TOPSOIL** Firm, damp, dark brown, Sandy CLAY; some white specs			
2								
	T4-1	⊠		SM	**VERY OLD TERRACE DEPOSITS (Qt)** Dense to very dense, damp, light brown to olive brown, Silty, fine to medium SANDSTONE			
4								
6								
					TRENCH TERMINATED AT 7 FEET No groundwater encountered			

Figure A-4,
Log of Trench T 4, Page 1 of 1

07955-42-02.GPJ

SAMPLE SYMBOLS

■ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
⊠ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. 07955-42-02

TRENCH T 5

ELEV. (MSL.) 527' DATE COMPLETED 12-22-2017

EQUIPMENT JD 410 BACKHOE BY: N. BORJA

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC/CL	**TOPSOIL** Loose, damp to moist, dark brown, fine to medium SAND to Sandy CLAY; little white specs			
2								
	T5-1	▨		CL	**VERY OLD TERRACE DEPOSITS (Qt)** Medium dense, dry, mottled tan brown, light brown and white, Sandy CLAY			
4								
				SM	Dense, dry to damp, light brown and olive brown, Silty, fine to medium SANDSTONE			
6								

TRENCH TERMINATED AT 7 FEET
No groundwater encountered

Figure A-5,
Log of Trench T 5, Page 1 of 1

07955-42-02.GPJ

SAMPLE SYMBOLS			
	■ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	▨ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. 07955-42-02

TRENCH T 6

ELEV. (MSL.) **523'** DATE COMPLETED **12-22-2017**

EQUIPMENT **JD 410 BACKHOE** BY: **N. BORJA**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL	**TOPSOIL** Firm, dry, dark brown, Sandy CLAY; little rootlets			
2				SM	**VERY OLD TERRACE DEPOSITS (Qt)** Dense, dry, yellowish brown, Silty, fine to medium SANDSTONE			
4					-Becomes gravelly with cobble up to 8" diameter below 4 feet			
6								
					TRENCH TERMINATED AT 7 FEET No groundwater encountered			

Figure A-6,
Log of Trench T 6, Page 1 of 1

07955-42-02.GPJ

SAMPLE SYMBOLS			
	▒ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◩ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. 07955-42-02

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**TRENCH T 7** ELEV. (MSL.) **524'** DATE COMPLETED **12-22-2017** EQUIPMENT **JD 410 BACKHOE** BY: **N. BORJA**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				CL	**TOPSOIL** Soft, damp, dark brown, Sandy CLAY; some white specs			
2				SM	**VERY OLD TERRACE DEPOSITS (Qt)** Dense, damp, olive brown to brown, Silty, fine to medium SANDSTONE			
4					-Becomes tan brown			
6					-Becomes light yellowish brown to light gray			
					TRENCH TERMINATED AT 7 FEET No groundwater encountered			

Figure A-7,
Log of Trench T 7, Page 1 of 1

07955-42-02.GPJ

SAMPLE SYMBOLS			
	■ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

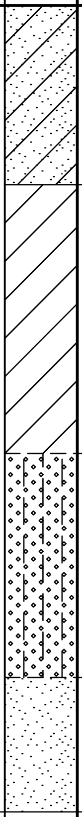
GEOCON

PROJECT NO. 07955-42-02

TRENCH T 8

ELEV. (MSL.) **527'** DATE COMPLETED **12-22-2017**

EQUIPMENT **JD 410 BACKHOE** BY: **N. BORJA**



DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				CL	**TOPSOIL** Soft to firm, moist, dark brown, Sandy CLAY			
2				CH	**VERY OLD TERRACE DEPOSITS (Qt)** Soft, damp, dark brown, CLAY			
4								
				SM	Dense, damp, brown to olive brown, Silty, fine to medium SANDSTONE			
6								
8				SM/SP-SM	Medium dense to dense, moist, mottled reddish brown to brown, fine to coarse SAND; some silt			
					TRENCH TERMINATED AT 9 FEET No groundwater encountered			

Figure A-8,
Log of Trench T 8, Page 1 of 1

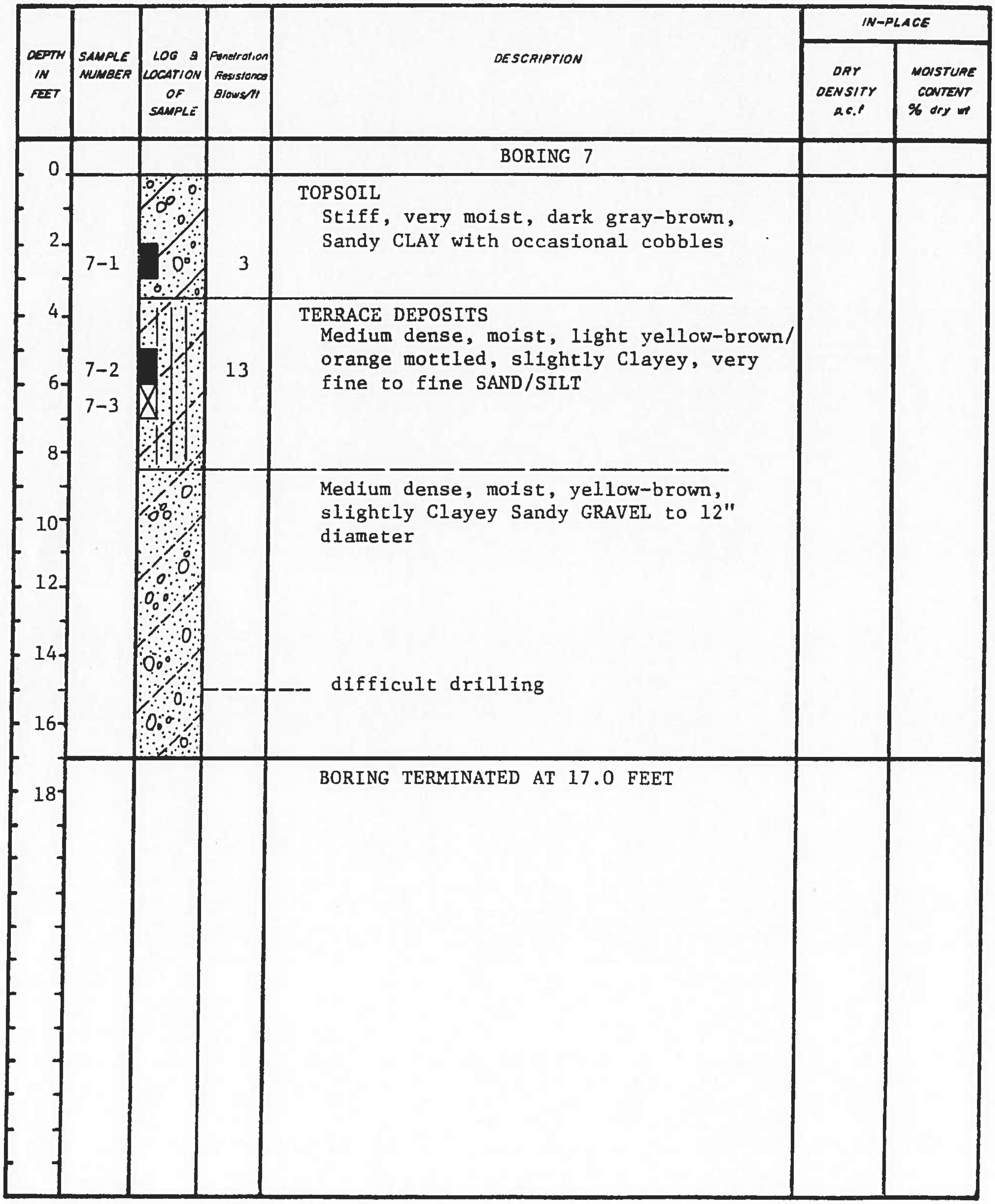
07955-42-02.GPJ

SAMPLE SYMBOLS			
	■ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

File No. D-3117-J01
May 14, 1984



DEPTH IN FEET	SAMPLE NUMBER	LOG & LOCATION OF SAMPLE	Penetration Resistance Blows/ft	DESCRIPTION	IN-PLACE DRY DENSITY p.c.f	IN-PLACE MOISTURE CONTENT % dry wt
				BORING 7		
0				TOPSOIL Stiff, very moist, dark gray-brown, Sandy CLAY with occasional cobbles		
2	7-1		3			
4				TERRACE DEPOSITS Medium dense, moist, light yellow-brown/ orange mottled, slightly Clayey, very fine to fine SAND/SILT		
6	7-2		13			
	7-3					
8				Medium dense, moist, yellow-brown, slightly Clayey Sandy GRAVEL to 12" diameter		
10						
12						
14				difficult drilling		
16						
18				BORING TERMINATED AT 17.0 FEET		

Figure A-9, Log of Test Boring 7

File No. D-3117-J01
May 14, 1984

DEPTH IN FEET	SAMPLE NUMBER	LOG & LOCATION OF SAMPLE	Penetration Resistance Blows/ft	DESCRIPTION	IN-PLACE DRY DENSITY p.c.f	IN-PLACE MOISTURE CONTENT % dry wt
				BORING 8		
0				TOPSOIL Stiff, very moist, dark red-brown, Sandy CLAY with minor caliche		
2				TERRACE DEPOSITS Medium dense, humid, light brown, slightly Clayey, very fine to fine SAND/SILT with caliche nodules to 2" dia.		
4						
6						
8				Medium loose, moist, light yellow-brown, Silty Sandy GRAVEL to 6" diameter, very friable		
10				becomes light brown, humid		
12				hole caving		
14						
16				BORING TERMINATED AT 15.0 FEET SEVERE CAVING		

Figure A-10, Log of Test Boring 8

APPENDIX B

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. We tested selected samples for maximum dry density and optimum moisture content, direct shear, expansion, water-soluble sulfate characteristics, and gradation. The results of our laboratory tests are presented on the following tables and graph.

TABLE B-I
SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS
ASTM D 1557

Proctor Curve No.	Source and Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
T1-2	Dark brown, silty CLAY	115.6	15.1
T4-1	Light brown, Clayey, fine to coarse SAND; trace gravel	118.4	13.8

TABLE B-II
SUMMARY OF LABORATORY DIRECT SHEAR TEST RESULTS
ASTM D 3080

Sample No.	Dry Density (pcf)	Moisture Content (%)		Unit Cohesion (psf)	Angle of Shear Resistance (degrees)
		Initial	Final		
*T4-1	106.8	13.4	21.3	450	28

*Sample remolded to 90% of the maximum dry density and optimum moisture content.

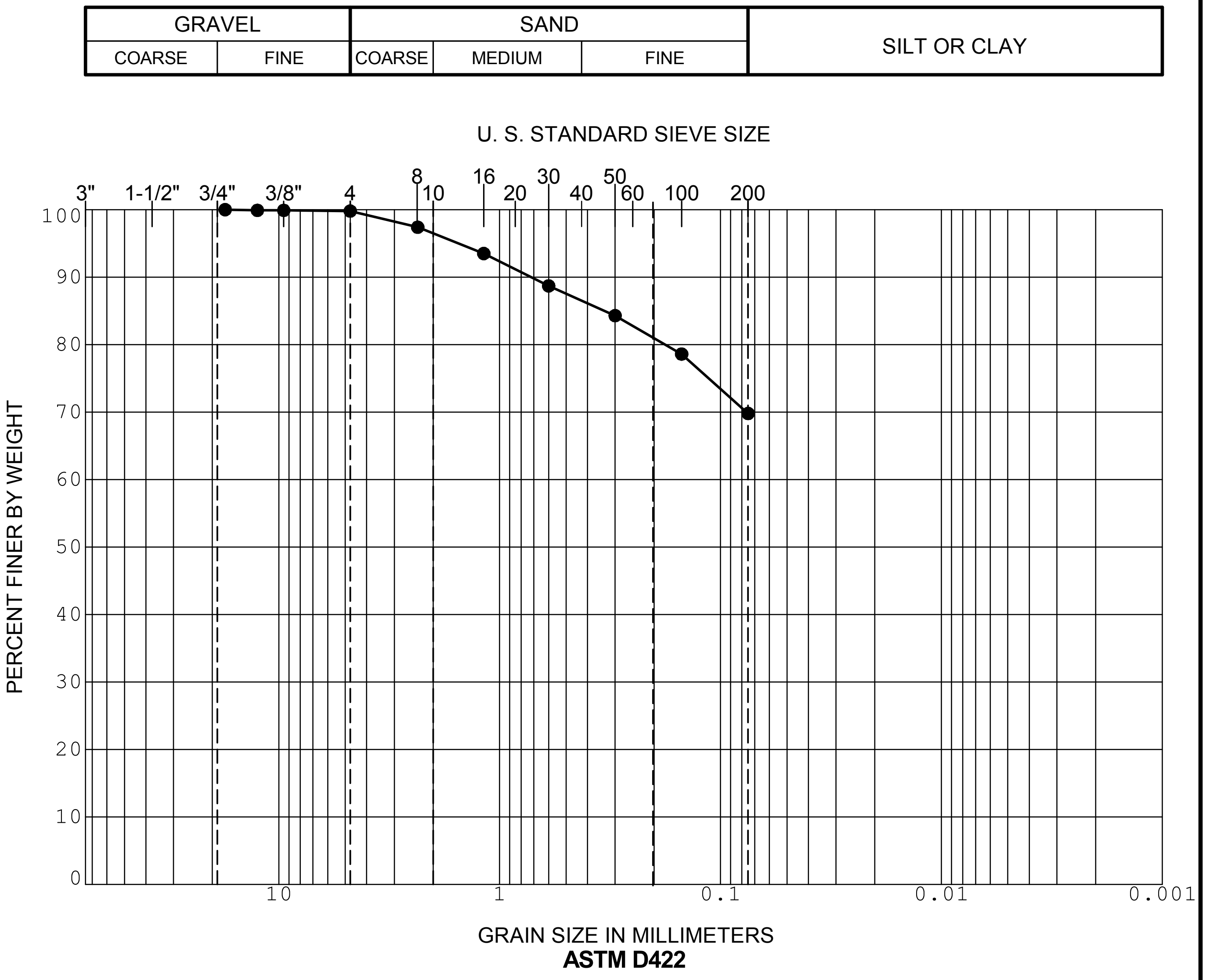
TABLE B-III
SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
ASTM D 4829

Sample No.	Moisture Content (%)		Dry Density (pcf)	Expansion Index	Expansion Classification
	Before Test	After Test			
T1-2	13.7	34.1	95.5	99	High
T4-1	10.6	23.3	107.7	52	Medium
T5-1	16.5	27.5	89.7	7	Very Low

TABLE B-IV
SUMMARY OF LABORATORY WATER-SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water-Soluble Sulfate (%)	Classification
T1-2	0.040	Not Applicable (S0)
T4-1	0.058	Not Applicable (S0)
T5-1	0.079	Not Applicable (S0)

PROJECT NO. 07955-42-02



	SAMPLE	DEPTH (ft)	CLASSIFICATION	NAT WC	LL	PL	PI
●	T5-1	2.5	CL - Sandy, lean CLAY				
☒							
▲							

GRADATION CURVE

OCEANVIEW HILLS PA 61

SAN DIEGO, CALIFORNIA

APPENDIX C

APPENDIX C

STORM WATER MANAGEMENT INVESTIGATION

We expect storm water management devices will be utilized on the project in accordance with the *2017 City of San Diego Storm Water Standards* (SWS). If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to these devices. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeological study at the site. If infiltration of storm water runoff occurs, downstream properties may be subjected to seeps, springs, slope instability, raised groundwater, movement of foundations and slabs, or other undesirable impacts as a result of water infiltration.

Hydrologic Soil Group

The United States Department of Agriculture (USDA), Natural Resources Conservation Services, possesses general information regarding the existing soil conditions for areas within the United States. The USDA website also provides the Hydrologic Soil Group. Table C-1 presents the descriptions of the hydrologic soil groups.

TABLE C-1
HYDROLOGIC SOIL GROUP DEFINITIONS

Soil Group	Soil Group Definition
A	Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.
B	Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.
C	Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
D	Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high-water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The property is classified as Soil Group D. Table C-2 presents the information from the USDA website for the subject property.

TABLE C-2
USDA WEB SOIL SURVEY – HYDROLOGIC SOIL GROUP

Map Unit Name	Map Unit Symbol	Approximate Percentage of Property	Hydrologic Soil Group	k_{SAT} of Most Limiting Layer (inches/ hour)
Stockpen gravelly clay loam, 2 to 5 percent slopes	SuB	100	D	0.00 to 0.06

In-Situ Testing

We performed 2 field-saturated, hydraulic conductivity tests at the site using a Soil Moisture Corp Aardvark Permeameter at the locations presented on the Geologic Map, Figure 2. The borings were excavated with a 4-inch-diameter hand auger. Table C-3 presents the results of the saturated hydraulic conductivity testing. Test data is presented on the attached figures in this Appendix.

We used the guidelines presented in the Riverside County Low Impact Development BMP Design Handbook which references the United States Bureau of Reclamation Well Permeameter Test Method (USBR 7300-89). Based on this widely accepted guideline, the saturated hydraulic conductivity (Ksat) is equal to the infiltration rate. Therefore, the Ksat value determined from the Aardvark Permeameter test is the unfactored infiltration rate. The Ksat (infiltration rate) equation provided in the Riverside County Handbook was used to compute the unfactored infiltration rate.

TABLE C-3
UNFACTORED, FIELD-SATURATED, INFILTRATION TEST RESULTS USING THE SOILMOISTURE CORP AARDVARK PERMEAMETER

Test No.	Depth (inches)	Geologic Unit	Field Infiltration Rate, I (in/hr)	Factored* Field Infiltration Rate, I (in/hr)
A-1	45	Terrace Deposits	0.002	0.001
A-2	48	Terrace Deposits	0.068	0.034

*Factor of Safety of 2.0 for feasibility determination.

Soil permeability values from in-situ tests can vary significantly from one location to another due to the non-homogeneous characteristics inherent to most soil. However, if a sufficient amount of field and laboratory test data is obtained, a general trend of soil permeability can usually be evaluated. For this project and for storm water purposes, the test results presented herein should be considered approximate values.

Infiltration categories include full infiltration, partial infiltration and no infiltration. Table C-4 presents the commonly accepted definitions of the potential infiltration categories based on the infiltration rates.

TABLE C-4
INFILTRATION CATEGORIES

Infiltration Category	Field Infiltration Rate, I (inches/hour)	Factored Infiltration Rate*, I (inches/hour)
Full Infiltration	I > 1.0	I > 0.5
Partial Infiltration	0.10 < I ≤ 1.0	0.05 < I ≤ 0.5
No Infiltration (Infeasible)	I < 0.10	I < 0.05

*Using a Factor of Safety of 2.

STORM WATER MANAGEMENT CONCLUSIONS

Soil Types

Very Old Terrace Deposits (Qt) – Very Old Terrace Deposits underlies the topsoils. The Terrace Deposits consist of an upper clay layer and a lower sandy cobbly layer. Infiltration tests within this unit typically exhibit very slow infiltration characteristics due to its dense condition. Therefore, full and partial infiltration should be considered infeasible.

Groundwater Elevations

We did not encounter groundwater during our field exploration. The site is at an elevation of about 520 to 530 feet MSL. We expect groundwater to be at elevations greater than 50 feet below the existing ground surface.

Soil or Groundwater Contamination

We are unaware of contaminated soil or groundwater contamination on the property. Therefore, infiltration associated with this risk is considered feasible.

New or Existing Utilities

Utilities are located adjacent to the property within the existing streets. However, we don’t expect infiltration will impact existing utilities based on the location of the proposed basins. The location of BMPs to proposed new utilities is unknown.

Existing and Planned Structures

Water should not be allowed to infiltrate in areas where it could affect the neighboring properties and existing adjacent structures, improvements and roadway. Mitigation for existing structures consists of not allowing water infiltration within a lateral distance of at least 15 feet from the new or existing foundations.

Storm Water Conclusions

The planned development will consist of the construction a multi-family apartment buildings and commercial buildings and improvements. The property is underlain by dense very old Terrace Deposits. We expect 2 to 7 feet of fill will be placed across the site. In addition, remedial removals of 2 to 6 feet are expected. At the completion of grading, we expect the site will be underlain by approximately 5 to 10 feet of compacted fill overlying Very Old Terrace Deposits.

Due to the very slow infiltration characteristics of the Very Old Terrace Deposits and the presence of compacted fill, infiltration is considered infeasible.

Storm Water Management Devices

Liners and subdrains should be incorporated into the design and construction of the planned storm water devices. The liners should be impermeable (e.g. High-density polyethylene, HDPE, with a thickness of about 30 mil or equivalent Polyvinyl Chloride**,** PVC) to prevent water migration. The subdrains should be perforated within the liner area, installed at the base and above the liner, be at least 3 inches in diameter and consist of Schedule 40 PVC pipe. The subdrains outside of the liner should consist of solid pipe. The penetration of the liners at the subdrains should be properly waterproofed. The subdrains should be connected to a proper outlet. The devices should also be installed in accordance with the manufacturer’s recommendations.

Storm Water Standard Worksheets

The SWS requests the geotechnical engineer complete the *Categorization of Infiltration Feasibility Condition* (Worksheet C.4-1 or I-8) worksheet information to help evaluate the potential for infiltration on the property. The attached Worksheet C.4-1 presents the completed information for the submittal process.

The regional storm water standards also have a worksheet (Worksheet D.5-1 or Form I-9) that helps the project civil engineer estimate the factor of safety based on several factors. Table C-5 describes the suitability assessment input parameters related to the geotechnical engineering aspects for the factor of safety determination.

TABLE C-5
SUITABILITY ASSESSMENT RELATED CONSIDERATIONS FOR INFILTRATION FACILITY SAFETY FACTORS

Consideration	**High Concern – 3 Points**	**Medium Concern – 2 Points**	**Low Concern – 1 Point**
Assessment Methods	Use of soil survey maps or simple texture analysis to estimate short-term infiltration rates. Use of well permeameter or borehole methods without accompanying continuous boring log. Relatively sparse testing with direct infiltration methods	Use of well permeameter or borehole methods with accompanying continuous boring log. Direct measurement of infiltration area with localized infiltration measurement methods (e.g., infiltrometer). Moderate spatial resolution	Direct measurement with localized (i.e. small-scale) infiltration testing methods at relatively high resolution or use of extensive test pit infiltration measurement methods.
Predominant Soil Texture	Silty and clayey soils with significant fines	Loamy soils	Granular to slightly loamy soils
Site Soil Variability	Highly variable soils indicated from site assessment or unknown variability	Soil boring/test pits indicate moderately homogenous soils	Soil boring/test pits indicate relatively homogenous soils
Depth to Groundwater/ Impervious Layer	<5 feet below facility bottom	5-15 feet below facility bottom	>15 feet below facility bottom

Based on our geotechnical investigation and the previous table, Table C-6 presents the estimated factor values for the evaluation of the factor of safety. This table only presents the suitability assessment safety factor (Part A) of the worksheet. The project civil engineer should evaluate the safety factor for design (Part B) and use the combined safety factor for the design infiltration rate.

TABLE C-6
FACTOR OF SAFETY WORKSHEET DESIGN VALUES – PART A[1]

Suitability Assessment Factor Category	**Assigned Weight (w)**	**Factor Value (v)**	**Product (p = w x v)**
Assessment Methods	0.25	2	0.50
Predominant Soil Texture	0.25	3	0.75
Site Soil Variability	0.25	2	0.50
Depth to Groundwater/ Impervious Layer	0.25	1	0.25
Suitability Assessment Safety Factor, S_A = □p			2.00

[1] The project civil engineer should complete Worksheet D.5-1 or Form I-9 using the data on this table. Additional information is required to evaluate the design factor of safety.

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	**Worksheet C.4-1: Form I-8A[10]**
Part 1 - Full Infiltration Feasibility Screening Criteria	
DMA(s) Being Analyzed:	Project Phase:
Project Site	
Criteria 1: Infiltration Rate Screening	
1A	Is the mapped hydrologic soil group according to the NRCS Web Soil Survey or UC Davis Soil Web Mapper Type A or B and corroborated by available site soil data[11]? ☐Yes; the DMA may feasibly support full infiltration. Answer "Yes" to Criteria 1 Result or continue to Step 1B if the applicant elects to perform infiltration testing. ☐No; the mapped soil types are A or B but is not corroborated by available site soil data (continue to Step 1B). ☐No; the mapped soil types are C, D, or "urban/unclassified" and is corroborated by available site soil data. Answer "No" to Criteria 1 Result. ☑No; the mapped soil types are C, D, or "urban/unclassified" but is not corroborated by available site soil data (continue to Step 1B).
1B	Is the reliable infiltration rate calculated using planning phase methods from Table D.3-1? ☐Yes; Continue to Step 1C. ☐No; Skip to Step 1D.
1C	Is the reliable infiltration rate calculated using planning phase methods from Table D.3-1 greater than 0.5 inches per hour? ☐Yes; the DMA may feasibly support full infiltration. Answer "Yes" to Criteria 1 Result. ☐No; full infiltration is not required. Answer "No" to Criteria 1 Result.
1D	**Infiltration Testing Method.** Is the selected infiltration testing method suitable during the design phase (see Appendix D.3)? Note: Alternative testing standards may be allowed with appropriate rationales and documentation. ☐Yes; continue to Step 1E. ☐No; select an appropriate infiltration testing method.

Note that it is not required to investigate each and every criterion in the worksheet, a single "no" answer in Part 1, Part 2, Part 3, or Part 4 determines a full, partial, or no infiltration condition.

[10] This form must be completed each time there is a change to the site layout that would affect the infiltration feasibility condition. Previously completed forms shall be retained to document the evolution of the site storm water design.

[11] Available data includes site-specific sampling or observation of soil types or texture classes, such as obtained from borings or test pits necessary to support other design elements.

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	Worksheet C.4-1: Form I-8A[10]
1E	**Number of Percolation/Infiltration Tests.** Does the infiltration testing method performed satisfy the minimum number of tests specified in Table D.3-2? ☐Yes; continue to Step 1F. ☐No; conduct appropriate number of tests.
IF	**Factor of Safety.** Is the suitable Factor of Safety selected for full infiltration design? See guidance in D.5; Tables D.5-1 and D.5-2; and Worksheet D.5-1 (Form I-9). ☐Yes; continue to Step 1G. ☐No; select appropriate factor of safety.
1G	**Full Infiltration Feasibility.** Is the average measured infiltration rate divided by the Factor of Safety greater than 0.5 inches per hour? ☐Yes; answer "Yes" to Criteria 1 Result. ☐No; answer "No" to Criteria 1 Result.
Criteria 1 Result	Is the estimated reliable infiltration rate greater than 0.5 inches per hour within the DMA where runoff can reasonably be routed to a BMP? ☐Yes; the DMA may feasibly support full infiltration. Continue to Criteria 2. ☐No; full infiltration is not required. Skip to Part 1 Result.

Summarize infiltration testing methods, testing locations, replicates, and results and summarize estimates of reliable infiltration rates according to procedures outlined in D.5. Documentation should be included in project geotechnical report.

We performed field-saturated, hydraulic conductivity tests, A-1 and A-2, using a Soil Moisture Corp Aardvark Permeameter (see Geologic Map, Figure 2). The test holes were hand excavated using 4-inch diameter hand augers. The unfactored test results of the saturated hydraulic conductivity testing for A-1 is 0.002 in/hr and 0.068 in/hr for A-2. Factored rates are 0.001 and 0.034 in/hr using a factor of 2.0.

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A[10]	
Criteria 2: Geologic/Geotechnical Screening			
2A	If all questions in Step 2A are answered "Yes," continue to Step 2B. For any "No" answer in Step 2A answer "No" to Criteria 2, and submit an "Infiltration Feasibility Condition Letter" that meets the requirements in Appendix C.1.1. The geologic/geotechnical analyses listed in Appendix C.2.1 do not apply to the DMA because one of the following setbacks cannot be avoided and therefore result in the DMA being in a no infiltration condition. The setbacks must be the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP.		
2A-1	Can the proposed full infiltration BMP(s) avoid areas with existing fill materials greater than 5 feet thick below the infiltrating surface?	☐Yes	☐No
2A-2	Can the proposed full infiltration BMP(s) avoid placement within 10 feet of existing underground utilities, structures, or retaining walls?	☐Yes	☐No
2A-3	Can the proposed full infiltration BMP(s) avoid placement within 50 feet of a natural slope (>25%) or within a distance of 1.5H from fill slopes where H is the height of the fill slope?	☐Yes	☐No
2B	When full infiltration is determined to be feasible, a geotechnical investigation report must be prepared that considers the relevant factors identified in Appendix C.2.1. If all questions in Step 2B are answered "Yes," then answer "Yes" to Criteria 2 Result. If there are "No" answers continue to Step 2C.		
2B-1	**Hydroconsolidation.** Analyze hydroconsolidation potential per approved ASTM standard due to a proposed full infiltration BMP. Can full infiltration BMPs be proposed within the DMA without increasing hydroconsolidation risks?	☐Yes	☐No
2B-2	**Expansive Soils.** Identify expansive soils (soils with an expansion index greater than 20) and the extent of such soils due to proposed full infiltration BMPs. Can full infiltration BMPs be proposed within the DMA without increasing expansive soil risks?	☐Yes	☐No

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A[10]	
2B-3	**Liquefaction**. If applicable, identify mapped liquefaction areas. Evaluate liquefaction hazards in accordance with Section 6.4.2 of the City of San Diego's Guidelines for Geotechnical Reports (2011 or most recent edition). Liquefaction hazard assessment shall take into account any increase in groundwater elevation or groundwater mounding that could occur as a result of proposed infiltration or percolation facilities. Can full infiltration BMPs be proposed within the DMA without increasing liquefaction risks?	☐Yes	☐No
2B-4	**Slope Stability**. If applicable, perform a slope stability analysis in accordance with the ASCE and Southern California Earthquake Center (2002) Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California to determine minimum slope setbacks for full infiltration BMPs. See the City of San Diego's Guidelines for Geotechnical Reports (2011) to determine which type of slope stability analysis is required. Can full infiltration BMPs be proposed within the DMA without increasing slope stability risks?	☐Yes	☐No
2B-5	**Other Geotechnical Hazards.** Identify site-specific geotechnical hazards not already mentioned (refer to Appendix C.2.1). Can full infiltration BMPs be proposed within the DMA without increasing risk of geologic or geotechnical hazards not already mentioned?	☐Yes	☐No
2B-6	**Setbacks.** Establish setbacks from underground utilities, structures, and/or retaining walls. Reference applicable ASTM or other recognized standard in the geotechnical report. Can full infiltration BMPs be proposed within the DMA using established setbacks from underground utilities, structures, and/or retaining walls?	☐ Yes	☐ No

<table>
<tr><th colspan="2">Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions</th><th colspan="2">Worksheet C.4-1: Form I-8A[10]</th></tr>
<tr><td>2C</td><td>Mitigation Measures. Propose mitigation measures for each geologic/geotechnical hazard identified in Step 2B. Provide a discussion of geologic/geotechnical hazards that would prevent full infiltration BMPs that cannot be reasonably mitigated in the geotechnical report. See Appendix C.2.1.8 for a list of typically reasonable and typically unreasonable mitigation measures.
Can mitigation measures be proposed to allow for full infiltration BMPs? If the question in Step 2 is answered “Yes,” then answer “Yes” to Criteria 2 Result.
If the question in Step 2C is answered “No,” then answer “No” to Criteria 2 Result.</td><td>☐Yes</td><td>☐No</td></tr>
<tr><td>Criteria 2 Result</td><td>Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geologic or geotechnical hazards that cannot be reasonably mitigated to an acceptable level?</td><td>☐Yes</td><td>☐No</td></tr>
<tr><td colspan="4">Summarize findings and basis; provide references to related reports or exhibits.</td></tr>
<tr><td colspan="2">Part 1 Result – Full Infiltration Geotechnical Screening [12]</td><td colspan="2">Result</td></tr>
<tr><td colspan="2">If answers to both Criteria 1 and Criteria 2 are “Yes”, a full infiltration design is potentially feasible based on Geotechnical conditions only.
If either answer to Criteria 1 or Criteria 2 is “No”, a full infiltration design is not required.</td><td colspan="2">☐Full infiltration Condition
☐Complete Part 2</td></tr>
</table>

---

[12] To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	**Worksheet C.4-1: Form I-8A[10]**
Part 2 – Partial vs. No Infiltration Feasibility Screening Criteria	
DMA(s) Being Analyzed:	Project Phase:
Project Site	
Criteria 3 : Infiltration Rate Screening	
3A	**NRCS Type C, D, or “urban/unclassified”:** Is the mapped hydrologic soil group according to the NRCS Web Soil Survey or UC Davis Soil Web Mapper is Type C, D, or “urban/unclassified” and corroborated by available site soil data? ☐ Yes; the site is mapped as C soils and a reliable infiltration rate of 0.15 in/hr. is used to size partial infiltration BMPS. Answer “Yes” to Criteria 3 Result. ☐ Yes; the site is mapped as D soils or “urban/unclassified” and a reliable infiltration rate of 0.05 in/hr. is used to size partial infiltration BMPS. Answer “Yes” to Criteria 3 Result. ☑ No; infiltration testing is conducted (refer to Table D.3-1), continue to Step 3B.
3B	**Infiltration Testing Result:** Is the reliable infiltration rate (i.e. average measured infiltration rate/2) greater than 0.05 in/hr. and less than or equal to 0.5 in/hr? ☐ Yes; the site may support partial infiltration. Answer “Yes” to Criteria 3 Result. ☐ No; the reliable infiltration rate (i.e. average measured rate/2) is less than 0.05 in/hr., partial infiltration is not required. Answer “No” to Criteria 3 Result.
Criteria 3 Result	Is the estimated reliable infiltration rate (i.e., average measured infiltration rate/2) greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour at any location within each DMA where runoff can reasonably be routed to a BMP? ☐ Yes; Continue to Criteria 4. ☐ No: Skip to Part 2 Result.

Summarize infiltration testing and/or mapping results (i.e. soil maps and series description used for infiltration rate).

We performed field-saturated, hydraulic conductivity tests, A-1 and A-2, using a Soil Moisture Corp Aardvark Permeameter (see Geologic Map, Figure 2). The test holes were hand excavated using 4-inch diameter hand augers. The unfactored test results of the saturated hydraulic conductivity testing for A-1 is 0.002 in/hr and 0.068 in/hr for A-2. Factored rates are 0.001 and 0.034 in/hr using a factor of 2.0.

Test results indicate infiltration rates less than 0.05 in/hr and are not high enough to support infiltration.

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A[10]	
Criteria 4: Geologic/Geotechnical Screening			
4A	If all questions in Step 4A are answered “Yes,” continue to Step 2B. For any “No” answer in Step 4A answer “No” to Criteria 4 Result, and submit an “Infiltration Feasibility Condition Letter” that meets the requirements in Appendix C.1.1. The geologic/geotechnical analyses listed in Appendix C.2.1 do not apply to the DMA because one of the following setbacks cannot be avoided and therefore result in the DMA being in a no infiltration condition. The setbacks must be the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP.		
4A-1	Can the proposed partial infiltration BMP(s) avoid areas with existing fill materials greater than 5 feet thick?	☐Yes	☐No
4A-2	Can the proposed partial infiltration BMP(s) avoid placement within 10 feet of existing underground utilities, structures, or retaining walls?	☐Yes	☐No
4A-3	Can the proposed partial infiltration BMP(s) avoid placement within 50 feet of a natural slope (>25%) or within a distance of 1.5H from fill slopes where H is the height of the fill slope?	☐Yes	☐No
4B	When full infiltration is determined to be feasible, a geotechnical investigation report must be prepared that considers the relevant factors identified in Appendix C.2.1 If all questions in Step 4B are answered “Yes,” then answer “Yes” to Criteria 4 Result. If there are any “No” answers continue to Step 4C.		
4B-1	**Hydroconsolidation.** Analyze hydroconsolidation potential per approved ASTM standard due to a proposed full infiltration BMP. Can partial infiltration BMPs be proposed within the DMA without increasing hydroconsolidation risks?	☐Yes	☐No
4B-2	**Expansive Soils.** Identify expansive soils (soils with an expansion index greater than 20) and the extent of such soils due to proposed full infiltration BMPs. Can partial infiltration BMPs be proposed within the DMA without increasing expansive soil risks?	☐Yes	☐No

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A[10]	
4B-3	**Liquefaction**. If applicable, identify mapped liquefaction areas. Evaluate liquefaction hazards in accordance with Section 6.4.2 of the City of San Diego's Guidelines for Geotechnical Reports (2011). Liquefaction hazard assessment shall take into account any increase in groundwater elevation or groundwater mounding that could occur as a result of proposed infiltration or percolation facilities. Can partial infiltration BMPs be proposed within the DMA without increasing liquefaction risks?	☐Yes	☐No
4B-4	**Slope Stability**. If applicable, perform a slope stability analysis in accordance with the ASCE and Southern California Earthquake Center (2002) Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California to determine minimum slope setbacks for full infiltration BMPs. See the City of San Diego's Guidelines for Geotechnical Reports (2011) to determine which type of slope stability analysis is required. Can partial infiltration BMPs be proposed within the DMA without increasing slope stability risks?	☐Yes	☐No
4B-5	**Other Geotechnical Hazards.** Identify site-specific geotechnical hazards not already mentioned (refer to Appendix C.2.1). Can partial infiltration BMPs be proposed within the DMA without increasing risk of geologic or geotechnical hazards not already mentioned?	☐Yes	☐No
4B-6	**Setbacks.** Establish setbacks from underground utilities, structures, and/or retaining walls. Reference applicable ASTM or other recognized standard in the geotechnical report. Can partial infiltration BMPs be proposed within the DMA using recommended setbacks from underground utilities, structures, and/or retaining walls?	☐Yes	☐No
4C	**Mitigation Measures.** Propose mitigation measures for each geologic/geotechnical hazard identified in Step 4B. Provide a discussion on geologic/geotechnical hazards that would prevent partial infiltration BMPs that cannot be reasonably mitigated in the geotechnical report. See Appendix C.2.1.8 for a list of typically reasonable and typically unreasonable mitigation measures. Can mitigation measures be proposed to allow for partial infiltration BMPs? If the question in Step 4C is answered "Yes," then answer "Yes" to Criteria 4 Result. If the question in Step 4C is answered "No," then answer "No" to Criteria 4 Result.	☐Yes	☐No

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		**Worksheet C.4-1: Form I-8A[10]**	
Criteria 4 Result	Can infiltration of greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour be allowed without increasing the risk of geologic or geotechnical hazards that cannot be reasonably mitigated to an acceptable level?	☐Yes	☐No
Summarize findings and basis; provide references to related reports or exhibits.			

Part 2 – Partial Infiltration Geotechnical Screening Result[13]	**Result**
If answers to both Criteria 3 and Criteria 4 are "Yes", a partial infiltration design is potentially feasible based on geotechnical conditions only. If answers to either Criteria 3 or Criteria 4 is "No", then infiltration of any volume is considered to be infeasible within the site.	☐Partial Infiltration Condition ☑No Infiltration Condition

---

[13] To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

Aardvark Permeameter Data Analysis

Project Name: CAL TERRACES - PA 61
Project Number: 07955-42-02
Test Number: A-1

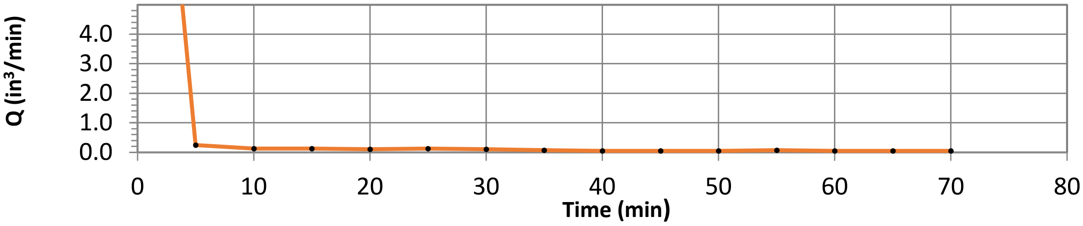
Date: 12/22/2017
By: N. BORJA

Borehole Diameter, d (in.): 4.00
Borehole Depth, **H** (in): 45.00

Ref. EL (feet, MSL): 528.5
Bottom EL (feet, MSL): 524.8

Head Height Measured, **h** (in.): 5.50

Reading	**Time Elapsed (min)**	**Water Weight Consummed (lbs)**	**Water Volume Consummed (in^3)**	**Q (in^3/min)**
1	0.00	0.000	0.00	0.00
2	5.00	3.785	104.82	20.963
3	5.00	0.045	1.25	0.249
4	5.00	0.025	0.69	0.138
5	5.00	0.025	0.69	0.138
6	5.00	0.020	0.55	0.111
7	5.00	0.025	0.69	0.138
8	5.00	0.020	0.55	0.111
9	5.00	0.015	0.42	0.083
10	5.00	0.010	0.28	0.055
11	5.00	0.010	0.28	0.055
12	5.00	0.010	0.28	0.055
13	5.00	0.015	0.42	0.083
14	5.00	0.010	0.28	0.055
15	5.00	0.010	0.28	0.055
16	5.00	0.010	0.28	0.055
			Steady Flow Rate, Q (in^3/min):	0.055



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

K_{sat} = 3.86E-05 in/min 0.002 in/hr

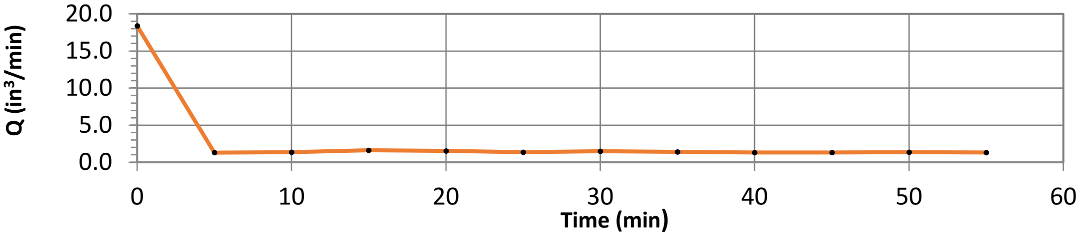
Aardvark Permeameter Data Analysis

Project Name: CAL TERRACES - PA 61
Project Number: 07955-42-02
Test Number: A-2

Date: 12/22/2017
By: N. BORJA
Ref. EL (feet, MSL): 529.5
Bottom EL (feet, MSL): 525.5

Borehole Diameter, d (in.): 4.00
Borehole Depth, **H** (in): 48.00
Head Height Measured, **h** (in.): 3.75

Reading	**Time Elapsed (min)**	**Water Weight Consummed (lbs)**	**Water Volume Consummed (in^3)**	**Q (in^3/min)**
1	0.00	0.000	0.00	0.00
2	5.00	3.320	91.94	18.388
3	5.00	0.235	6.51	1.302
4	5.00	0.245	6.78	1.357
5	5.00	0.290	8.03	1.606
6	5.00	0.275	7.62	1.523
7	5.00	0.245	6.78	1.357
8	5.00	0.270	7.48	1.495
9	5.00	0.255	7.06	1.412
10	5.00	0.240	6.65	1.329
11	5.00	0.240	6.65	1.329
12	5.00	0.245	6.78	1.356
13	5.00	0.240	6.65	1.330
			Steady Flow Rate, Q (in^3/min):	1.338



Field-Saturated Hydraulic Conductivity (Infiltration Rate)

K $_{sat}$ **=** 1.13E-03 in/min 0.068 in/hr

APPENDIX D

APPENDIX D

RECOMMENDED GRADING SPECIFICATIONS

FOR

OCEANVIEW HILLS PA-61
SAN DIEGO, CALIFORNIA

PROJECT NO. 07955-42-02

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9 and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

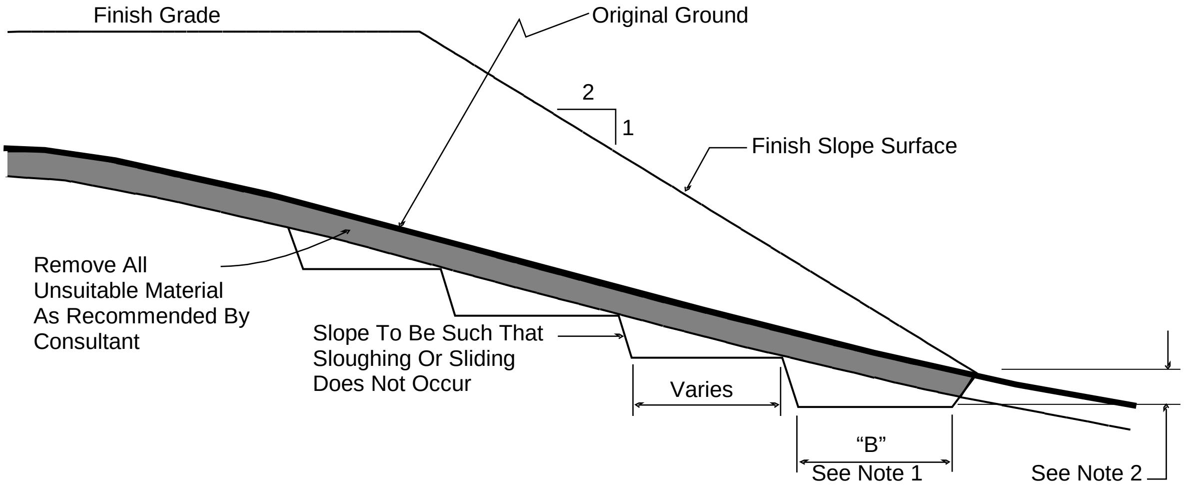
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

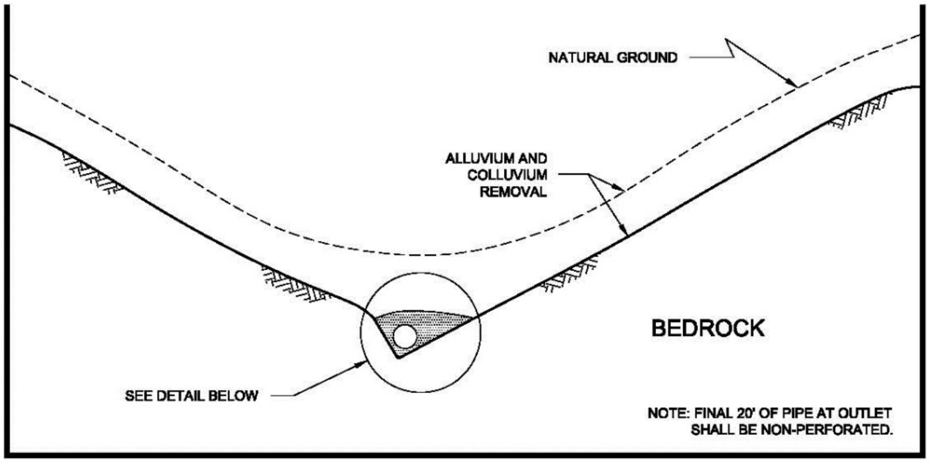
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

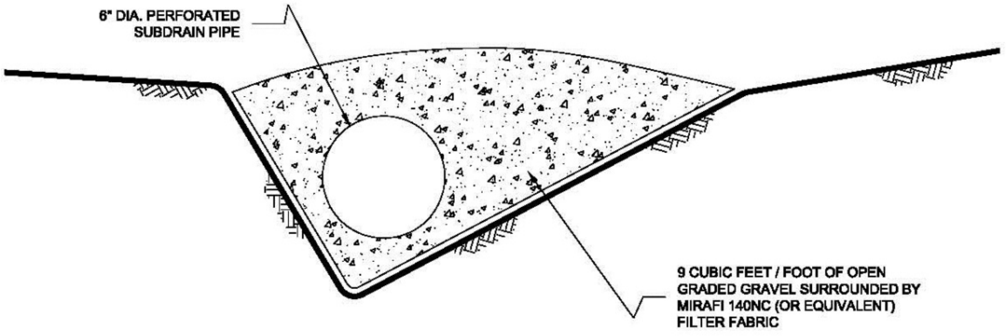
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

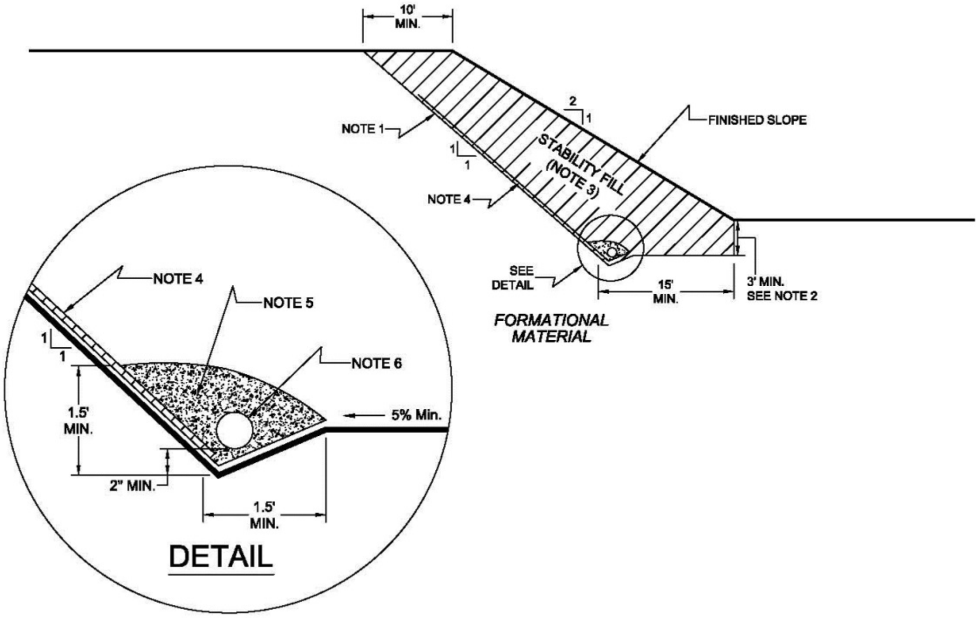
1......8-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2......6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

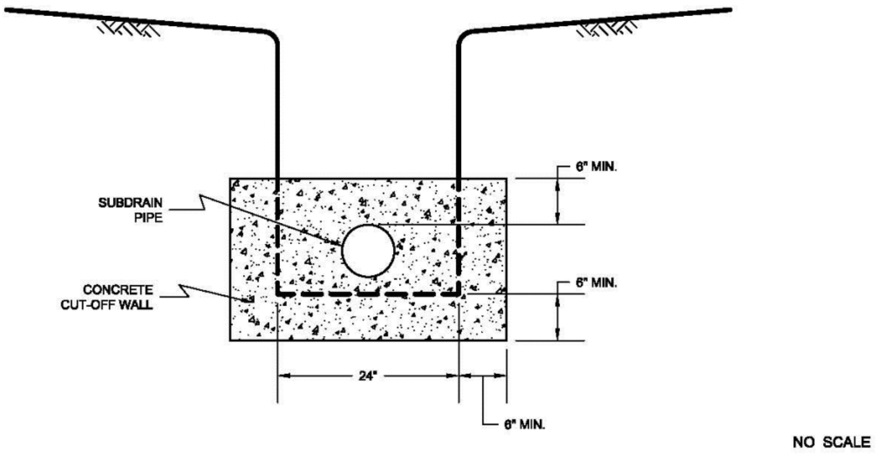
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

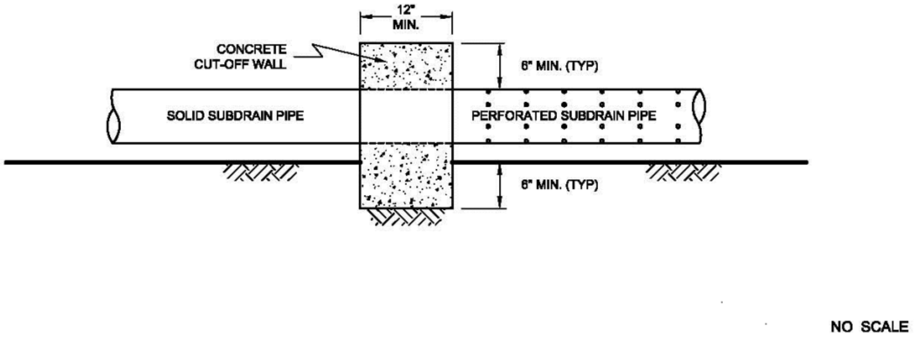
7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW

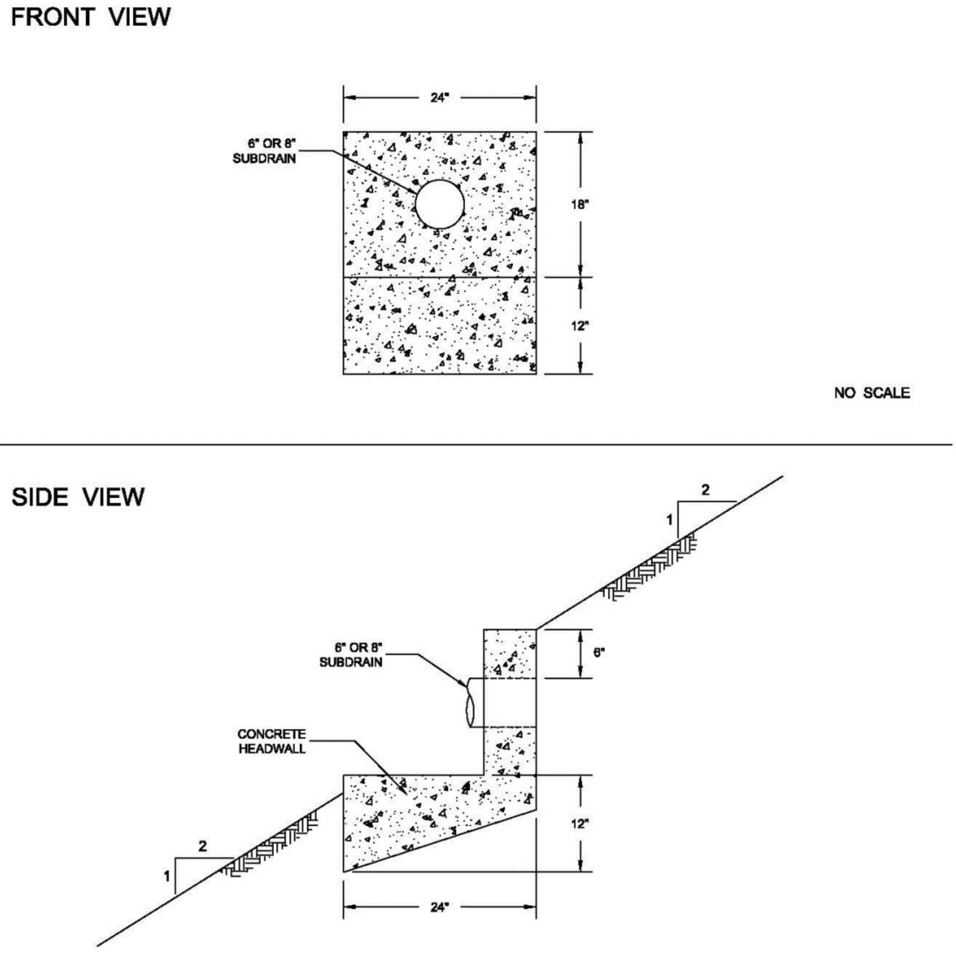


SIDE VIEW



7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

TYPICAL HEADWALL DETAIL



NOTE: HEADWALL SHOULD OUTLET AT TOE OF FILL SLOPE
OR INTO CONTROLLED SURFACE DRAINAGE

NO SCALE

7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an “as-built” map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

LIST OF REFERENCES

Boore, D. M., and G. M Atkinson (2006), *Boore-Atkinson NGA Ground Motion Relations for the Geometric Mean Horizontal Component of Peak and Spectral Ground Motion Parameters,* Report Number PEER 2007/01, May 2007;

Campbell, K. W., Y. Bozorgnia, *NGA Ground Motion Model for the Geometric Mean Horizontal Component of PGA, PGV, PGD and 5% Damped Linear Elastic Response Spectra for Periods Ranging from 0.01 to 10 s*, Preprint of version submitted for publication in the NGA Special Volume of Earthquake Spectra, Volume 24, Issue 1, pages 139-171, February 2008;

Chiou, Brian S. J. and Robert R. Youngs, Robert R, *A NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra,* preprint for article to be published in NGA Special Edition for Earthquake Spectra, Spring 2008;

Geocon Incorporated, *Update Geotechnical Report, South Otay Mesa Corporate Center, California Terraces Planning Area 61, San Diego, California,* February 29, 2008 (Project No. 07955-42-01);

Kennedy, M. P., and Tan, S. S., (2008), *Geologic Map of the San Diego 30' x 60' Quadrangle, California*, USGS Regional Geologic Map Series, 1:100,000 Scale, Map No. 3;

Risk Engineering, *EZ-FRISK*, 2015;

City of San Diego (2008), *Seismic Safety Study, Geologic Hazards and Faults, Map Sheet 7*;

USGS (2016), *Quaternary Fault and Fold Database of the United States*: U.S. Geological Survey website, http://earthquakes,usgs.gov/hazards/qfaults, accessed May 2, 2017;

USGS (2017), U.S. Seismic Design Maps; USGS Earthquake Hazards Program website, https://earthquake.usgs.gov/designmaps/us/application.php, accessed May 2, 2017;

Unpublished Geotechnical Reports and Information, Geocon Incorporated.